Caleb Ball

From: Jamie Upton [redacted]
Sent: Friday, 12 August 2016 5:51 PM
To: DPE CSE Information Planning Mailbox
Subject: Wind farms

Costs us for no real return. Just wrong

Sent from my iPad

Caleb Ball

From: system@accelo.com on behalf of Stewart Gemmell [redacted]
Sent: Wednesday, 24 August 2016 11:32 AM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for Stewart Gemmell (comments)

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Stewart Gemmell
Email: [redacted]

Address:
[redacted]

Turramurra, NSW
2074

Content:
It is ridiculous to include an assessment of "visual impact" for the approval of wind turbines.

Which has a greater adverse visual impact - a coal mine, a coal generator, land clearing or wind turbines?

The answer is obviously not wind turbines, so why is the approval of wind turbines the only one where visual impact is considered?

IP Address: [redacted]
Submission: Online Submission from Stewart Gemmell (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=158911

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Caleb Ball

From: system@accelo.com on behalf of Noel Dean [redacted]
Sent: Saturday, 20 August 2016 4:31 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for Noel Dean (comments)

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Noel Dean
Email: [redacted]

Address:
[redacted]

Alfredton, VIC
3350

Content:
This is my submission to identify the failings of the compliant investigation process in regard to sound pressure level complaints not being investigated to identify the received sound pressure levels that give reason for a sound based complaint today be made .

The use of LA90 to investigate a complaint does not measure the sound pressure level in a complaint situation because this method is only suitable for assessing the sound without the sound that is under investigation , it is a background assessment only ,LAeq is required to investigate the total received sound pressure which is the combination of the background and the turbine produced sound pressure level the limit being normally 40dB or the background plus 5dB , when their is no background pre construction the limit is 40dB from any wind direction , claims that LAeq cannot be used is false as the international testing is based on LAeq and LA90 is not recognised as a measurement because it is not a measurement .

At many windfarm developerments Sound Power level Is being used to determine the predicted sound level to be received , the predictions based on this method underestimates the predicted sound because although it is a dB measurement it can not be measured by a sound pressure meters it is not sound pressure level pascal in dB , but Sound power level Watt in dB as in power / heat as in heater/ light globe, in other words it is like a doctor using a thermometer to measure your blood pressure .

Complaint investigation is now included in the compliance monitoring plan , this is because found that a compliant investigation plan identified non compliance so they changed the rules so they did not have to shut down the 50 turbines , that are required to operate in low noise mode , the way that ACCIONA cheated was they authored another Complaint management plan , so they have two plans one that does not measure the sound that brought about the complaint , and the one that does they changed this after our complaint was made so there is now no evidence of our complaint investigation , but our neighbour was done to avoid any measurement , which is a page of useless dots that Marshall Day do not understand together with thousands of other people , people In planning departments do not understand the method used it is authored after the planning permit has been given , even though it is required to be independent of the Operator it is not , in fact this plan was approved by the Mr Jeffrey Gilmore in April 2009 and then back dated to March 2009 to get subsidies , this is required to be made available for public to view before the operation of the wind farm started but was not done , the local council was provided with this information on 23 December 2008 , the local council did not have a meeting before mid Frebruary 2009 and it was approved in early February so council did not consider the the initial plan before it was approved , this form of cheating seams to be wide spread in Victoria , turbines being moved , no compliant wind farm by prediction , low noise mode required and not used , Council and planning departments refuse to issue improvement or infringement notices when the Developer,s do not produce the documentation to support complaint investigation procedure to enable complaint investigation to the approval of the complainants , I said to the local Council manager for governance ,that it looks like it will take the full 25 Years before the windfarm will have to prove compliance , his rely was He hoped not he had no dispute with my claim the wind farm was not compliant .

After seven and half years still no sound pressure level assessment , no SAC assessment all that is required is Section 10 of EPA that means a audit that some went to do the assessment , I said to Micheal Juttner of the planning that this is like getting a used car registered with out a road worthy certificate , his response was that you have to get a road worthy certificate but you do not have to produce it , this appears to be the way government process happens , at the Dundonnell Wind farm hearing in late 2015 , I made a presentation , prior to the presentation I was asked to provide 10 copies , Mr Juttner took 4 copies only the developer did not get a copy , I later complained to the planning panel office about the copies not being distributed to all of the panel and was told that that was unusual.

My Complaint was that that complaint handling process was not being made available prior to windfarm hearing so as the public knew what it was in relation to the Dundonnell windfarm hearing ,The Dundonnell windfarm presentation was to alert the panel of

the need for people to know this information ,because any person that I spoke to refused to take me seriously , my Son also needs to got into the Area to get lime and is affected by excessive air turbulence resulting in making him lill.

We have needed to avoid operating our property in the Moorabool shire of which was are rate payers because of sound emissions unregulated coming from The Mt Mercer Wind Farm , I made a submission to the Lal Lal wind farm hearing , there was a directions hearing about 4 weeks ago , at this hearing the Developer,s lawyer said that very minor extra changes requested to be made over and above those in the amendment to the planning permit , it was said that shifting one turbine more than 100 mths was minor , and some time there was no objection , I spoke up and said that to change a location more than 100 mths requires a new wind farm plan , the chair person agreed with me , I then said is there going to be a new wind farm plan , I did not get a response the direction hearing is there for people to ask questions , I was refused a answer .

The planning permit states very clearly that for a turbine to be moved more than 100 mts , there has to be approval given by the Minister for Planning , the planning officer did not give approval for the change , the developer requesting the change is in breach of permit , The question must be asked is the planning department going to issue a infringement notice to the developer for breaking the law , this is one another or a long line of civil disobedience by windfarm developer,s that I have came across in the last seven plus years .

Also at this hearing I said that I consider it a breach of human rights that the operational complaint management plan was not been made available prior to the wind farm hearing , after my insistance the panel chairperson agreed , as it was to be made available prior to the developement starting and was not , I consider that this is also a breach of permit the developerment was reported as being started in about April 2013 , Is the planning department or the shire going to issue a infringement notice , at a cost of $1550 Dollars a day for non compliance since that time .

The local group lawyer requested documents in relation to the development history. ,the proponent,s lawyer refused , this request , this is also a breach of human rights and of permit , there seams to be collusion among the the planning department and the developer to keep permit related documents from public viewing , there appears to be a culture of civil disobedience as in unlawfull activities in Victoria , given that these companies operate in other states I suspect the issues of corruption of proper process and using proper basis to investigate sound based complaints is common place across Australia .

I believe the process of sound pressure level and air pressure related issues that affect the natural accepted acoustic emmissions in the environment , there should be a halt to wind farm development until the lay person who is affected is treated with the respect that the rest of the community takes for granted , we know the sound is eccessive because our ears get sore from the air pressure vibration/ pulsing that was not there before turbine cam alone , we also know that the sound does not get measured , we know all to well that the wind farm developers are breaking the laws to protect us from harm assisted by planning departments in some local and state governments .

Noel Dean .

IP Address: [redacted]
Submission: Online Submission from Noel Dean (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=158390

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

From: NSW Premier
Sent: 2016-08-13 13:06:23
To: premier@nsw.gov.au
Subject: Wind Turbines

Submitted on Saturday, August 13, 2016 - 13:06

Submitted by anonymous user: [redacted]

Submitted values are:

Title: Mrs
First Name: Kay
Last Name: Park
Phone: [redacted]
Email: [redacted]
Street address: [redacted]
Suburb: Drummoyne
State: New South Wales
Postcode: 2047
Subject: Wind Turbines
Type of enquiry: Message
Message:

Mr. Baird. Just to let you know that my husband and I are against wind turbines as do not feel it will make much difference to the usage of power and they are very ugly and, apparently, can affect the health of those living nearby.

I would like a response: Yes, I would like a response
I would like to receive regular updates from the NSW Government: No

End of message

Caleb Ball

To: Felicity Greenway
Subject: RE: Submission Details for Richard Sharp (comments)

From: system@accelo.com [mailto:system@accelo.com] **On Behalf Of** Richard Sharp
Sent: Thursday, 4 August 2016 7:31 PM
To: Felicity Greenway <Felicity.Greenway@planning.nsw.gov.au>
Subject: Submission Details for Richard Sharp (comments)

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Richard Sharp
Email: [redacted]

Address:
[redacted]

Burra, NSW
2620

Content:
Overall, the framework is an improvement on the previous policy guidance however it is requested that the following revisions be made:
Assessment Policy:
Section 5.3.1 Landscape values
-Expand this statement to include a requirement to engage with the community about the heritage values of the landscape such as dry stone walls, historic plantings, convict roads, etc.
Section 6. Post approval regulation
-Expand the development consent conditions to include other common matters relevant to past projects including measures to prevent soil pollution, reporting protocols for unintended native fauna deaths or injuries, and the erection of artistic steel fences around facilities such as sub-stations and operational buildings.
Standard Secretary's Environmental Assessment Requirements:
General Requirements
-The EIS must be prepared by suitably qualified persons, one of which must be a Certified Environemntal Practitioner.
Biodiversity
-Biodiversity needs to be defined to make it clear whether it includes both invertebrate fauna and vertebrate fauna.
- the EIS must assess the impact of shadow flicker on native vertebrate fauna such as reptiles.

IP Address: [redacted]
Submission: Online Submission from Richard Sharp (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=156532

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Caleb Ball

From: system@accelo.com on behalf of Gary Foster [redacted]
Sent: Wednesday, 17 August 2016 10:22 AM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for Gary Foster (comments)

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Gary Foster
Email: [redacted]

Address:
[redacted]

Bingara , NSW
2404

Content:
I do not support windfarms in any form. They are visually obnoxious and disturbing because of their size and slow movement, produce an unacceptable noise disturbance and are financially unsutaniable ie they aren't viable without government subsidy/assistance. Any government or any politician that supports windfarms are displaying their ignorance on the matter and their disdain for the view of the majority of the informend Australian community.

I do support other forms of clean energy development eg solar farms and water based energy generating systems eg ocean and river.

IP Address: - [redacted]
Submission: Online Submission from Gary Foster (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=157721

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Caleb Ball

From: [redacted] on behalf of Scott Butler [redacted]
Sent: Friday, 12 August 2016 1:11 PM
To: DPE CSE Information Planning Mailbox
Subject: wind energy planning

I must be misinformed but all I have read about wind energy is that they are very high maintenance and the output these things produce is very minimalistic

Why spend the money on something that may /will cost more to run that than it gives in power ?

Scott Butler

Caleb Ball

From: system@accelo.com on behalf of Julie Gray [redacted]
Sent: Wednesday, 10 August 2016 7:05 AM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for Julie Gray (comments)

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Julie Gray
Email: [redacted]

Address:
[redacted]

Tarago , NSW
2580

Content:
WIND TURBINES SHOULD NOT BE USED AS THE IMPACT OF THESE MACHINES IS FAR GREATER THAN ANY BENEFIT. IT IS A FACT THAT THIS FORM OF ENERGY GENERATION DOES NOT WORK AND COSTS THE ENVIRONMENT AND COMMUNITY A GREAT DEAL OF STRESS AND MONEY, TAKE ALL SUBSIDIES AWAY AND THEN SEE HOW MANY WIND INDUSTRIAL SITES ARE BUILT.

IP Address: - [redacted]
Submission: Online Submission from Julie Gray (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=156976

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Caleb Ball

To: Felicity Greenway
Subject: RE: Submission Details for Brent Lowrey (comments)

From: Brent Lowrey [redacted]
Date: 6 August 2016 at 10:18:13 AM AEST
To: Felicity Greenway <Felicity.Greenway@planning.nsw.gov.au>
Subject: Submission Details for Brent Lowrey (comments)

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Brent Lowrey
Email: [redacted]

Address:
[redacted]

Port Macquarie, NSW
2444

Content:
Your 'Review of the Impact of Wind Farms on Property Values' is just laughable.

Joke number one. Key finding (4.1) "There is insufficient sales data to provide a definitive answer to the question of whether wind farm development in NSW impacts on surrounding land values utilising statistically robust quantitative analysis techniques." Somehow your conclusion (4.3) is "As the results of this study and that of the 2009 NSW Valuer-Generalâ€™s assessment of the impact of wind farms on property values have drawn similar conclusions, there is likely to be
little value in undertaking further research into the value impact of wind farms in NSW." How bloody convenient! You wouldn't want a report that complicates matters by arriving at a logical conclusion, meaning more work for your department let alone a fair go for affected residents. You are relying on northen hemisphere and outdated data. Get realistic. The game has changed, with increased tower height and blade length, not to mentioned a putty-like planning process, favouring developers and worsening outcomes for local communities.

Joke number two. Key Finding (4.1) "There is limited available sales data to make a conclusive finding relating to value impacts on residential or lifestyle properties located close to wind farm turbines, noting that wind farms in NSW have been constructed in predominantly rural areas." Compare this to Attributes that may Affect Value (4.2) "Proximity to higher density populations â€" The location of wind farms near areas of higher population density could be expected to result, in absolute terms if nothing else, in an increase in perceived and actual impacts on a larger number of residential use properties." One does not even have to read between the lines; you will worry about turbine impact when greater numbers (more voters?) are affected and in the meantime blithely ignore financially and emotionally devastated owners of affected rural-residential (lifestyle) properties.

I could go on but here's some evidence for you.

My property (woe to me - it is within 2 km of a proposed Jupiter turbine) spent over six months on the market without receiving even a ridiculously low ball offer, despite being keenly priced, aggressively marketed and offered at a significantly reduced price for over half this time. Meanwhile, life has taken my family away from the area and I consequently have to service a mortgage on an unsellable property - and pay rent on our new home. This financial stress is compounded by the emotional turmoil inflicted by a complete lack of certainty surrounding the planning process. The best I can hope for, it seems, is that the proposal be denied (history gives little cause for hope in this regard) and my property's true value will be restored. Failing that, if the proposal is approved I have to pray that the terms of the approval allow me to compel the proponent to acquire my property at its true value - the lack of clear process means there is no guarantee this will be the case.

Where in this report - or anywhere! - are such traumatic injustices addressed? And please don't point me to "benefit sharing" agreements; these are a bigger joke than this report. I have no qualms about climate change science and the need for more renewable energy. I merely want something resembling the seemingly doomed-to-extinction Australian fair go. As the situation stands, wind turbines hurt. They don't hurt everyone and I don't begrudge farmers signing up for a reliable income stream. That said, they are hurting my family and others like us. Hurting bad.

RAJwt are being absolutely terrific in taking up the local community's fight for justice. LISTEN. ACT.

Rose Wakefield

From: Rob Stokes MP - Minister for Planning <no-reply@nsw.gov.au>
Sent: Friday, 12 August 2016 3:24 PM
To: Webform
Cc: "=?UTF-8?B?DQo=?="@ded-6701.prod.hosting.acquia.com
Subject: wind farms

Submitted on Fri, Aug 12, 2016 15:23:50
Submitted by user: Anonymous
Submitted values are:

Title: Mr
First Name: ross
Last Name: chilvers
Phone: [redacted]
Email: [redacted]
Street address: [redacted]
Suburb: Riverstone
State: New South Wales
Postcode: 2765
Subject: wind farms
Type of enquiry: Comment

Message:
You can fool some of the people all of the time .....what a waste of taxpayers money.....

what will it do without the required amount of wind .... CLIMATE CHANGE SCAM RIDES HIGH

I would like a response: Yes
I would like to receive regular updates from the NSW Government: No

End of message

Caleb Ball

From: system@accelo.com on behalf of [redacted]
Sent: Monday, 15 August 2016 9:43 AM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for [redacted]

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: yes

Submitted by a Planner: no

Disclosable Political Donation:

Name: [redacted]

Address: [redacted]

Content:
My submission relates to the need to better raise public awareness around the positive long term impacts of using renewable clean energy instead of burning fossil fuels, ie. coal etc.

In addition, I feel that the new wind energy planning framework fails to consider the concept of providing free energy to users once the costs of building and implementing the project have been paid. The future direction of the new wind energy planning framework should be based around the fundamental end goal of providing to its users renewable energy that is free, i.e. devoid of financial costs for users.

In this way, one could imagine that over the course of several decades, the cultural norms surrounding the idea of paying for renewable energy consumption would change in such a way that future generations would consider it normal to be provided with a renewable energy source that is entirely free

IP Address: - [redacted]
Submission: Online Submission from [redacted]
https://majorprojects.affinitylive.com/?action=view_activity&id=157462

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Wind Energy Community Session – Yass

Thanks for your time tonight. Don't forget that you can make a submission at http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

I AM PLEASED THE DEPARTMENT IS AIMING TO SPEED UP THE APPROVAL PROCESS.

I STATE THAT MY FEELING ON VISUAL AMENITY IS THAT WIND TOWERS ACTUALLY ENHANCE THE LANDSCAPE. I WOULD LIKE TO SEE THE RESOURCE MORE GREATLY UTILISED BY PLACING MORE TURBINES IN APPROPRIATE LOCATIONS.

THANK YOU FOR MEETING WITH US AND CONSIDERING OUR VIEWS.

Name: MATTHEW SMITH.

Email: [redacted]

Address: [redacted] RYE PARK.

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Wind Energy Community Session – Yass

Thanks for your time tonight. Don't forget that you can make a submission at http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

- NOISE
- SOCIAL UNREST
- VISUAL IMPACT
- SET BACKS TO BE LAW NOT A GUIDLINE
- WE ARE RURAL RESIDENTIAL
- EROSION IN HIGHLY AFFECTED AREAS
- SATURATION POINT - TO MANY FOR OUR AREA
- SA 155M IN 1 MTH GOV HAD TO PAY
- CLEARING VIRGIN TIMBER
- FUTURE GROWTH - SUBDIVISION, FAST-TRAIN WE ARE TO - CLOSE TO CANB

Name: [redacted]

Email: [redacted]

Address: [redacted]

Privacy: [redacted]

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Wind Energy Community Session

Thanks for your time tonight. Don't forget that you can make a submission at:
http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

RFS - NEED TO MAKE SOP & NOW STUDY WITH ALL RFS STAFF DECLARE INTRESTS
LAND VALUES - WILL DROP - DO STUDY ON CROOKWELL & GUNDAGAI WHO IS BUYING FARMS & THE NEIGHBOURS ARE ON GAG CLAUSE & DO NOW MAP TO REFLECT HOST & NON HOST
- LAND SCAPE VALUES - WHO DETERMINES THE VALUE? AND FUTURE GROWTH IN VALUES

Name: [redacted]

Email: [redacted]

Address: [redacted]

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Rohan Tayler

From: Bruce & Noeleen Hazell [redacted]
Sent: Friday, 16 September 2016 4:48 PM
To: DPE PS Wind Energy Mailbox
Subject: Submissions -Wind Energy Framework

Submission on the Wind Energy Frame work:

1. Guidelines are 'developer friendly'---Guidelines from 2011 were not enforced – The 2011 Guidelines required a Visual Influence of no less than 10 km, however, approval granted with Visual Impact within 1. 9 km!!

2. Projects NOT be proposed/approved when a 'non associated' landowner has previously and constantly lodged objections

3. Permission NOT be considered in closer settled districts; e g. In districts that had been subdivided into Soldier Settlement blocks following the 2nd World War

4. It is within any 'non associated' landowners rights to object and have that objection upheld to any Industrial Infrastructure which would have an impact on their lives and property values, with a residence within 4 km (new Guidelines) or 10 km (2011 Guidelines)
e g. Amendment to the proposed Development – Tru Energy v Goyder Project 2011.

5. Objections related to: Visual Impact, Noise and Residual Health effects, reduction of Land value especially subdivided 'Lifestyle' blocks by 30 – 60%, scaring of the landscape, soil erosion, massive devastation caused by clearing 'green' timber ' on access roads (within 500 metres of a residence) and the landscape when installing the Turbines

6. Decommissioning: – An independent legal agreement must be signed by the 'Host' landowner and/or any new Purchaser of the said property (included in the conditions of sale) all Turbines MUST be removed within 6 months of decommissioning

7. Aviation Impact : Fire and Agricultural pursuits

8. Discrimination: Rejecting one project and approving another in the same locality, without consultation with 'non associated' landowners and ignoring Consultants Guidelines

9. Allowing Proponents/Developers to propose additional turbines, reconfiguration or increase the height of approved Turbines, there is no assurance for the 'non associated' landowner – Guidelines are DEVELOPER FRIENDLY!!!

Thank you

Bruce and Noeleen Hazell
[redacted]
Bookham NSW 2582.

Wind Energy Community Session – Yass

Thanks for your time tonight. Don't forget that you can make a submission at http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

Guidelines must be retrospective
Draft Guidelines 2011
Proponent proposed 2009
NO consultation.

Turbines on 'host' property NOT constructed while affected neighbour has not signed agreement

Name: BRUCE & NOELEEN HAZELL

Email: [redacted]

Address: [redacted] BOOKHAM

Privacy:

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Wind Energy Community Session – Yass

Thanks for your time tonight. Don't forget that you can make a submission at http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

Jim Guilfoyle - real estate Delta agent. Advised me Rat a "good" sale on Black Range Rd collapsed as property over possibly within visual range of proposed turbine development.

Kath

Name: Tony FORRARD

Email: [redacted]

Address: [redacted] Bowning

Privacy:

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Wind Energy Community Session

Thanks for your time tonight. Don't forget that you can make a submission at:
http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

Very strongly in support of Renewable energy, wind farms, and solar farms in Upper Lachlan Shire.

Name: Nic Clancy

Email: [redacted]

Address: [redacted] Gunning.

Privacy:

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☐ Please tick this box if you do not want your details published in the list of submitters on the department's website

Wind Energy Community Session

Thanks for your time tonight. Don't forget that you can make a submission at:
http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

- LAND VALUE IMPACTS – RESEARCHED FACTS & PERCENTAGES

- SUBSIDIES IN $ FIGURES / TURBINE FOR CROOKNELL 2 & 3 AS A RATE PAYER WHAT IS IT GOING TO COST ME?

- PLANNING APPROVALS – WHY DOES AN APPROVAL BE GRANTED THEN AFTER A LONG PERIOD NO PROGRESS STILL BE GRANTED ALLOWANCE FOR MODIFICATIONS ??

Name: PAUL N. SEARY

Email: [redacted]

Address: [redacted] ROSLYN NSW 2580

Privacy:

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Wind Energy Community Session

Thanks for your time tonight. Don't forget that you can make a submission at:
http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

The community engagement aspects of the framework are so essential to avoiding the community division that wind farms can cause. I am a very close neighbour to a wind farm so I am happy living there. But I would be happier if my neighbours were content with the presence of the wind farm. I am sure the discontent could have been avoided with proper community engagement.

Name: Dimity Taylor

Email: [redacted]

Address: [redacted] Bannister.

Privacy:

Your personal information is protected under the *Privacy and Personal Information Protection Act 1998* (PPIP Act). The Department collects personal information in submissions for the purposes set out in the Department's Privacy Statement which can be found at: http://www.planning.nsw.gov.au/privacy

☐ Please tick this box if you do not want your details published in the list of submitters on the department's website

Wind Energy Community Session

Thanks for your time tonight. Don't forget that you can make a submission at:
http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

The loudest voices are from those opposed to any windfarms.

Many people actually like looking out at wind turbines close or far. This is because many people also understand why a transition to clean energy is a national matter of addressing carbon pollution. The regional development rewards are also ~~control~~ important and impact

Name: [redacted]

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Caleb Ball

From: system@accelo.com on behalf of [redacted]
Sent: Thursday, 8 September 2016 2:30 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for [redacted] (comments)
Attachments: community-attitudes-renewable-energy-150419.pdf; EDC Project Proposal Renewable Energy Industry Opportunities _1_.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: [redacted]
Organisation: [redacted]
Email: [redacted]

Address:
[redacted]

Content:
*Preliminary comments about my experience of the Information Session at Crookwell.

I attended the community information session in Crookwell on 1st September 2016. I attended because I am in touch with the regional economic impacts of wind farm projects. I also have connections with people who live in Crookwell and Bannister.

It was poorly moderated and allowed a souring of the mood in the meeting. This is not good for community morale and when the Department Reps go home we are all left with the relationship debris. I don't think city based reps quite get the impact of loud and angry voices on community trust and cohesion. We are not anonymous in the country. Stronger moderation needs to be employed to prevent ongoing fall out from these meetings. Allowing people to vent publically is psychologically damaging to relationships in rural and regional communities.

Most of the people who spoke at that meeting are opposed to wind farms in any form regardless of the Guidelines in front of them. They were given far to long to vent - more than their allotted 3 minutes worth. It makes for a very uncomfortable meeting for ordinary people who are genuinely interested in a constructive outcome.

Two or Three speakers were from outside the region and had already attended the previous information session in Yass and had spoken there. These people took valuable time away from those in the Crookwell and Goulburn region who wanted to ask a question from the floor or listen to the presentation by the Department. The majority of people in the room were either quietly supportive of wind farm developments or genuinely interested in hearing about the guidelines. However the impression will be that the loud, biased and often rude comments from the floor represent a strong view in this region. They do not. If you set aside the people in the room who had an ideological opposition to wind farms then the majority of those left were supporters of wind farm projects.

No wonder the majority of the community stay away from these meetings!

Some "ground truthing" with respect to comments about land values dropping would show that some of the speaker's have properties that are degraded. This is not the fault of proposed or adjoining wind farms. it says everything about the struggel to keep large farming properties viable. Many speakers that night have no visual line of sight of a turbine - they just hate them in principle and see not rationale for a shift to clean energy in Australia. At least not if it affects their backyard or involves any discussion about climate change.

*Understanding landscape values

The natural character of the landscape is always changing. Over the last decade we have seen large farming properties subdivided in the Goulburn and Upper Lachlan LGA and this has altered vistas and had mixed impacts on biodiversity, tree cover and soil

quality. While wind farms change the visual landscape many love the view of them in all weathers and lights. Without wind farms the landscape values would shift over time to a patchwork of subdivisions, lifestyle blocks and hobby farms increasing fire risks and reducing the uninterrupted rural views.

Windfarms offer many legitimate farmers a secondary income that has positive effects on the viability of our agriculture and land management practices.

*The views of the meeting did not representative of the nuances in the community.

How do I know this?

1. Firstly the NSW Government's own commissioned community attitudes survey into clean energy projects released in 2016, identified majority support for wind farm projects even those surveyed within close proximity to wind farms. (Attachment 2)

2. The majority of the Crookwell and Goulburn population are either indifferent or support clean energy projects and the economic stimulus they bring to the region. However they are intimidated by wind farm opponents who are often abusive and divisive.

I have previously worked at the coal face of community engagement around regional wind projects on behalf of the Australian Wind Alliance (AWA). This has shown me the level of intimidation that many people feel when confronted with wind farm opponents if they speak up in favour.

3. I have connected with regional farmers and businesses that support the drought proofing that wind farms bring. I have met with workers in construction businesses and seen the growth in workforce participation thanks to large scale wind projects.

4. I have seen the flow on effects to the Crookwell and Goulburn economies by talking to business owners and the Goulburn Chamber Of Commerce. Goulburn Council has quantified the dollar value to the region for a single 50 MW wind farm and the figures are in the millions. (see attached).

5. I have seen communities like Taralga shift from being nervous about their local wind farm to identifying the eco tourism opportunities. I have personally spoken with real estate agents who attest to stable and rising property values irrespective of wind farm developments. Some agents even have wind farm graphics decorating their vehicle fleet.

*Benefit sharing

I have been an active supporter of benefit sharing beyond the current Guidelines. As a member of both AWA and Community Energy For Goulburn I believe that it is time that wind farm proponents offered shares in the project to local investors. This is done in Germany and has a significant impact on wind farm acceptance.

I recommend that benefit sharing models be stretched beyond what the Guidelines and recommend that the Government take a greater leadership role in facilitating this with Industry. Community enhancement funding is tokenistic in my view and a basic expectation.

Proximity rent is a good step to share prosperity with neighbours to wind farms. Investment opportunities through a local share offer would widen the support base and signal a commitment to genuine regional engagement.

*The VIA Tool

I think that the Visual Impact Assessment Tool is a reasonable way to deal with what is a very subjective and localised issue. However it should not in any way create buffer zones or assume that the issue of visual impact can be objectively quantified. iIt is a very subjective issue. I have heard people refer to them as big white daisies, ballet dancers or largely "invisible" as often as I've heard people decry them as "industrial".

I am a bit concerned about the cost burden of the tool and whether it may embroil proponents and opponents in prolonged conflict. This risk should be kept to a minimum. I hope instead that it acts as a "flag" and prevents what has occurred to date ie projects overly bogged down by opponents who try to manipulate the rules and tie projects up in red tape, causing unreasonable delays in the assessment/approval stages.

*The industry needs to take regional community seriously.

I would like to see the Industry lift its game on community engagement and invest in high quality staff who will genuinely work in a regions to get to know the people and their concerns and hopes. This quality of community engagement by wind farm companies is very very patchy!

*Decommissioning
I think the Government should consider decommissioning as an issue. I think it is unfair to leave hosts with the risk. The mining industry has a woeful track record in decommissioning and so I think there may need to be consideration in all large scale developments of a bond security to cover decommissioning. However this must be a wider issue impacting on all state significant projects not singling out wind farms alone.

[redacted]

[redacted]

Submission: Online Submission from [redacted] (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162140

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Economic Development Committee Project Proposal 2014

Renewable Energy Opportunities

Project Outline

Background:

This project proposes to facilitate connections between the region's business community and the wind farms, maximising the potential for local benefit.

Australia's Renewable Energy Target is a Federal Government policy designed to ensure that at least 20 per cent of Australia's electricity comes from renewable sources by 2020.

The ACT Government plans to reach a 90% renewable energy target by 2020 through its commitment to solar and sourcing power from wind farms in surrounding NSW. The Government wants to source 200 megawatts of power from wind farms to supply 80,000 Canberra homes by 2020. The policy has local content guidelines, which improve opportunities for the region's businesses.

See following research "Regional Benefits of Windfarm Construction & Operation" for an overview of the status of the region's windfarms and the benefits to the community of construction and operation.

What:

Utilising a similar project model to the highly successful Extractive Industries Opportunities project (ie consult industry participants to identify opportunities then communicate these to the relevant businesses in the region) but aimed at the Renewable Energy sector.

Firstly, consult with relevant stakeholders (ie South Eastern Region of Renewable Energy Excellence (SERREE) to identify what work has already been undertaken in this area, then, as relevant:

- Consult with renewable energy providers which are either established or proposed in the region; identify requirements now and into the future
- Create the opportunities list
- Create an outline of how the process might work regarding bidding for the work with new farms
- Publicise/circulate the opportunities and invite businesses to submit their details to create a "Renewable Energy Industry Suppliers List"
- Working Group to identify most effective and appropriate method of information collection and dissemination

Why:

A 2012 study by Sinclair Knight Merz (SKM, see Further Information section for link) on the economic benefits of wind farms in Australia found that for every 50 MW in capacity, a wind farm delivered the benefits detailed below:

- Direct employment of up to 48 construction workers, with each worker spending approximately $25,000 in the local area in shops, restaurants, hotels and other services – a total of up to $1.2 million
- Direct employment of around five staff – a total annual input of $125,000 spent in the local economy
- Indirect employment during the construction phase of approximately 160 people locally, 504 state jobs and 795 nationwide jobs
- Up to $250,000 per year for farmers in land rental income and $80,000 on community projects each year.

Applying the SKM multipliers to Goldwind's 165.5MW Gullen Range wind farm as an example:

- Direct employment of up to 159 construction workers, with each worker spending approximately $25,000 in the local area in shops, restaurants, hotels and other services – a total of up to $3.97 million

- Direct employment of around 16 staff – a total annual input of $413,000 spent in the local economy
- Indirect employment during the construction phase of approximately 529 people locally, 1,668 state jobs and 2,631 nationwide jobs
- Up to $827,000 per year for farmers in land rental income and $265,000 on community projects each year.

(Note: This expenditure is likely to be a minimum as wind farm developers' policies of sourcing suppliers and services locally as far as possible also mean that transport, plant hire and materials such as crushed rock, cement, sand and gravel are likely to be provided from local sources).

The industry uses this rule of thumb for assessing the local content 'dollar value' of wind farms:

- 15% of the total value of the project is spent on the steel towers
- 40% of the total value of the project is spent on the turbines
- 5% of the total value of the project is spent on haulage of towers/turbines from port
- 40% of the total value of the project is local spend – tracks, roadbase material, lines, trucking, etc.

The proposed Crookwell 2 and 3 projects will have a total construction value in excess of $300M, putting approximately $120M on the table for local subcontractors.

Goulburn Mulwaree needs to actively work towards capturing and retaining the long-term benefits of renewable energy developments in the region. In addition to those outlined above, benefits could include in migration of residents and businesses; and expansion, strengthening and diversification of existing businesses.

This project could also inform a business case to attract relevant service industries to the region by demonstrating local demand for specific products/services.

Community Strategic Plan

Key Direction: Business & Industry
2.2.1: "to investigate and develop economic initiatives and assistance programs for business and industry".
2.3.2: "to promote the local and regional economy".

Economic Development Plan:

Key Goal: A Strong Economy
Strategy 1-3-2: "Develop Goulburn as the regional centre for retail and service businesses".
Strategy 1-5-4: "Support the retention, expansion and/or diversification of local businesses".

Resources:

It is anticipated that the Economic Development Officer with the assistance of the Working Group will be able to undertake the majority of tasks related to this project. Some site visits may be required and these would entail the use of a Council vehicle.

Potential project team: Craig Simon (Acciona Wind Farm – Manager), John De Groot (Divalls – Civil Engineer), Brenda Proudman (Upper Lachlan Shire Council – Economic Development), Debbi Rodden (Goulburn Mulwaree Council – Economic Development), representative from SERREE, others as appropriate.

Depending upon the information dissemination model identified as most suitable, some costs may be incurred (for hosting an event, advertising and the like), therefore a budget of $5,000 is requested. These funds are available in the 2014/15 budget for BRES Projects.

Timeframe:

June to December 2014

Further information:
http://southerntablelandsrenewables.org.au Report – Economic Benefits of Wind Farms In Australia: www.cleanenergycouncil.org.au/technologies/wind-energy/benefits-of-wind-energy.html

Project submitted by: Debbi Rodden – Economic Development **Date:** May 2014

REGIONAL BENEFITS – WINDFARM CONSTRUCTION & OPERATION

Australia has an abundance of sun and wind. It makes sense to use it to produce clean energy, create jobs and bring investment into regions that have not enjoyed the benefits of the mining boom.

Renewable energy is driving significant investment in regional Australia and creating thousands of local jobs. Renewables are aligned to the NSW Government's policy to "protect important agricultural land and water resources,"[1] as wind farms take up negligible farming country and use no water.

There are significant challenges in keeping young people in regional areas. Very few new jobs are created on the Southern Tablelands and none on the scale of renewable energy. According to the ABS since March 2011 jobs in the Capital region defined as between Goulburn and the Victorian border have declined by 13,000 with unemployment climbing to 6.9% in January 2014 from 1.7% in March 2011.[2]

There are four wind farms on the Southern Tablelands: Capital Renewable Energy Precinct Bungendore, Gunning, Cullerin and the nearly complete Gullen Range. Combined, the wind farms employed 540 people over a 12-18 month construction period and currently provide 40 local jobs. The majority of wind farm construction work is on-site hence at least 70% of the work force comes from the local communities.

These wind farms inject over $10 million each into the regional community during construction. Suzlon (Senvion) was responsible for the engineering, procurement and construction of the Capital wind farm in Bungendore and worked closely with a group called the Industry Capability Network to ensure local suppliers and services got a cut of the action. Local beneficiaries included: consulting and training services, OH&S providers; power providers; real estate agencies; hotel and motel accommodation and restaurants; level 1 accredited electricians; retail sector; security; riggers; steel retailers; civil works; car servicing and repairs; fencing contractors; and hardware suppliers. Suzlon (Senvion) spent $10 million in the local community during the construction of Capital wind farm (not including the Woodlawn wind farm. Goldwind spent $12.3 million locally during the construction of Gullen Range wind farm near Goulburn during construction in 2013.

Each operational wind farm spends around $3 million in the local economy every year. This is big money for communities that have missed out on sharing in the mining boom. According to Infigen, Capital and Woodlawn wind farms return $3 million to the community each year through direct wages, payments for land leases, contractors, accommodation, hardware, infrastructure upgrades, sponsorships and donations.[3]

Divall's Earthmoving Goulburn NSW
Between 2013- 2014 Divall's turnover from renewables increased by 17 per cent and in the past 18 months the number of staff they have working on renewable energy projects has trebled. According to

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[1] *Strategic regional and land use policy brochure* http://www.nsw.gov.au/sites/default/files/strategicregionallandusepolicy-brochure_sd_v01.pdf

[2] *Australian Bureau of Statistics* http://www.abs.gov.au/websitedbs/D3310114.nsf/home/home?opendocument

[3] *Infigen http://www.infigenenergy.com/about-us/news/infigen-builds-a-wildlife-corridor-for-generations-to-come.html*

John Degroote from Divall's the number of positions at Divall's associated with renewable energy has grown from 16 to 48. The renewables industry now accounts for 27 per cent of their business.

"We have worked hard to prove our capabilities with developers and government organisations and to ensure the work and profits from renewable projects stays in the region with local companies," said Mr Degroote.

"We are really proud that Divall's has grown from supplying equipment on renewable projects to being the head contractor. This industry is providing real jobs and opportunities for local families."

"There's also a flow on effect where landowners living on wind farms invest in our business by doing work on their properties, like erosion control, dam construction, landscaping and building houses or renovating.[4]

Tutt Bryant, Goulburn, NSW
Goulburn plant hire company Tutt Bryant is another of the companies supplying plant and machinery to renewable projects including loaders, excavators, rollers, tractors and graders to assist with road works and cabling, as well as helping with oversized loads.

Tutt Bryant local manager Ben Zyla said the business engaged the services of a dozen or so local subcontractor companies to supply the needs of the Gullen Range wind farm site, as well as employing four local staff.[5]

A message from the Bungendore supermarket Foodworks
"The wind farms near Bungendore have helped local businesses by creating employment in the village not only during their construction but also in ongoing management and maintenance. Being on the outskirts of a major centre, few people stay and shop in the town during the day. Having an extra 120 people living in the village during construction boosted sales in my business and improved the vibrancy of the shopping precinct." Darren Heathcote, Bungendore Foodworks, 14 July 2013[6]

Bungendore resident and publican
"The wind farm construction period was a very rewarding time for me as a local business owner and landlord. The arrival of a sizeable workforce into the town boosted sales for my hotel business over a two-year period. Each profit centre showed significant improvement – the restaurant, accommodation, gaming and bar sales all increased. There was also a positive social impact with the arrival of the workers, adding energy and life to a small town hotel. In addition to these benefits, I experienced a 20% increase in profits from rental properties during that time. This was due to the demand for short term leases of furnished accommodation for the wind farm contractors, with up to 6 individuals living in a share-house situation during the working week." Tom Gordon 1 July 2013[7]

Owner of the Bungendore motel
"The Bungendore Motel noticed a significant increase in occupancy during the design and construction phase of the wind farms in Bungendore. There were also spin-offs to local food businesses from the workers who ate at cafes, restaurants and used the local supermarket. Another interesting development

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[4] *John Degroot, Divall's Earthmoving Goulburn*
[5] *Ben Zyla, Tutt Bryant Goulburn*
[6] *Southern Tablelands Renewables* http://southerntablelandsrenewables.org.au/community-events/local-businesses/page/4/
[7] *Southern Tablelands Renewables* http://southerntablelandsrenewables.org.au/community-events/local-businesses/page/4/

was that many of the workers' families travelled to Bungendore to visit and used Bungendore as a base to explore Canberra." Greg Nye 17 June 2013[8]

Bungendore resident

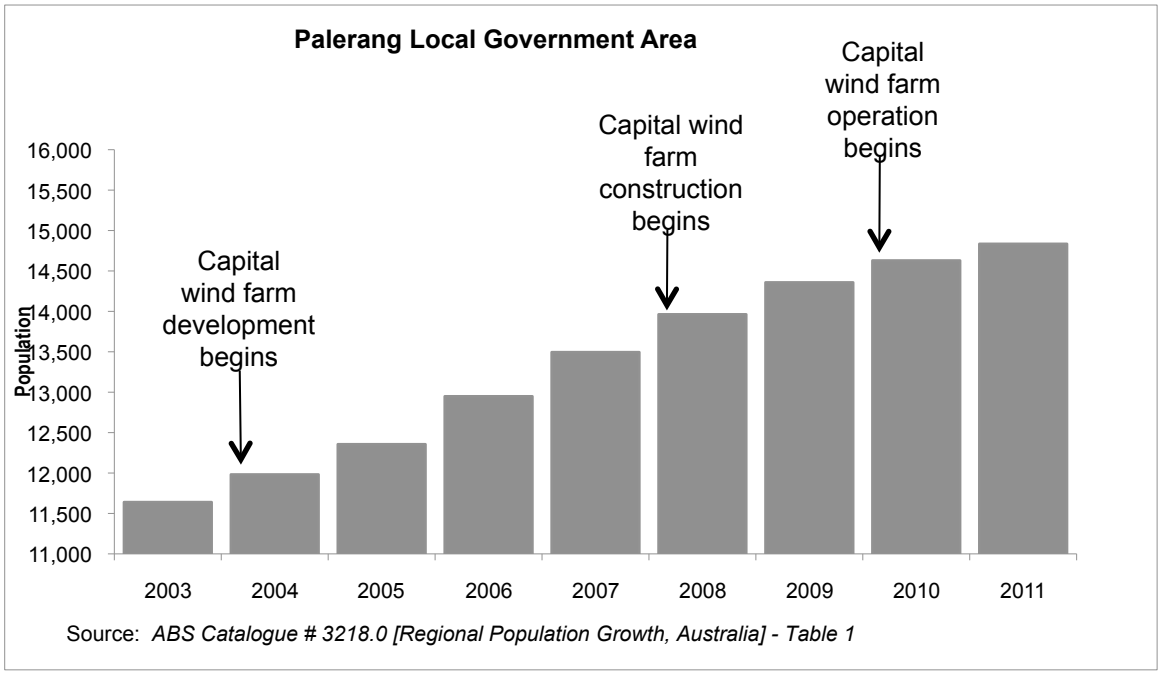
"Every morning the bakery was full of workers. The impact on the money brought into Bungendore is huge. Financially, for the town, it's been wonderful." Sharon Rasker, Bungendore resident[9]

Landowner

"Unlike a coal mine we have lost a minimal amount of valuable farming country to the wind turbines. Income from the wind farm has enabled us to reduce our stocking rates and take better care of our paddocks. We've spent around $100,000 on erosion problems and planted thousands of trees." Brian Osborne May 2012

Community building

People will try and tell you wind farms destroy communities. The Palerang Chamber of Commerce uses the wind turbines as their symbol on their letterhead and marketing materials. The following graph shows the town of Bungendore and its surrounds has thrived since the wind farm was first mentioned.



This chart shows the Palerang Local Government Area has grown from 11,982 residents in 2004 when the Capital wind farm project commenced development in earnest, to 14,629 in 2010 when the wind farm became operational, and grew by another 206 people in 2011. The 22 per cent increase in population is a strong vote of confidence for wind farms and clearly demonstrates they can exist in harmony with the local community.

[8] *Southern Tablelands Renewables* http://southerntablelandsrenewables.org.au/community-events/local-businesses/page/4/
[9] *Source: Bungendore Bulletin Sept 2013*

Furthermore, over 1500 tourists have been to visit the Capital and Woodlawn wind farms bringing busloads of people into the community.

Currently under construction are: Boco Rock, Taralga wind farms and Royalla solar farm creating a further 390 construction jobs and 49 operational jobs.

Immediately threatened are over 887 construction jobs and over $1 billion in investment on approved projects and projects in development including Capital 2, Collector, Crookwell 2 & 3.

The renewables industry keeps people in regional areas. It provides work experience and employment opportunities for apprentices, engineers, planners, developers, operators, contractors and many other roles, diversifying the employment opportunities available to the local community. I have heard people say the construction jobs are just a 'sugar hit' to the economy. Well how does that differ from building roads, building a powerstation or any construction project? Politicians argue that we should spend our renewable dollars overseas helping developing countries to be more environmental. It is reprehensible to think we would ship jobs and investment earmarked for regional areas overseas because we don't like the look of a wind turbine.

As the industry grows so too will additional benefits and opportunities including the potential to develop local service industries and to manufacture and repair component parts.

Stage	PROJECT	LOCATION	Capacity (MW)	Greenhouse Gas Savings	Houses powered	Jobs in construction	Jobs during operational stage
OPERATING	Gunning Acciona 2011	Gunning	46.5	135,000	23,250	100	9
OPERATING	Capital renewable energy precinct 2010/2012	Bungendore	189	600,000	92,000	270	17
OPERATING	Cullerin Range Origin 2009	Gunning	30	95,000	12,200	50	5
CONSTRUCTION	Boco Rock CWP	Nimmitabel	113.9	293,343	50,421	115	15
OPERATING	Taralga wind farm	Taralga	106.8	247,000	45,000	200	9
CONSTRUCTION	Gullen Range	Crookwell	165.5		60,000	115	15
CONSTRUCTION	Royalla solar farm FRV	Canberra	20		4,500	100	3
APPROVED	Collector wind farm Ratch	Collector	228		70,000	100	12
APPROVED	Capital 2 wind farm	Bungendore	100	280,000	36,000	110	6
APPROVED	Crookwell 2 Union Fenosa	Crookwell	92	295,000	46,000		10
APPROVED	Capital solar farm	Bungendore	30.6	55,000	7000	50	3
APPROVED	Mugga Lane Znenfa	Canberra	13		3250	40	3
APPROVED	One Sun Capital	Canberra	7		1500		
HORIZON	Crookwell 3	Crookwell	58		35000	40	6

HORIZON	Yass wind farm Epuron	Yass	300	1,140,000	140,000	167	34
HORIZON	Conroy's Gap Epuron	Yass	30	94,000	12,600	50	5
16	**Total**		**1,530.3**	**3,234,343**	**638,721**	**1,507**	**152**

Source: variety of developer websites, NSW Dept of Planning submissions etc.

Each wind farm project spends around $10-15m in the local community during construction and then $3m per year once they are operating. So that's a further $75m over the life of the project in today's $.

Assumptions on the benefits to the community of these projects regarding investment / jobs etc can be made using data from the SKM report found that a typical 50 megawatt (MW) wind farm:

- Has an estimated average construction workforce of 48 people with each worker spending $25,000 per year in the local area. This equates to some $1.2 million per year flowing into hotels, shops, restaurants, and other local service providers.
- Employs around five staff for operations and maintenance, equating to an ongoing local annual influx of $125,000.
- Provides up to $250,000 annually in payments to farmers, a proportion of which flows into the local community.
- Provides a community contribution of up to some $80,000 per year for the life of the project.[10]

[10] *Source: Clean Energy council – benefits of wind energy in Australia*

action matters

Community Attitudes to **Renewable Energy in NSW**

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Executive summary

The Office of Environment and Heritage (OEH) commissioned research from Newspoll on community attitudes to renewable energy in general, self-assessed knowledge of renewable energy and wind and solar farms in New South Wales. The aims of the research were to:

- provide a comprehensive picture of community awareness, knowledge and attitudes to renewable energy technologies
- provide an understanding of community attitudes to local wind and solar farms and perceived benefits and impacts
- establish a baseline measure of community attitudes on which to base evaluation of the activities of the Regional Clean Energy Program.

A representative sample of 2000 people aged 18 years and over from across NSW was surveyed by telephone from late August to mid-September 2014. This report presents the findings of this survey at a state level and in six regional areas.

Awareness and self-assessed knowledge of renewable energy technologies

When asked to name types of renewable energy, 76% of survey respondents thought of solar and 64% thought of wind. After prompting, virtually all respondents said they had heard of solar (99%) and wind (98%). Many people reported they knew 'a lot' or 'a moderate amount' about solar power (74%) and wind power (57%).

Awareness of other renewable energy technologies was lower. Unprompted awareness of hydroelectric power by survey respondents was 31%, for bioenergy 3% and geothermal power 9%. After prompting people were fairly confident of their knowledge of hydroelectric power, but most admitted they knew little about bioenergy and geothermal power.

There was almost universal awareness (97%) of the concept of **wind farms**, wind turbines or windmills being used to generate electricity. Fewer respondents (66%) said they had heard of the idea of commercial **solar farms**. About half of survey respondents who had heard of wind farms and solar farms said they knew 'a lot' or 'a moderate amount' about these technologies.

Men and university-educated people reported knowing more about renewable energy, wind and solar farms than women and people without a university education.

The research also considered differences in awareness and self-assessed knowledge between regions. This analysis found that while the essential substance of people's responses was the same there were some regional differences, such as:

- people in the North East Region of NSW had the highest awareness and self-assessed knowledge of renewable energy
- wind power was more top-of-mind for people in the South East Region and awareness and self-assessed knowledge of both wind and solar farms was higher in this area than in other regions
- Sydney residents tended to have lower top-of-mind awareness of wind and solar power, and lower awareness and self-assessed knowledge of solar farms.

Attitudes to renewable energy technologies

Whilst 88% of people identified advantages with renewables, 62% also saw disadvantages. In weighing up the pros and cons, the vast majority of people (91%) supported the use of renewables to generate electricity in NSW. There was also a widely held view that NSW should be producing more of its electricity in this way (83%), rather than less (3%), or maintaining current levels (11%). Most people surveyed supported the use of both wind farms (81%) and solar farms (89%).

The principal advantages people saw in renewables were:

- benefits to the **environment** (80%)
  – cleaner/creating less 'pollution' or fewer greenhouse gases (52%)
  – more sustainable, reducing reliance on non-renewable resources such as coal (39%)
- **lower cost**, or at least the potential for reduced cost in the long run (37%).

The principal disadvantages people saw in renewables were:

- **higher cost** (39%), particularly in the set-up phase
- concerns about **efficiency and reliability** (18%).

About four-in-ten people believed there were no disadvantages to renewables, or could not think of any.

The perceived cost of renewables is a complex and multi-dimensional issue. Some people were aware of the competing priorities of higher cost now versus lower cost in the long run, were wary of the potential for higher domestic electricity costs, and some were willing to pay more to support renewable energy technologies.

Regional attitudes to local wind and solar farms

People living in non-metropolitan regions of NSW – North East, Hunter/Central Coast (excluding Newcastle), North West, South East and South West – were asked for their views about siting wind and solar farms in their local region and within 1 to 2 kilometres of where they lived. The closer to peoples' homes wind or solar farms were located, the lower the level of support for them (see table).

	Within NSW	Within local region	Within 1–2 kilometres of peoples' homes
Wind	81%	73%	59%
Solar	91%	84%	78%

The main benefits identified by people who supported locating solar farms within 1–2 kilometres of their homes were the environment (62%) and cost (29%). The same benefits were identified by people who supported locating wind farms close to their homes (69% and 23%, respectively).

When asked if a solar or wind farm was located within 1–2 kilometres of where people lived, 17% opposed solar farms and 37% opposed wind farms. The main unprompted reasons people opposed having wind farms this close to their homes were noise (61%), visual impact (38%) and health (23%). Some supporters of wind farms expressed similar concerns (32%, 11% and 8%, respectively).

The number of supporters or opponents of solar or wind farms who raised unprompted concerns about noise, visual impact, health and property values varied from negligible to just over 40%. When survey respondents were prompted about these concerns, these figures changed to between 45% to 77%. This rise after prompting suggests that the in-principle majority support for wind farms, subject to communication about these issues, could be a fragile one.

Conclusions

It is clear there is widespread in-principle support for using renewable energy in NSW and most people do not need convincing about its environmental benefits. There are mixed views about the costs, efficiency and reliability of renewable energy. Reasoned arguments about the long term financial payoff from investing in renewable infrastructure are important for those who have concerns.

The proximity to peoples' homes is important with the location of large-scale renewable energy projects. This is particularly relevant to wind farms.

1 Introduction

1.1 Background

In 2013 the NSW Government released the Renewable Energy Action Plan (REAP) which outlines three goals, comprising 24 specific actions, designed to grow the use of renewable energy in NSW to 20% by 2020. These three goals are:

- Goal 1: to attract renewable energy investments and projects
- Goal 2: to build community support for renewable energy
- Goal 3: to attract and grow expertise in renewable energy technology.

The Regional Clean Energy Program (RCEP) has responsibilities under Goal 2, Actions 11 and 12, to build an informed and engaged community and support for renewable energy.

The RCEP is a four-year program that builds on the Renewable Energy Precincts (REP) program which was established in 2010. It involves the equivalent of six full-time regionally-based coordinators engaging and informing communities about renewable energy and supporting the development of community-owned renewable energy projects.

1.2 Research purpose

The Office of Environment and Heritage (OEH) commissioned research to develop an understanding of its customers both at a statewide and regional level. The specific aims of the research were to:

- provide a comprehensive picture of community awareness, knowledge and attitudes to renewable energy technologies
- provide an understanding of community attitudes to local wind and solar farms, along with perceived benefits and impacts
- establish a baseline measure of community attitudes which, through comparison with future surveys, will help evaluate the impact of programs.

In 2010, the then NSW Department of Environment, Climate Change and Water commissioned a survey relating to community attitudes to wind farms. This differed from the current survey in scope and geographic coverage. The 2010 survey was undertaken in areas of NSW designated as Renewable Energy Precincts. The current survey has statewide coverage and is stratified by RCEP regions that do not align with the Renewable Energy Precincts. Where the same or similar questions were asked in the two surveys, the report contains some (appropriately qualified) comparisons.

1.3 Research methods

Between 27 August 2014 and 11 September 2014 a NSW-wide telephone survey of 2000 people aged 18 years and over was conducted. The sample was geographically stratified across seven regions (Table 1.1).

Table 1.1: Region and number of people sampled for the survey.

Region	Sample size
Greater Sydney	500
North East	250
Hunter/Central Coast	250
North West	250
Illawarra	250
South East	250
South West	250
Total	**2000**

Within each region the results were post-weighted by an interlocking matrix of sex and age within five age ranges (18–24, 25–34, 35–49, 50–64 and 65+ years). The results within each region were also weighted by the highest level of education achieved, and then all regions were recombined in their correct population proportions.

Preliminary qualitative research was conducted to assist with the design of the quantitative research rather than act as a standalone piece of research. The report draws on elements of the preliminary research to expand on issues raised in the survey. The preliminary research comprised four focus groups of mixed sex and age, with one group being held in Sydney and three in regional NSW.
The survey questionnaire was piloted to test survey flow and comprehension. This identified the need for changes which were implemented in the final survey.

1.4 Statistical significance testing

Statistically significant differences between regions or demographic segments are identified throughout the report. Statistical significance testing was undertaken, at the 95% level of confidence, by comparing a particular segment or group with its complement. For example:

- for a test of significance by region, respondents residing in a given region were compared with all people who were **not** residing in that region
- for a test by age, respondents in a given age group (for example people aged 65 and over) were compared with all people who were **not** in that age group (in this example, people under the age of 65)
- for a test of significance by gender, men were compared with women.

In tables throughout this report segments that are significantly **higher** than others are indicated with an asterisk (*) and segments that are significantly **lower** than others are indicated with the symbol †.

2 Findings

2.1 Community awareness and knowledge of renewable energy technologies

2.1.1 Overall awareness and self-assessed knowledge of renewable energy technologies

The following results were obtained when survey participants were asked about their awareness of renewable technologies (Figure 2.1).

General awareness

- Solar and wind power were the dominant technologies people associated with 'renewable energy'. When asked to name types of renewable energy, unprompted 76% of NSW adults mentioned solar and 64% mentioned wind. After prompting, virtually everyone said they had heard of them both (solar 99%, wind 98%).
- Although most people had also heard of **hydroelectric** power (89% after prompting), far fewer thought of it unprompted as a source of renewable energy (31%).
- Unprompted awareness of **bioenergy** or **geothermal** power was limited to a small minority, (bioenergy including biomass or biofuel 3%; geothermal 9%). Unprompted, a few others (2%) mentioned something that could be classified as bioenergy, although they did not refer to the terms 'bioenergy', 'biomass' or 'biofuel'. This included things such as methane, ethanol, manure, sugar cane, crops/plants or using waste/garbage. After prompting, about 60% of people claimed to have heard of bioenergy and geothermal power.

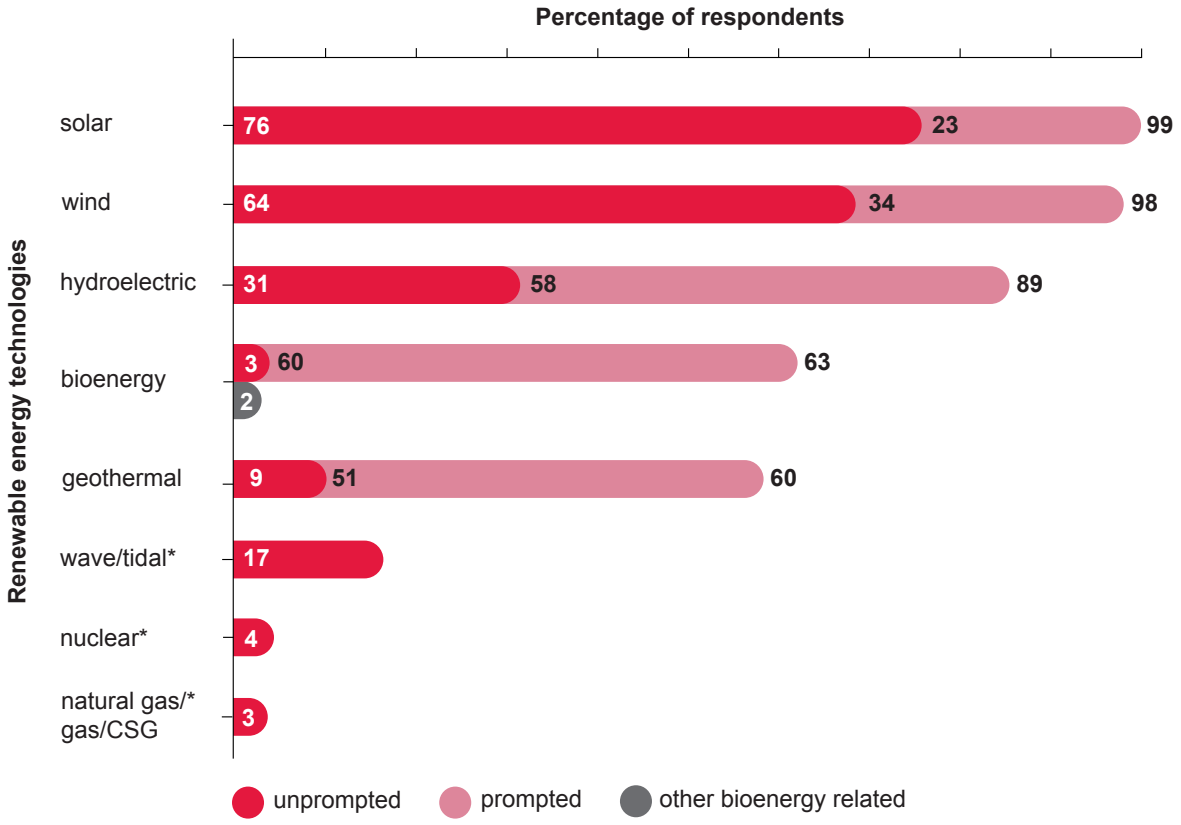


Figure 2.1: Community awareness of renewable energy technologies.
Question A1. What types of renewable energy can you think of that can be used to generate electricity?
Question A2. Which of these types of renewable energy have you heard of before?
'Prompted' refers to the answers survey respondents gave after being prompted with suggested answers.
'Unprompted' refers to the answers survey respondents voluntarily gave to survey questions.
*Prompted awareness of these technologies was not measured.
Number of survey respondents = 2000. CSG = coal seam gas.

Beyond the five renewable energy sources shown in Figure 2.1, the survey also captured unprompted mentions of:

- **wave** or **tidal power** (17%)
- **nuclear** power (4%), and
- gas/natural gas or coal seam gas (CSG; 3%).

Some people (16%) were unable to nominate **any** type of renewable energy.

Self-assessed knowledge

Self-assessed knowledge of renewable technologies varied amongst survey respondents (Figure 2.2). For example:

- many survey respondents believed they knew ‘a lot’ or ‘a moderate amount’ about solar power (74%), wind power (57%) and hydroelectric power (49%)
- a small number of respondents felt they knew ‘a lot’ or ‘a moderate amount’ about bioenergy (15%) or geothermal power (18%)
- for solar, wind and hydroelectric power, many survey respondents felt they knew ‘a little’ about it, or it was something they had heard of (solar 25%, wind 41%, hydroelectric 40%); this was also the case for bioenergy (46%) or geothermal power (41%).

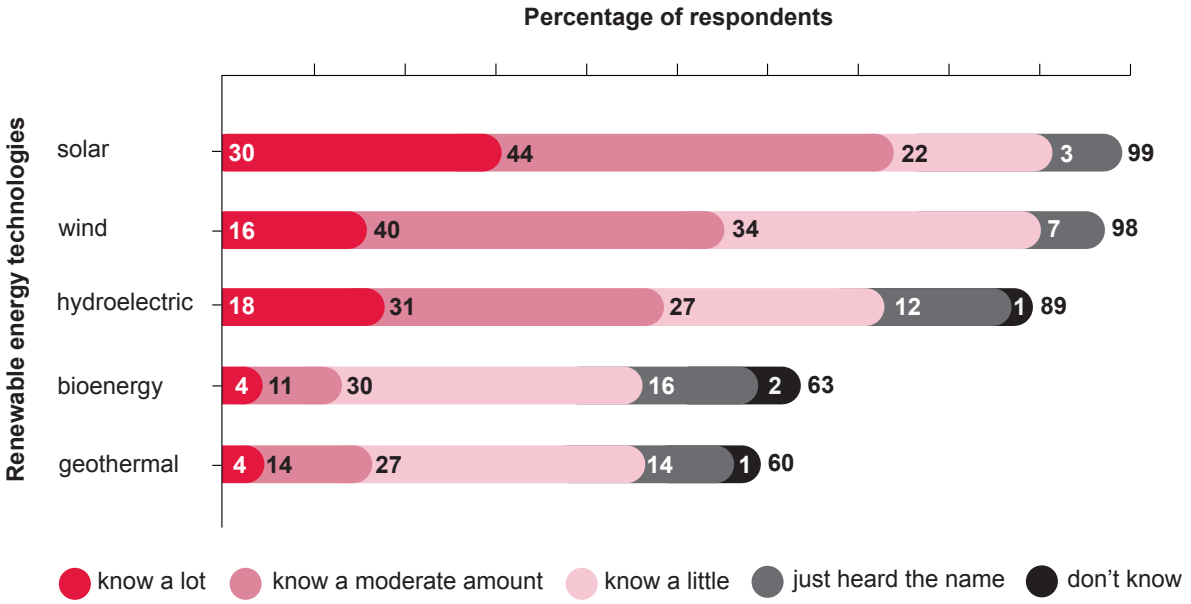


Figure 2.2: Self-assessed knowledge of renewable energy technologies.

Question A4. For each of the following types of renewable energy, please tell me how much you feel you know about it. Would you say you know a lot about it, a moderate amount, a little, or you’ve just heard the name?

Number of survey respondents = 2000.

2.1.2 Awareness and knowledge of renewable energy technologies among demographic segments

Regional variation

Regional variation in awareness of renewable technologies occurred (Table 2.1)[1]. For example:

- unprompted awareness of solar and wind power was higher among people living in regional NSW (82%, 69%) than people living in Sydney (71%, 60%)
- survey respondents living in regional NSW were a little more likely to have heard of hydroelectric power than those living in Sydney (92% total awareness in regional NSW versus 86% total awareness in Sydney)
- people from the North East Region appeared most knowledgeable about renewable energy technologies, with higher levels of unprompted awareness and self-assessed knowledge of solar, wind and hydroelectric power, and a higher awareness of bioenergy and geothermal power
- unprompted awareness of wind power was highest in the South East Region (82%).

Table 2.1: Survey results showing regional variation in awareness/self-assessed knowledge of renewable energy technologies.

	Total surveyed	Greater Sydney	Regional NSW	North East	Hunter/ Central Coast	North West	Illawarra	South East	South West
Number of respondents	2000	500	1500	250	250	250	250	250	250
	Numbers below are shown as percentages.								
Solar									
Total awareness	99	**99†**	**100***	100	100	99	100	100	100
Unprompted awareness	76	**71†**	**82*‡**	**88***	77	**86***	**84***	**86***	79
Know a lot/moderate amount	74	73	75	**85***	72	73	72	75	73
Wind									
Total awareness	98	98	98	99	99	97	97	99	98
Unprompted awareness	64	**60†**	**69*‡**	**74***	67	70	63	**82***	61
Know a lot/moderate amount	57	58	56	**64***	51	51	56	**68***	54
Hydroelectric									
Total awareness	89	**86†**	**92***	**93***	91	91	**94***	89	**95***
Unprompted awareness	31	31	**31‡**	**38***	28	30	28	28	32
Know a lot/moderate amount	49	49	48	**56***	44	45	44	54	50
Bioenergy									
Total awareness	63	61	65	**71***	61	64	62	67	67
Unprompted awareness	3	3	2	5	**1†**	2	2	3	2
Know a lot/moderate amount	15	16	13	18	11	12	13	16	16
Geothermal									
Total awareness	60	58	63	**69***	61	56	66	**69***	60
Unprompted awareness	9	8	10	8	**14***	9	6	**15***	8
Know a lot/moderate amount	18	18	17	**23***	15	15	16	19	14

Notes: * † Indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when than compared with other regions.

‡ The 2010 'Community Attitudes to Wind Farms' survey measured unprompted awareness of 'clean' energy sources (as opposed to 'renewable' energy sources that can be used to generate electricity) in people residing within regional NSW areas designated as Renewable Energy Precincts. The survey found the unprompted level of awareness among respondents was 74% for solar, 59% for wind and 18% for hydroelectric. The current survey found higher levels of unprompted awareness in survey respondents across all NSW regional areas: 82% for solar,69% for wind and 31% for hydroelectric. Because of differences in geographic coverage and questions asked, it is not clear whether the different survey results was driven by real change or by methodological differences.

'Total awareness' represents the sum of unprompted and prompted responses. 'Unprompted awareness' refers to responses voluntarily given to survey questions. 'Know a lot/moderate amount' refers to self-assessed knowledge respondents reported about renewable energy technology.

1 See ‡ in table notes

Demographic variations

Awareness of renewable technologies also varied among demographic segments of the population surveyed (Table 2.2). The following two clear patterns emerged among demographic segments:

- men had higher levels of awareness and self-assessed knowledge than women on nearly all measures
- university-educated people showed greater awareness and self-assessed knowledge across most technologies, whereas people with no post-school qualifications recorded the lowest on these measures.

No striking patterns were observed when different age groups were assessed, although the following reasonably consistent patterns emerged:

- people aged 50 to 64 years had a significantly higher awareness or self-assessed knowledge, or both, of each technology
- for each technology, the level of unprompted awareness was lower among people aged 65+ years than other people
- for four out of five technologies (solar, wind, hydroelectric and geothermal) the level of self-assessed knowledge was lower among people aged 25 to 34 years than people in the other age groups surveyed, as was unprompted awareness of wind and solar power.

Table 2.2: Survey results showing demographic.

	Total surveyed	Gender		Age (years)					Highest education level		
		Men	Women	18–24	25–34	35–49	50–64	65+	Uni degree	TAFE/ apprenticeship	School only
Number of respondents	2000	998	1002	166	216	575	491	552	680	753	567
		Numbers below are shown as percentages.									
Solar											
Total awareness	99	99	99	99	**97†**	100	100	99	100	99	98
Unprompted awareness	76	**83***	**69†**	73	**68†**	**85***	79	**68†**	**87***	78	**67†**
Know lot/moderate amount	74	**78***	**70†**	77	**64†**	76	**80***	70	**83***	76	**67†**
Wind											
Total awareness	98	99	98	98	97	99	99	98	99	98	98
Unprompted awareness	64	**73***	**55†**	64	**56†**	68	**74***	**53†**	**75***	64	**56†**
Know lot/moderate amount	57	**65***	**49†**	57	**44†**	56	**66***	60	**69***	59	**48†**
Hydroelectric											
Total awareness	89	**92***	**85†**	86	**71†**	**93***	**94***	**93***	**96***	88	**85†**
Unprompted awareness	31	**36***	**26†**	**42***	30	**38***	28	**19†**	**39***	31	**25†**
Know lot/moderate amount	49	**62***	**36†**	**36†**	**25†**	51	**64***	**55***	**63***	52	**37†**
Bioenergy											
Total awareness	63	**69***	**57†**	65	62	65	63	59	**72***	62	**58†**
Unprompted awareness	3	**4***	**1†**	5	4	3	4	**0†**	**5***	2	2
Know lot/moderate amount	15	**21***	**9†**	15	12	14	**20***	12	**24***	14	**10†**
Geothermal											
Total awareness	60	**71***	**49†**	58	53	60	**69***	57	**73***	58	**53†**
Unprompted awareness	9	**15***	**4†**	**15***	10	10	9	**5†**	**16***	**7†**	7
Know lot/moderate amount	18	**27***	**9†**	18	**11†**	17	**26***	15	**28***	18	**11†**

Notes: * † indicates statistically significant difference at the 95% level of confidence. * indicates a result was higher and † indicates a result was lower compared to other groups.

'Total awareness' represents the sum of unprompted and prompted responses. 'Unprompted awareness' refers to responses voluntarily given to survey questions. 'Know a lot/moderate amount' refers to self-assessed knowledge respondents reported.

2.1.3 Specific awareness and self-assessed knowledge of wind farms and solar farms

Having looked at community understanding of the broader category of renewable energy, this section looks at specific awareness and self-assessed knowledge survey respondents had about wind farms and solar farms (Figure 2.3). The following provides an overview of the findings:

- nearly all survey respondents (97%) had heard about the use of wind farms, wind turbines or windmills to generate electricity
- nearly all survey respondents (97%) knew what a wind turbine looked like – about 80% had seen a wind turbine in 'the distance' or 'up close', and 89% had seen them in pictures or on television (Table 2.3)
- fewer people (66%) said they had heard of commercial solar farms being used to generate electricity
- about half the survey respondents who had heard of wind farms and solar farms said they knew 'a lot' or 'a moderate amount' about these technologies, and others said they knew 'a little' or had heard of them.

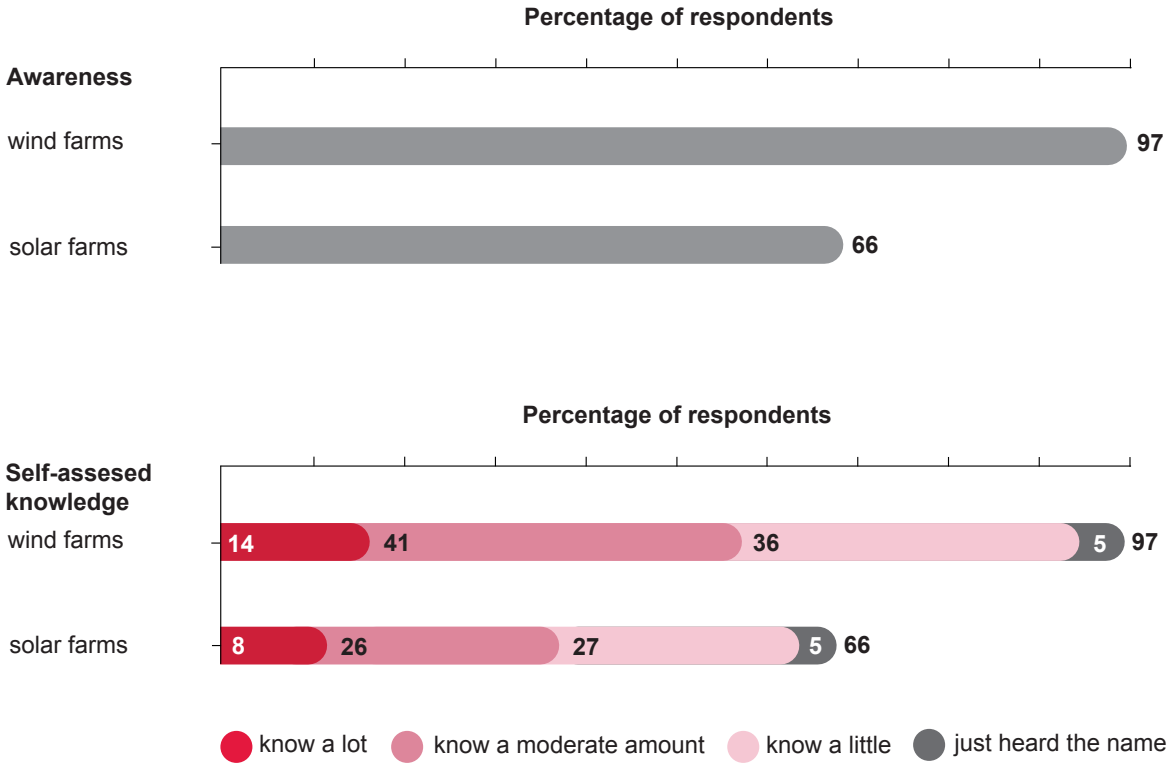


Figure 2.3: Awareness and self-assessed knowledge of wind farms and solar farms.

Question E1/F2. [Wind farms are groups of wind turbines or windmills used to generate electricity. / A commercial solar farm is about the size of a football field, with a large number of solar panels that generate electricity. The electricity is then fed into the national power grid.] Before today, had you heard about the use of wind farms or wind turbines or windmills/ the idea of solar farms being used to generate electricity?

Question E2/F3. Before this survey, how much did you know about wind/solar farms?

Number of survey respondents = 2000.

Table 2.3: Exposure to wind turbines.

Survey response	Percentage of respondents
Total seen turbine in some way	97
Total seen 'in distance'/'up close'	83
Seen in distance	78
Seen up close	50
Seen on TV	89
Seen pictures	89
Seen some other way	42

Note: Number of respondents = 2000

2.1.4 Awareness, self-assessed knowledge and exposure to wind and solar farms among demographic segments

Regional variation

Survey results about awareness, self-assessed knowledge and exposure to renewable technologies varied between regional NSW and Sydney as well as between regions (Table 2.4). For example:

- overall awareness of wind (98%) and solar farms (70%), and exposure to wind farms (98%), particularly having seen wind turbines 'up close' (59%), was higher in regional NSW than in Sydney
- survey respondents from the South East region were more likely to know a lot/moderate amount about wind farms (67%), and be aware of (84%) and know a lot/moderate amount (44%) about solar farms compared to other regions
- survey respondents from the South East region had the highest level of exposure to wind turbines (99%, including 66% 'up close') and those from the Illawarra (63%) and Hunter/Central Coast (68%) regions were also more likely to have seen a wind turbine 'up close'.

Table 2.4: Survey results showing regional variation in awareness/self-assessed knowledge/exposure to wind and solar farms.

	Total surveyed	Greater Sydney	Regional NSW	North East	Hunter/ Central Coast	North West	Illawarra	South East	South West
Number of respondents	2000	500	1500	250	250	250	250	250	250
	Numbers below are shown as percentages.								
Wind farms									
Total awareness	97	**96†**	**98***	**99***	99	95	98	99	**99***
Know a lot/moderate amount	55	56	54	55	51	**48†**	56	**67***	52
Total seen turbine	97	**95†**	**98***	99	99	95	98	99	**99***
Total seen 'in distance /'up close'	83	**80†**	**87***	**73†**	**90***	83	**93***	**99***	**93***
Seen 'up close'	50	**44†**	**59***	47	**68***	50	**63***	**66***	52
Solar farms									
Total awareness	66	**63†**	**70***	72	68	**73***	63	**84***	64
Know a lot/moderate amount	34	33	36	38	32	38	35	**44***	36

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when regions were compared.

'Total awareness' represents the sum of unprompted and prompted survey responses. 'Know a lot/moderate amount' refers to self-assessed knowledge survey respondents reported.

Demographic variations

Demographic trends were in line with overall awareness/self-assessed knowledge of wind and solar power (section 2.1.1; Table 2.5). For example:

- men were more aware of and believed they knew 'a lot/moderate amount' about wind farms (99% and 64%, respectively) and solar farms (78% and 48%, respectively), and had seen wind turbines (99%, including 57% 'up close'), compared with women
- survey respondents who had university degrees were more likely to know a lot/moderate amount about wind farms (64%) and solar farms (43%), and to have seen wind turbines in the distance/up close (90%), compared with survey respondents with no post-school education
- compared with other age groups, self-assessed knowledge of these technologies was a little lower among 25–34 year olds (40% and 25% reported they knew 'a lot/moderate amount' about wind and solar farms respectively) and higher among 50–64 year olds (64% and 41% reported they knew a lot/moderate amount about wind and solar farms respectively).

Table 2.5: Survey results showing demographic variation in awareness/self-assessed knowledge/exposure to wind farms and solar farms.

	Total surveyed	Gender		Age (years)					Highest education level		
		Men	Women	18–24	25–34	35–49	50–64	65+	Uni degree	TAFE/ appren-ticeship	School only
Number of respondents	2000	998	1002	166	216	575	491	552	680	753	567
	Numbers below are shown as percentages.										
Wind farms											
Total awareness	97	**99***	**95†**	98	**91†**	97	98	**99***	98	97	96
Know a lot/moderate amount	55	**64***	**46†**	55	**40†**	55	**64***	57	**64***	58	**47†**
Total seen turbine	97	**99***	**94†**	98	**91†**	97	97	**99***	98	97	96
Total seen 'in distance/'up close'	83	**86***	**80†**	84	**76†**	86	85	84	**90***	84	**78†**
Seen 'up close'	50	**57***	**44†**	47	44	54	52	50	**60***	54	**41†**
Solar farms											
Total awareness	66	**78***	**55†**	66	**54†**	67	**74***	66	**73***	67	**61†**
Know a lot/moderate amount	34	**48***	**21†**	33	**25†**	35	**41***	34	**43***	36	**27†**

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when regions were compared.

'Total awareness' represents the sum of unprompted and prompted survey responses. 'Know a lot/moderate amount' refers to self-assessed knowledge survey respondents reported about wind and solar farms.

2.2 Attitudes towards renewable energy technologies

2.2.1 Support for the use of renewable energy in NSW

The survey results showed that nine-in-ten people supported the use of renewable energy to generate electricity in NSW. About half of survey respondents **strongly** supported it (Figure 2.4). The rest of respondents were divided equally between a small number who opposed it (4%) and those who were uncommitted (5%).

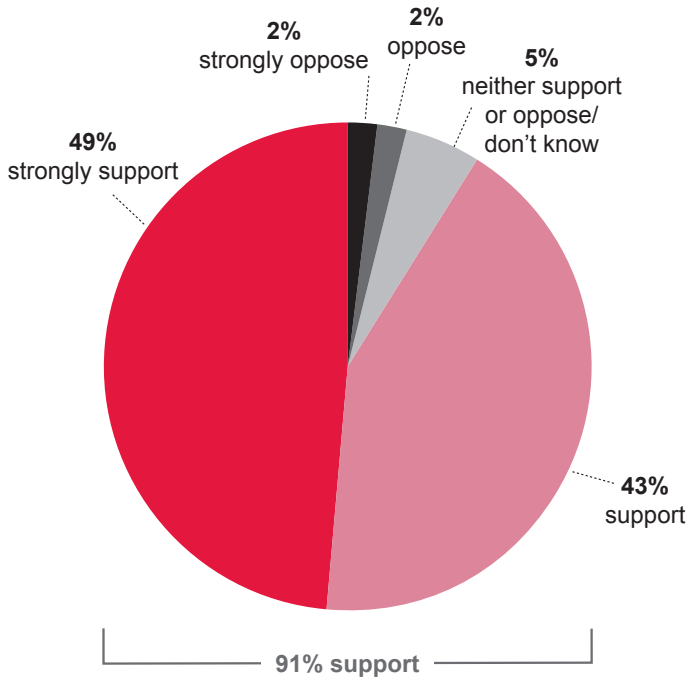


Figure 2.4: Overall support for generating electricity in NSW using renewable energy technologies.

Question A5. Most electricity in NSW is generated by coal-fired power stations. Some of it is generated from renewable energy. To what extent do you support or oppose (strongly oppose, oppose, neither support or oppose/don't know, support, strongly support) using renewable energy for at least some of the electricity in NSW?

Number of survey respondents = 2000.

Most people surveyed (83%) also believed that over the next five years, NSW should produce more of its electricity from renewable energy (Figure 2.5). A small percentage of people believed the use of renewables should be **reduced** (3%).

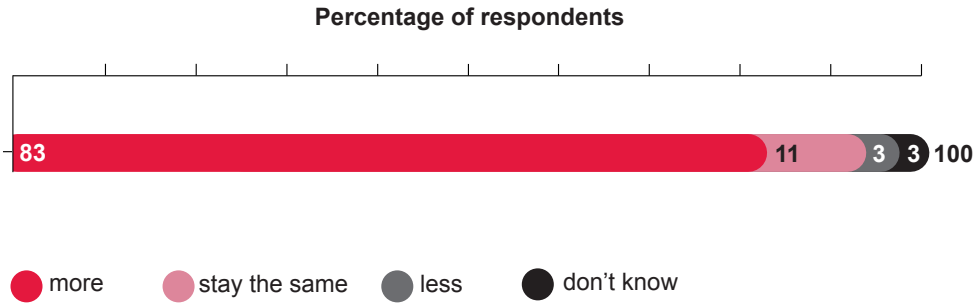


Figure 2.5: Support for use of renewable energy to produce electricity in NSW over the next five years.

Question A6. And over the next five years, do you think NSW should be trying to produce… more of its electricity from renewable energy, less, or should it stay the same as now?

Number of survey respondents = 2000.

Support for use of renewable energy technologies in NSW among regions and demographic segments

Support for the use of renewables, and for an increase in their use over the next five years, was prevalent across all regions and demographic groups. There were some differences in the degree of support, for example:

- survey respondents who lived in the North East region (59%), university educated people (68%) and those aged 35–49 years (55%) were more likely than others to **strongly** support the use of renewables
- university educated survey respondents were more likely to support increased use of renewables over the next five years (90%)
- fewer people living in the Hunter/Central Coast and South West regions strongly supported the use of renewables (around 40%)
- overall support for renewables was lower among people aged 65+ years (85%) and those with no post-school qualifications (88%)
- slightly fewer people aged 65+ years (71%) and those with no post-school qualifications (80%) believed that use of renewables should be increased over the next five years.

Table 2.6: Survey results showing regional variation in overall support of renewable energy and its expansion in NSW

	Total surveyed	Greater Sydney	Regional NSW	North East	Hunter/ Central Coast	North West	Illawarra	South East	South West
Number of respondents	2000	500	1500	250	250	250	250	250	250
	Numbers below are shown as percentages.								
Use renewable energy to produce some electricity									
Total support	91	91	92	93	93	94	91	90	91
Strongly support	49	50	46	**59***	**41†**	43	49	49	**38†**
Total oppose	4	4	4	4	4	4	5	5	5
Over next 5 years									
Produce more electricity from renewables	83	83	85	86	85	81	89	82	79
Stay the same as now	11	10	12	10	12	**17***	9	11	15
Produce less electricity from renewables	3	3	2	1	2	2	1	2	3

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when regions were compared.

Table 2.7: Survey results showing demographic variation in overall support of renewable energy and its expansion in NSW

	Total surveyed	Gender		Age (years)					Highest education level		
		Men	Women	18–24	25–34	35–49	50–64	65+	Uni degree	TAFE/ appren-ticeship	School only
Number of respondents	2000	998	1002	166	216	575	491	552	680	753	567
	Numbers below are shown as percentages.										
Use renewable energy to produce some electricity											
Total support	91	92	91	95	92	**95***	91	**85†**	**95***	93	**88†**
Strongly support	49	52	46	52	49	**55***	50	**35†**	**68***	45	**40†**
Total oppose	4	5	3	2	3	2	5	**8***	3	3	**6***
Over next 5 years											
Produce more electricity from renewables	83	83	84	**90***	89	86	83	**71†**	90	83	**80†**
Stay the same as now	11	13	9	**6†**	6	**8†**	12	**22***	5†	12	**14***
Produce less electricity from renewables	3	3	2	4	1	2	4	3	2	3	3

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when regions were compared.

2.2.2 Perceived advantages and disadvantages of generating electricity from renewable sources (unprompted)

When survey respondents were asked to describe the advantages and disadvantages of using renewable energy to generate electricity they answered in a variety of ways. The issues raised can be divided into a few broad categories (Figure 2.6).

There were two key responses about the **advantages** of using renewable energy to generate electricity:

1. benefits to the environment (80%)
2. lower cost (37%).

There were three key responses about the disadvantages of using renewable energy to generate electricity

1. higher cost (39%)
2. lack of efficiency and/or reliability (18%)
3. no disadvantages to renewables, or unable to think of any (38%).

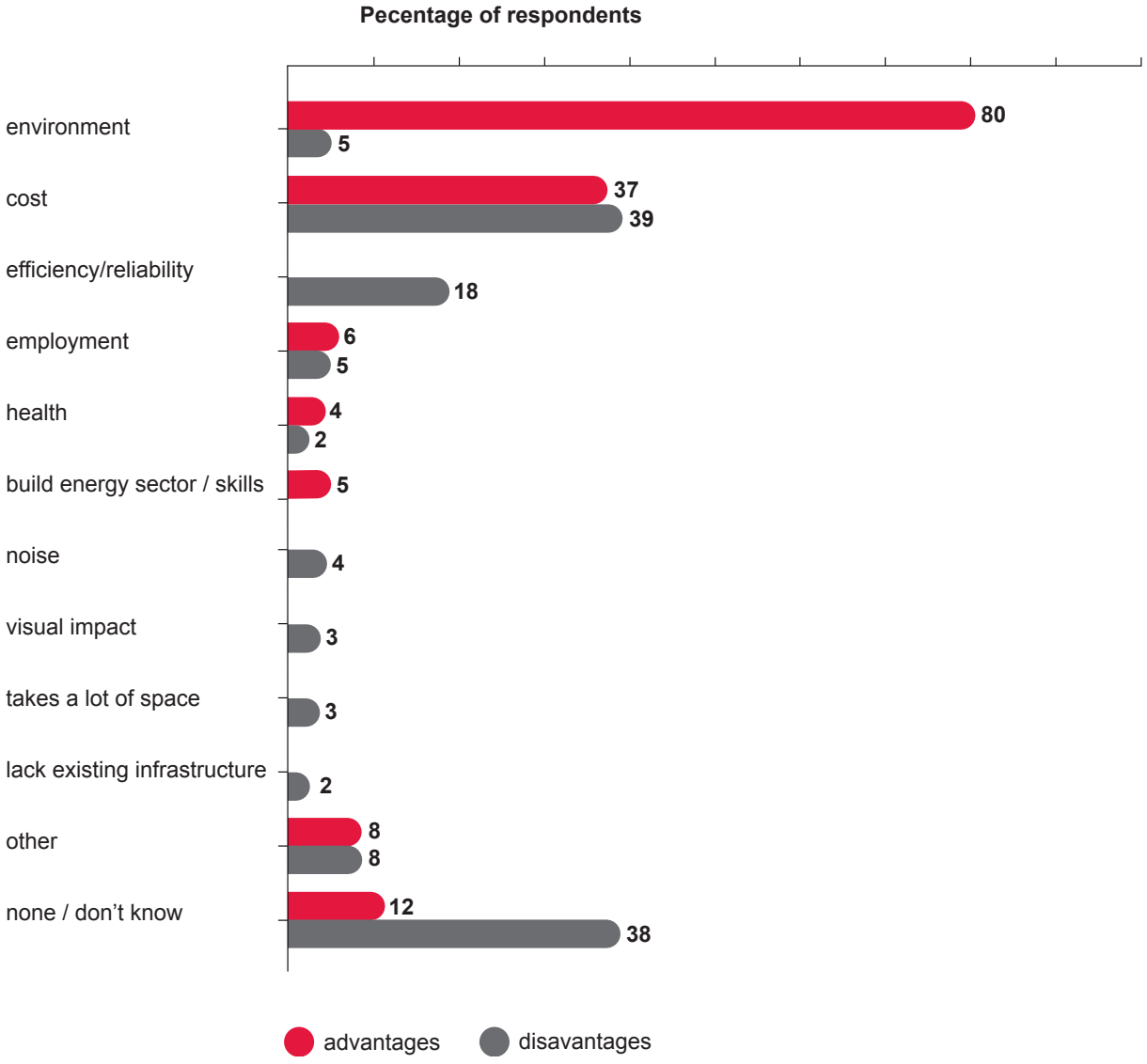


Figure 2.6: Perceived advantages/disadvantages of using renewable energy to generate electricity (unprompted).

Questions A7/8. What would you say are the advantages/disadvantages of generating electricity from renewable sources?

Number of survey respondents = 2000

There were other broad categories of opinion, but all were much smaller than the key responses shown in Figure 2.6. In some cases, different people saw the same issue from different perspectives. For example, some people saw cost as an advantage, while others saw it as a disadvantage, and some simultaneously saw it as both (discussed further below).

The environment

Environmental benefits were clearly the dominant perceived advantage of renewable energy technologies. For example:

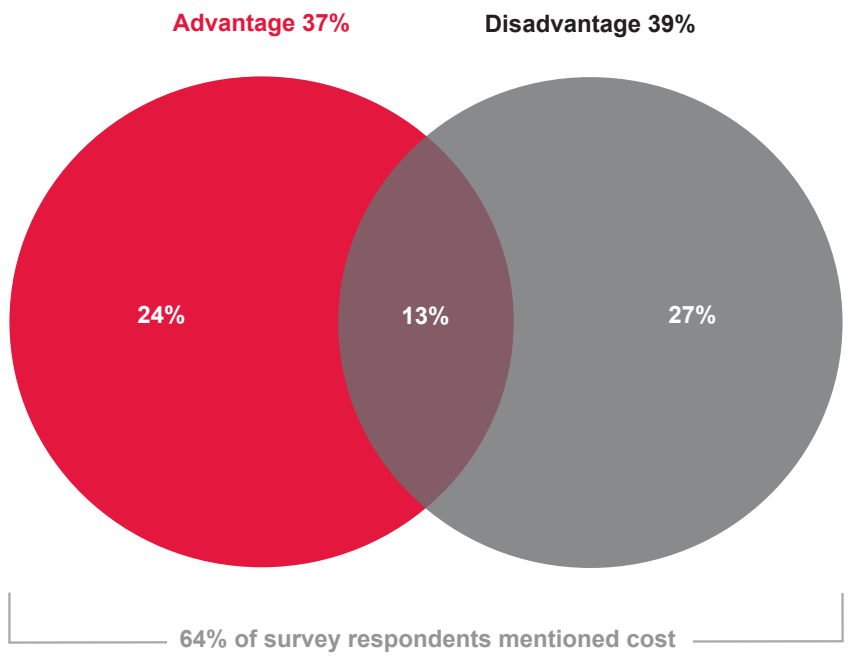
- many survey respondents said that renewables were cleaner or created less 'pollution' or fewer greenhouse gases (52%)
- some (39%) mentioned sustainability and reduced reliance on non-renewables such as coal
- some said renewables would help 'save the planet' for future generations (7%)
- others saw benefits in the preservation of the landscape and agricultural land, e.g. by not digging up the landscape (5%).

In comparison with the 80% who saw environmental benefits of using renewable energy technologies, a very small proportion (5%) saw renewables as harmful to the environment. For example:

- some respondents (1%) saw renewables as destroying the landscape rather than preserving it (e.g. taking land to build wind farms, or dams for hydroelectricity resulting in flooding valleys)
- other respondents (1%) were concerned about potential impacts on animals or wildlife, including the impact of wind turbines on bird life
- others (1%) said renewables generated pollution/carbon; this included the belief that the harm caused to the environment in manufacturing the required equipment (e.g. solar panels, wind turbines) outweighed other environmental benefits, in other cases it appeared to be based on confusion about what 'renewable' meant.

Cost

Cost is one of the more complex issues around renewable energy. The results of the survey showed that almost as many people saw cost as an advantage of renewables (37%) as a disadvantage (39%). This was more than a simple case of opposing points of view (Figure 2.7), and for some people cost could simultaneously be an advantage and a disadvantage (13%).



Number of survey respondents = 2000

Figure 2.7: Perceptions about the cost of renewable energy.

The type of logic or contexts that underpinned people's thinking on each side of the cost equation were many and varied. Below are some examples of the logic behind some of the responses generated in the survey.

Lower cost as an advantage

Domestic solar panels:

- ‘The ones on the roof are the ones I’m talking about. So no more electricity bills once I’ve paid off the ones on the roof’
- ‘Less cost/households can produce their own electricity.’
- ‘We have solar. We get a small rebate that we make.’

It’s free energy:

- ‘It’s not costing us anything, it’s coming from nature.’
- ‘Wind costs nothing.’
- ‘And it’s free harvesting the wind, the sun and water flow.’

It will become cheaper eventually (if we stick with it):

- ‘Ultimately it should be cheaper.’
- ‘The more that we generate the cheaper it will become.’
- ‘In the long term it’s going to be cheaper.’

People usually did not explain **why** they believed renewable energy would be cheaper. The language people used in saying renewable energy was cheaper was not always definitive; sometimes it was speculative, or merely hopeful. For example:

- ‘Maybe cost?’
- ‘Possibly cheaper in the long run.’
- ‘In theory, apart from capital costs, it will be cheaper for the end user.’
- ‘I hope it would be cheaper.’
- ‘Hopefully it’s cheaper.’

Lower cost as a disadvantage

The set-up cost/equipment costs are high:

- ‘There’s no disadvantages that I’m aware of other than cost – the expensive equipment.’
- ‘In some instances at the moment the capital cost.’
- ‘Have to spend a lot of money setting up the initial infrastructure and the technology.’
- ‘The cost of setting it up.’

At the moment it costs more:

- ‘Cost at the moment.’
- ‘At this stage cost.’
- ‘It’s a bit more expensive at the moment but I think with time it’ll come down.’
- ‘I think probably in the short term it’s more expensive.’

Again, people did not always explain **why** they believed renewable energy was more costly.

Those who saw both cost advantages **and** disadvantages typically distinguished between cost **now** versus cost **later**, or set-up costs versus (longer-term) operating costs (Table 2.8).

Table 2.8: Survey respondents’ reasons for the cost of renewable energy technologies being both an advantage and a disadvantage.

Advantages	Disadvantages
Saving money in the long run.	The initial cost.
Eventually once you work out the technology it should end up being cheaper.	The technology isn’t up to scratch yet to do it as efficiently as coal fire stations, etc so it’s probably a little more expensive.
In the long run I’d imagine it’d be cheaper.	Initial costs.
It saves more money I guess because it’s using the energy from the sun.	It can cost a bit of money to set up.
Well, in the long term it would be cheaper.	The cost to set up the infrastructure

Efficiency/reliability

Almost one in five people surveyed said renewable technologies lacked efficiency/reliability of supply (18%). Some viewed these technologies as not yet advanced or efficient enough (7%) for electricity generation and unable to provide base-load power (3%). Solar and wind power, in particular, were perceived as dependent on the right weather conditions: people assumed that no daylight/sunshine or no wind equated to no electricity supply. This contributed to the view that it was hard to achieve reliable or sufficient levels of electricity supply from renewables (9%).

Other advantages/disadvantages

Survey respondents gave other unprompted reasons why renewable energy technologies could be advantageous or disadvantageous. For example:

- Employment – 6% of people believed renewable energy would create jobs and employment, but just as many (5%) believed it would cost jobs in existing electricity generation industries or coal mining.
- Long-term national benefits – these responses related to favourable views on job creation, some people saw an opportunity to encourage innovation, investment and development in the renewable energy sector to benefit Australia's future energy needs and for export opportunities (5%).
- Health – some people saw renewables as having positive health benefits through a healthier environment, such as cleaner air and oceans/waterways, reduced greenhouse gases/carbon emissions, etc. (4%). Others had potential health concerns (2%), principally wind turbines causing ill health among people living in nearby communities.
- Noise and visual impact – noise issues (4%) and visual impact (3%) were disadvantages people mainly associated with wind turbines. Some believed that noise ('humming') from wind turbines was a problem for nearby communities and the large size, overall look ('ugliness'), and number of wind turbines grouped together could 'ruin the natural skyline'. Others also saw solar panels as 'eyesores'.
- Infrastructure and space needed – new/additional infrastructure needed to capture, convert and store energy from different renewable energy types (2%), and the amount of land required for wind turbines, solar panels or hydroelectric dams (3%), were viewed as other disadvantages of renewable energy technologies.

2.2.3 Perceived advantages/disadvantages among those who support and those who oppose renewables (unprompted)

The vast majority of people surveyed (91%) supported the use of renewable energy technologies. Most could see advantages and disadvantages but thought advantages outweighed disadvantages (Tables 2.9 and 2.10).

Those who **supported** renewable energy were significantly more likely than the small number who **opposed** it to see both environmental benefits (84%) and cost benefits (38%). Of those who opposed (4%) some could also see these advantages (33%, 20%), and about half of them could not think of any advantages.

Perceptions about the disadvantages of renewable energy among the two groups were similar. About 40% of each group saw a cost disadvantage, but supporters of renewables were more likely to identify higher set-up cost (17%), whereas those who opposed them identified higher cost generally (40%). Those who opposed renewables were more likely to see disadvantages for the environment (17%) and in relation to health (14%).

Interestingly, there were some people who did not appear to base their support or opposition on anything concrete. For example, 8% of supporters did not cite advantages for using renewables, and 29% of those who opposed them did not cite a disadvantage. It was unclear what was driving these opinions. It could be a vague sense that renewables are 'good' or 'bad', or that people were reflecting opinions they had heard without knowing why.

Table 2.9: Perceived advantages of using renewables (unprompted) provided by survey respondents who supported or opposed renewable energy technologies.

	Total surveyed	Support renewables	Oppose renewables
Number of respondents	2000	1844	86
	Numbers below are shown as percentages.		
Environmental issues	80	**84***	**33†**
It's better/less harmful for the environment/environmentally friendly	31	**33***	**4†**
Cleaner/less pollution/greenhouse gases	52	**55***	**20†**
Less emissions of greenhouse gases/carbon dioxide/contribute less to global warming	21	**22***	**8†**
Its cleaner/not dirty	15	**16***	**5†**
Less/no (air) pollution	22	**24***	**7†**
Safer/Less (toxic) waste/by products being produced	6	**7***	0
Less water pollution/better or cleaner water quality	1	1	0
Sustainability	39	**41***	**13†**
Sustainable/can be reused/won't run out	23	**25***	**7†**
Less reliant on/won't use up/limited supply of coal/fossil fuels/non-renewable resources	16	**17***	**6†**
Making use of available (renewable) resources (solar/wind/water)	7	7	**1†**
Save the planet/won't destroy the earth for future generations	7	7	**1†**
Preserve landscape/farm/agricultural land	5	**6***	2
Won't damage the landscape (from digging)/destroy the land/the beautiful countryside	5	**5***	2
Better use of land for agriculture/farming/won't destroy agricultural land	1	1	0
Better for/less impact on ozone layer	2	2	3
Lower cost	37	**38***	**20†**
Cheaper energy bills/cost less for consumers	7	7	**2†**
Cost less to generate/run/maintain (in the long run)	1	**1***	0
The cost/savings/cheaper – other cost mentioned and no further information provided	29	**30***	17
Other issues			
Healthier/good for our health/better quality of living	4	**5***	1
Build long term energy sector/technological advancement/skills	5	**5***	**0†**
Create more jobs	6	7	5
Other	8	8	11
None/don't know	12	**8†**	**49***

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when the two groups (support or oppose renewables) were compared.

Table 2.10: Perceived disadvantages of using renewables (unprompted) provided by respondents who supported or opposed renewable energy technologies.

	Total surveyed	Support renewables	Oppose renewables
Number of respondents	2000	1844	86
	Numbers below are shown as percentages.		
Cost	39	40	42
High start-up/set-up costs/installation/infrastructure/capital cost	15	**17***	**4†**
Expensive to run/maintain	1	1	1
Very expensive/high cost/cost/price other/cost mentioned and no further information provided	26	26	**40***
Efficiency/reliability	18	18	20
Difficult to generate/produce/supply as subject to sun/wind conditions	9	10	5
Cannot provide enough/base load power	3	3	3
Inefficient technology/not fully developed/not advanced enough	7	7	13
Environment	5	5	**17***
Generate air pollution/carbon emissions/gas emissions/impacts ozone layer	1	1	1
Landscape damage/destruction	1	1	4
Impact on/dangerous to animals mentioned and no further information required	1	1	**7***
Not good for the environment and no further information provided	2	2	4
Other issues			
Job losses/unemployment/people will lose their jobs	5	6	**1†**
Generate noise/noisy/noise pollution	4	4	4
Visually unpleasant/distracting/impacting/unsightly/eye sore/ visual pollution	3	3	5
Takes up a lot of land space/need space/large area	3	**3***	**0†**
Health concerns	2	**2†**	**14***
No existing infrastructure/need to build it (includes mentions of building dams)	2	**2***	**0†**
Other	8	8	**18***
None/don't know	38	37	29

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when the two groups (support or oppose renewables) were compared.

2.2.4 Perceived advantages and disadvantages of generating electricity from renewable sources (unprompted) among demographic segments

Regional variation

Perceived advantages and disadvantages of generating electricity from renewable energy technologies varied according to which region survey respondents lived in (Table 2.11). For example:

- survey respondents who lived in Sydney were more likely than those in regional NSW to report **disadvantages** to using renewable energy, particularly in terms of cost (43% versus 34%), and to a smaller degree a lack of existing infrastructure (3% versus 1%)
- Sydneysiders were more likely to see building the renewable energy sector/skills base as an **advantage** of using renewables (6%)
- residents in the North East and South West Regions were less likely to see **disadvantages** in using renewable energy, particularly in terms of cost (30%, 28% respectively)
- people living in the South West Region were less likely to see the environmental advantages of renewables (73%)
- visual impact was more of a concern in the South East Region (8%) than in other areas, whereas in the North West and Illawarra Regions more people viewed cost/savings as an advantage of using renewable energy in NSW (45% and 44%, respectively).

Table 2.11: Survey results showing regional variation in perceived advantages and disadvantages of generating electricity from renewable sources (unprompted).

	Total surveyed	Greater Sydney	Total NSW regional	North East	Hunter/ Central Coast	North West	Illawarra	South East	South West
Number of respondents	2000	500	1500	250	250	250	250	250	250
	Numbers below are shown as percentages.								
Advantages									
Environment	80	80	80	84	79	79	83	83	**73†**
Cost	37	35	39	40	34	**45***	**44***	37	39
Employment	6	7	6	4	7	6	4	9	6
Health	4	4	4	4	6	4	3	5	**2†**
Build energy sector/ skills	5	**6***	**3†**	**1†**	4	2	3	5	3
None/don't know	12	12	11	8	12	11	8	12	13
Disadvantages									
Environment	5	6	4	3	5	3	5	5	4
Cost	39	**43***	**34†**	**30†**	36	36	34	39	**28†**
Efficiency/reliability	18	19	16	17	14	19	14	18	15
Employment	5	4	7	6	8	6	7	3	6
Health	2	3	2	1	2	3	1	3	2
Noise	4	5	3	4	2	6	3	4	3
Visual impact	3	2	4	2	5	4	2	8	3
Takes a lot of space	3	3	3	2	4	4	**1†**	2	2
Lack existing infrastructure	2	3	**1†**	3	0	2	**0†**	2	2
None/don't know	38	**35†**	**42***	**45***	40	40	43	34	**49***

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when regions were compared.

Demographic variation

Demographic variation occurred when survey participants were asked about perceived advantages and disadvantages of generating electricity from renewable energy technologies (Table 2.12).

Some key trends that appeared in different demographic segments were:

- Men appear to be more knowledgeable about renewables, with more being able to list advantages and disadvantages of these technologies than women. Men were more likely to have perceived advantages/disadvantages. For example, they cited environmental (84%) and employment (8%), and building the renewable energy sector/skills base (7%) as **advantages** and areas such as cost (44%) and problems with efficiency/reliability (21%) as **disadvantages**.
- Survey participants who had university degrees also self-assessed their knowledge higher than others. A large majority of this segment named advantages and disadvantages of renewables and they were more likely to mention advantages (e.g. environment 93%, employment 12%, building sector/skills 10%) and disadvantages (e.g. cost 53%, efficiency/reliability 25%). Survey participants with no post-school qualifications self-assessed their knowledge about renewables the lowest, with the TAFE/apprenticeship group sitting in between. An interesting exception was the higher proportion among the TAFE/apprenticeship group who viewed cost as an **advantage** of renewables (43%).
- By age group, older people (65+ years) were less likely than younger people to name advantages or disadvantages of renewable technologies. The older age group was less likely to mention advantages and disadvantages such as environmental advantages (66%), high costs/prices (25%) and problems with efficiency/reliability (11%). Although their self-assessed knowledge matched the state average, the **youngest age** group (18–24 years) was much less likely than other age groups to see cost/savings as an advantage (23%) and much more likely see efficiency/reliability as a **disadvantage** of using renewables (32%).

Table 2.12: Survey results showing demographic variation in perceived advantages and disadvantages of generating electricity from renewable sources (unprompted).

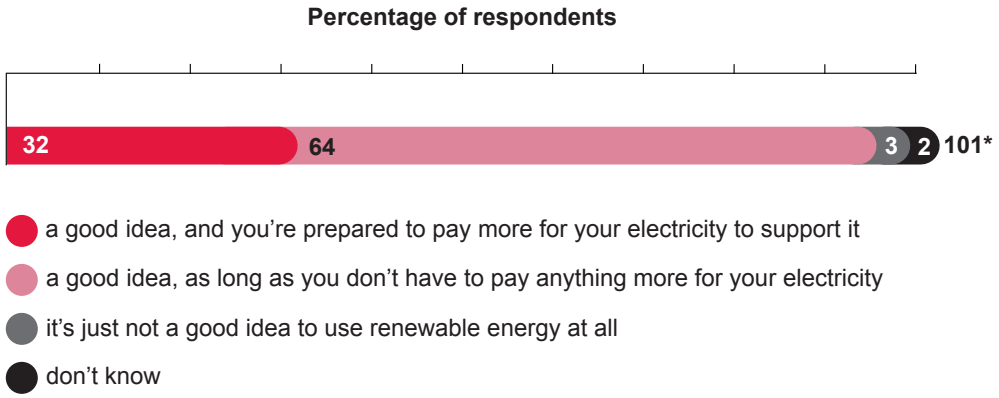
	Total surveyed	Gender		Age (years)					Highest education level		
		Men	Women	18–24	25–34	35–49	50–64	65+	Uni degree	TAFE/ apprenticeship	School only
Number of respondents	2000	998	1002	166	216	575	491	552	680	753	567
	Numbers below are shown as percentages.										
Advantages											
Environment	80	**84***	**76†**	**89***	79	**86***	81	**66†**	**93***	82	**71†**
Cost	37	36	37	**23†**	37	41	40	35	35	**43***	33
Employment	6	**8***	**5†**	7	8	7	6	**4†**	**12***	5	**4†**
Health	4	3	5	6	4	4	5	4	4	3	6
Build energy sector/skills	5	**7***	**2†**	8	8	4	4	**1†**	**10***	3	**3†**
None/don't know	12	**8†**	**14***	**3†**	12	**7†**	11	**23***	**4†**	**8†**	**19***
Disadvantages											
Environment	5	6	4	4	**9***	5	4	3	6	6	4
Cost	39	**44***	**35†**	46	40	**46***	41	**25†**	**53***	40	**31†**
Efficiency/reliability	18	**21***	**14†**	**32***	18	17	16	**11†**	**25***	17	**14†**
Employment	5	6	4	6	6	6	6	**3†**	5	5	6
Health	2	2	3	3	1	**1†**	**5***	1	2	3	2
Noise	4	4	5	2	**1†**	3	**7***	5	4	5	3
Visual impact	3	4	2	3	1	3	4	4	4	3	2
Takes a lot of space	3	4	2	5	3	2	2	2	4	2	2
Lack existing infrastructure	2	3	1	4	2	2	2	2	3	2	2
None/don't know	38	**30†**	**45***	**28†**	32	35	37	**55***	**22†**	38	**48***

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when demographics were compared.

2.2.5 Personal cost as a mitigating factor on support for renewables

It was clear that along with the environment, cost was a pivotal element in community thinking about renewables. The most prevalent community view was that renewable energy was a good idea 'provided I don't have to pay more for my electricity' (64%; Figure 2.8).

Even so, 32% of survey respondents said that renewables were not only a good idea, but they were also prepared to pay more for their electricity to support them. Only 3% of people said 'it's just not a good idea to use renewable energy at all'.



* numbers have been rounded up. Number of survey respondents = 2000.

Figure 2.8: Overall views about using renewable energy to produce electricity in NSW.

Question A9. Overall, which one of the following best describes your view about renewable energy to produce electricity? Do you think it's... ?

Personal cost as a mitigating factor on support for renewables

Survey respondents from Sydney (34%), those with a university education (49%) and 18–24 year olds (41%) were more likely to say that renewable energy was something they were prepared to pay more to support. Conversely, respondents with no post-school qualifications (72%) and those living in country/regional areas (68%), particularly the North West and South West Regions (74% each), were more inclined to say that renewables were a good idea provided they didn't have to pay more to support them (Table 2.13).

Table 2.13: Personal cost as a mitigating factor on support for renewable energy technologies – by region.

	Total surveyed	Greater Sydney	Total NSW regional	North East	Hunter/ Central Coast	North West	Illawarra	South East	South West
Number of respondents	2000	500	1500	250	250	250	250	250	250
				Numbers below are shown as percentages.					
Using renewable energy to produce electricity in NSW is:									
A good idea	95	95	96	97	95	96	**98†**	96	94
Prepared to pay more for electricity to support it	32	**34***	**28†**	35	30	**22†**	29	26	**20†**
If don't have to pay more for electricity	64	**61†**	**68***	63	65	**74***	69	70	**74***
Not a good idea	**3**	3	2	**0†**	3	2	2	2	5

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when other regions were compared.

Table 2.14: Personal cost as a mitigating factor on support for renewable energy technologies – by demographics.

	Total surveyed	Gender		Age (years)					Highest education level		
		Men	Women	18–24	25–34	35–49	50–64	65+	Uni degree	TAFE/ appren-ticeship	School only
Number of respondents	2000	998	1002	166	216	575	491	552	680	753	567
	Numbers below are shown as percentages.										
Using renewable energy to produce electricity in NSW is:											
A good idea	95	95	95	**98***	96	96	95	**92†**	97	94	95
Prepared to pay more for electricity to support it	32	33	30	**41***	29	35	30	**25†**	**49***	**28†**	**24†**
If don't have to pay more for electricity	64	63	65	57	66	62	65	67	**48†**	66	**72***
Not a good idea	3	3	2	2	1	1	4	**6***	2	3	3

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when demographics were compared.

2.2.6 Community support for building wind farms and solar farms

There was substantial majority support for building wind farms in NSW (81%)[2] , and even more support for solar farms (89%). The number of survey respondents who **strongly** supported the idea of solar farms (43%) was also somewhat higher than the number who strongly **supported** wind farms (34%; Figure 2.9).

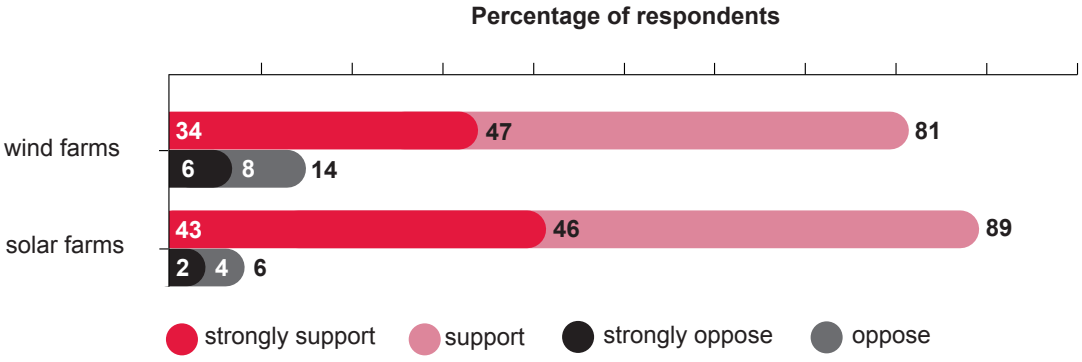


Figure 2.9: Support for building wind farms and solar farms in NSW.

Question E4/F4. Now thinking specifically about wind/solar farms in NSW. Overall, to what extent do you support or oppose wind/solar farms being built in NSW?

Number of survey respondents = 2000.

Regional variations in support for building wind and solar farms in NSW

There was not a lot of variation in support for building wind and solar farms by region (Table 2.15).

Overall support for both wind and solar farms was slightly higher in the Illawarra Region (87% and 95% respectively), and for solar farms in the North West Region (95%). People in the South West Region were a little less likely than others to **strongly** support wind farms (26%). The small level of opposition to solar farms was slightly higher in Sydney (8%) than in regional NSW (4%).

[2] The 2010 'Community Attitudes to Wind Farms' survey measured support for wind farms in NSW among people living in regional NSW areas designated as Renewable Energy Precincts. That survey reported support of 85%, a similar result to the 81% support across regional NSW reported in the current survey.

Table 2.15: Support for building wind and solar farms in NSW – by region.

	Total surveyed	Greater Sydney	Total NSW regional	North East	Hunter/ Central Coast	North West	Illawarra	South East	South West
Number of respondents	2000	500	1500	250	250	250	250	250	250
	Numbers below are shown as percentages.								
Wind farms									
Total support	81	81	82	81	80	86	**87***	79	77
Strongly support	34	36	33	35	32	28	38	35	**26†**
Total oppose	14	15	13	13	15	10	10	16	15
Solar farms									
Total support	89	**87†**	**91***	91	89	**95***	**95***	88	93
Strongly support	43	43	44	48	42	46	42	46	39
Total oppose	6	**8***	**4†**	4	4	3	3	5	3

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when regions were compared.

Demographic variation

Patterns in support were more distinct within demographic groups compared to regional areas (Table 2.16). For example:

- men were more likely to support solar farms (93%) and **strongly** supported wind (39%) and solar (49%) farms
- support for wind and solar farms was higher (89% and 94% respectively) and stronger (52% and 60% respectively) among survey participants who were university educated
- support for wind farms was higher among people under 35 (around nine in 10) whereas opposition to wind farms was higher among people aged 50 and over (two in 10)
- opposition to solar farms was highest among people aged 65 and over, although it was relatively small (12%).

Table 2.16: Support for building wind and solar farms in NSW – by demographics.

		Gender		Age (years)					Highest education level		
	Total Surveyed	Men	Women	18–24	25–34	35–49	50–64	65+	Uni degree	TAFE/ appren-ticeship	School only
Number of respondents	2000	998	1002	166	216	575	491	552	680	753	567
				Numbers below are shown as percentages.							
Wind farms											
Total support	81	82	81	**94***	**88***	84	**77†**	**69†**	**89***	78	79
Strongly support	34	**39***	**31†**	**44***	37	36	34	**25†**	**52***	**29†**	**29†**
Total oppose	14	15	13	**5†**	**5†**	13	**18***	**24***	**7†**	15	**17***
Solar farms											
Total support	89	**93***	**86†**	**96***	92	91	89	**80†**	**94***	89	**86†**
Strongly support	43	**49***	**37†**	45	47	45	46	**31†**	**60***	39	**36†**
Total oppose	6	5	7	**2†**	3	5	8	**12***	**3†**	5	**9***

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when demographics were compared.

2.3 Attitudes towards local wind and solar farms

2.3.1 Responses to building wind and solar farms in NSW, local regions and within 1–2 kilometres of where they lived

Along with measuring opinions about locating wind and solar farms within NSW, the survey also sought people's attitudes to having them in their local region and even closer, within 1–2 kilometres of where they lived (Figure 2.10).

People who lived outside of the Sydney and Newcastle metropolitan areas and Illawarra region were asked about their responses to building wind and solar farms in NSW, in their local region and within 1–2 kilometres of where they lived. Some of the survey findings were:

- the level of support for having **wind farms**[3] in NSW closely reflected statewide sentiment (81%)
- support for having wind farms in the local region was (73%) but remained a fairly solid majority
- a majority supported having a wind farm within 1–2 kilometres of their home (59%) and 37% opposed it
- **solar farms** were preferred over wind farms for the three proximities
- although support dropped progressively from 91% for solar farms in NSW, to 84% in the local region, to 78% within 1–2 kilometres of where they lived, this drop was not as sharp as the drop in support for wind farms
- there was substantial majority support for having a solar farm within 1–2 kilometres of where they lived (78%), and relatively little opposition to it (17%); at this proximity to where they lived, more people would **strongly** support a solar farm (33%) than a wind farm (18%).

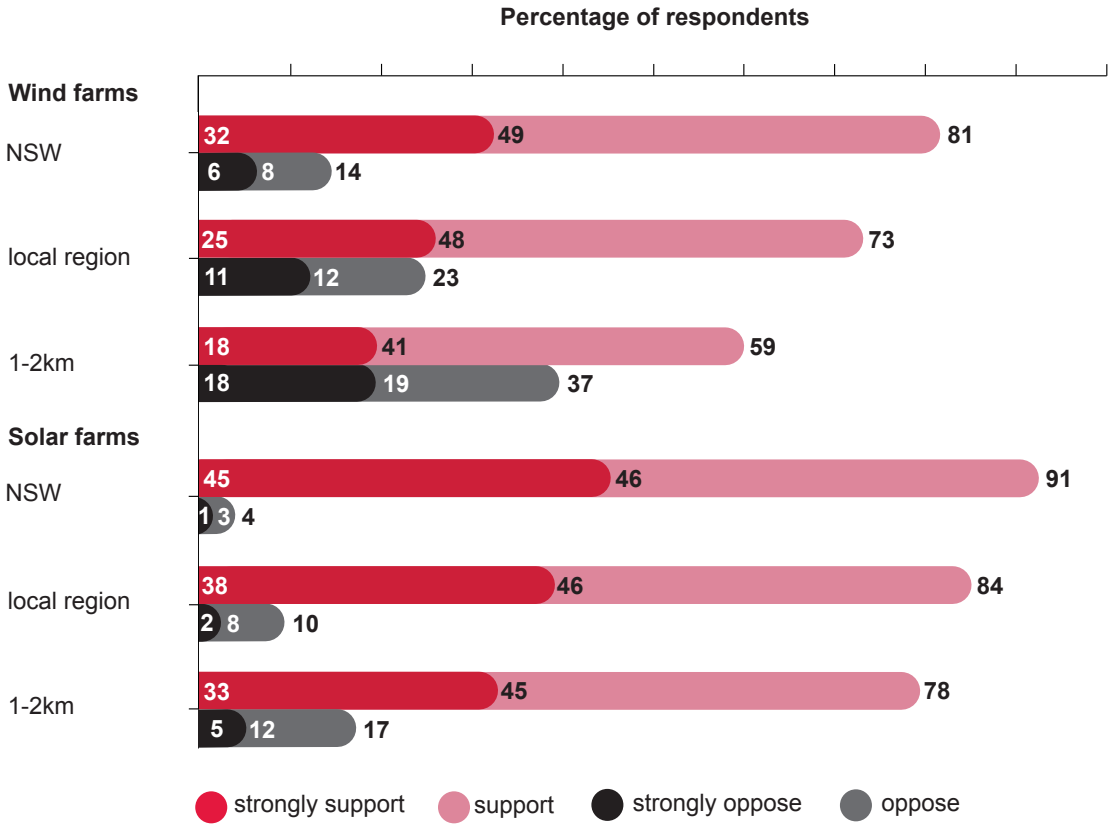


Figure 2.10: Support for and opposition to building a wind/solar farm in three proximities – in NSW, the local region, and within 1–2 kilometres of where they lived.

Question E4/F4 Overall, to what extent do you support or oppose wind/solar farms being built in NSW?
Question E5/F5. To what extent do you support or oppose wind/solar farms being built in your local region?
Question E8a,b/F6a,b. To what extent do you support or oppose a wind/solar farm being built within 1 to 2 kilometres of where you live?

Number of survey respondents (adults in non-metropolitan areas) = 1200.

Responses to building wind and solar farms in NSW, local regions, and within 1–2 kilometres of where they lived, excluding the Sydney and Newcastle metropolitan areas and Illawarra region[4]

Regional variations

Attitudes to wind and solar farms at the three geographic proximities were largely consistent across the non-metropolitan areas (Table 2.17). There were a few significant differences, such as the:

- North East region showed a higher level of strong support for solar farms in the local region (44%) compared to other regions
- Hunter/Central Coast region showed a slightly higher level of strong opposition to wind farms in NSW (10%) and within the local region (15%) compared to other regions
- overall support in the North West region for wind farms in NSW (86%) and support for wind farms (79%) and solar farms (92%) in the local region was higher than other regions.

[3] The 2010 'Community Attitudes to Wind Farms' survey measured support for wind farms in NSW among people living in regional NSW areas designated as Renewable Energy Precincts. This found support of 60% at 1–2 kilometres, which is almost identical to the current survey, at 59%. Compared with the current survey, the 2010 survey found a similar, but slightly higher level of support for wind farms in NSW (85% versus 81%) and within the local region (80% versus 73%)

[4] In Tables 2.17 and 2.18, patterns in statistically significant differences concerning support for local wind and solar farms in NSW may differ from the patterns in support for local wind and solar farms shown in Tables 2.15 and 2.16. This is because the significance calculations in Tables 2.17 and 2.18 were based on survey participants living in outside of the Sydney, Newcastle and Illawarra metropolitan areas, whereas Tables 2.15 and 2.16 were based on the full NSW sample of 2000 respondents.

Table 2.17: Regional variation in responses to building wind and solar farms in NSW, in local region, and within 1–2 kilometres of residence.

	Total non-metroploitan areas	North East	Hunter/ Central Coast**	North West	South East	South West
Number of respondents	1210	250	250	250	250	250
		Numbers below are shown as percentages.				
Wind farms in NSW[4]						
Total support	81	81	79	**86***	79	77
Strongly support	32	35	32	28	35	26
Total oppose	14	13	17	10	16	15
Strongly oppose	6	4	**10***	4	6	4
Wind farms in local region						
Total support	73	72	71	**79***	72	71
Strongly support	25	27	24	24	31	21
Total oppose	23	21	27	**17†**	24	23
Strongly oppose	11	8	**15***	**6†**	10	9
Wind farms within 1–2 km						
Total support	59	61	57	64	56	53
Strongly support	18	17	18	18	24	16
Total oppose	37	33	39	34	41	41
Strongly oppose	18	16	21	15	22	17
		Numbers below are shown as percentages.				
Solar farms in NSW[4]						
Total support	91	91	89	95	88	93
Strongly support	45	48	43	46	46	39
Total oppose	4	4	4	3	5	3
Solar farms in local region						
Total support	84	82	80	**92***	85	85
Strongly support	38	**44***	**31†**	45	42	36
Total oppose	10	11	12	**5†**	10	7
Solar farms within 1–2 km						
Total support	78	80	76	84	74	77
Strongly support	33	38	30	33	36	32
Total oppose	17	16	18	13	21	17

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when regions were compared.

** excluding Newcastle.

Demographic variations

Survey responses to wind and solar farms at the three geographic proximities varied across the State excluding the Sydney and Newcastle metropolitan areas and Illawarra region (Table 2.18). Key themes within the different demographic groups were as follows:

- men were more supportive of solar farms than women at each of the three geographic proximities
- men were more likely to strongly support (36%) **and** oppose (17%) wind farms in NSW, and to strongly support a wind farm within 1–2 kilometres (23%) of where they lived
- people aged 50 years and over were more likely to oppose wind farms at each geographic proximity
- within the 50–64 years and 65+ years age groups, opinion about a wind farm within 1–2 kilometres of a residence was almost equally divided between those who supported it (around 50%) and those who opposed it (45%)
- university educated respondents were more likely than others to support (and **strongly** support) solar farms at each geographic proximity
- university educated respondents were more likely to support wind farms within NSW, and to strongly support them at each geographic proximity.

Table 2.18: Demographic variation in responses to building wind and solar farms in NSW, in local region, and within 1–2 kilometres of residence.

	Total non-metroploitan areas	Gender		Age (years)					Highest education level		
		Men	Women	18–24	25–34	35–49	50–64	65+	Uni degree	TAFE/ appren-ticeship	School only
Number of respondents	1210	605	605	86	116	339	315	354	367	484	359
				Numbers below are shown as percentages.							
Wind farms in NSW[4]											
Total support	81	80	81	**92***	86	**87***	**75†**	**73†**	**86***	79	80
Strongly support	32	**36***	**27†**	41	33	36	31	**23†**	**49***	29	**28†**
Total oppose	14	**17***	**12†**	**6†**	10	**9†**	**19***	**20***	**10†**	15	15
Strongly oppose	6	**9***	**4†**	**1†**	8	**1†**	8	**11***	**3†**	6	7
Wind farms in local region											
Total support	73	72	73	**87***	82	**79***	**64†**	**64†**	76	72	71
Strongly support	25	28	23	31	29	29	23	**18†**	**41***	**21†**	23
Total oppose	23	25	21	**12†**	15	**17†**	**30***	**31***	**18†**	24	25
Strongly oppose	11	12	10	**1†**	10	**4†**	**17***	**15***	9	11	11
Wind farms within 1–2 km											
Total support	59	62	56	67	67	**66***	**52†**	**51†**	63	58	58
Strongly support	18	**23***	**13†**	20	24	19	18	14	**31***	15	16
Total oppose	37	37	37	31	**25†**	**31†**	**45***	**45***	33	38	38
Strongly oppose	18	20	17	**6†**	16	**13†**	**25***	**24***	17	20	18
Solar farms in NSW[4]											
Total support	91	**94***	**89†**	**98***	95	93	88	**87†**	**97***	92	**88†**
Strongly support	45	**52***	**37†**	48	47	46	48	**36†**	**63***	44	**38†**
Total oppose	4	3	4	1	3	**2†**	6	6	**1†**	4	5
Solar farms in local region											
Total support	84	**88***	**79†**	83	88	87	81	80	**90***	85	**80†**
Strongly support	38	**46***	**31†**	41	44	42	38	**30†**	**54***	39	**33†**
Total oppose	10	9	11	10	10	7	10	12	8	9	12
Solar farms within 1–2 km											
Total support	78	**83***	**74†**	86	78	**84***	74	73	**84***	79	75
Strongly support	33	**41***	**26†**	31	38	32	36	29	**48***	31	30
Total oppose	17	15	19	12	16	12	20	22	**12†**	16	20

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when demographics were compared.

2.3.2 Reasons for supporting (and perceived benefits of) a wind or solar farm within 1–2 kilometres of where they lived (unprompted)

Survey participants who supported the location of a wind farm within 1–2 kilometres of where they lived were asked why they supported this. Participants who opposed a wind farm being located within 1–2 kilometres of where they lived were asked what benefits, if any, they could identify. The same questions were asked to those who supported and opposed locating solar farms within 1–2 kilometres of where they lived.

Participants who **supported** the location of a wind or solar farm within 1–2 kilometres of where they lived, gave largely the same unprompted reasons for wind and solar. Principal among them were:

1. environmental benefits (69% wind/62% solar)
2. lower cost (23% wind/29% solar)
3. benefits to the local economy (14% for both wind and solar).

Most people surveyed who **opposed** a wind or solar farm being located within 1–2 kilometres of their residence could not identify any benefits (about 70% for wind and solar). Those who identified benefits principally related them to the environment (12% wind, 9% solar), cost (9%, 14%) and the local economy (8%, 7%). Around one in 10 of those who supported and those who opposed the concept also said the infrastructure would increase electricity-generating capacity.

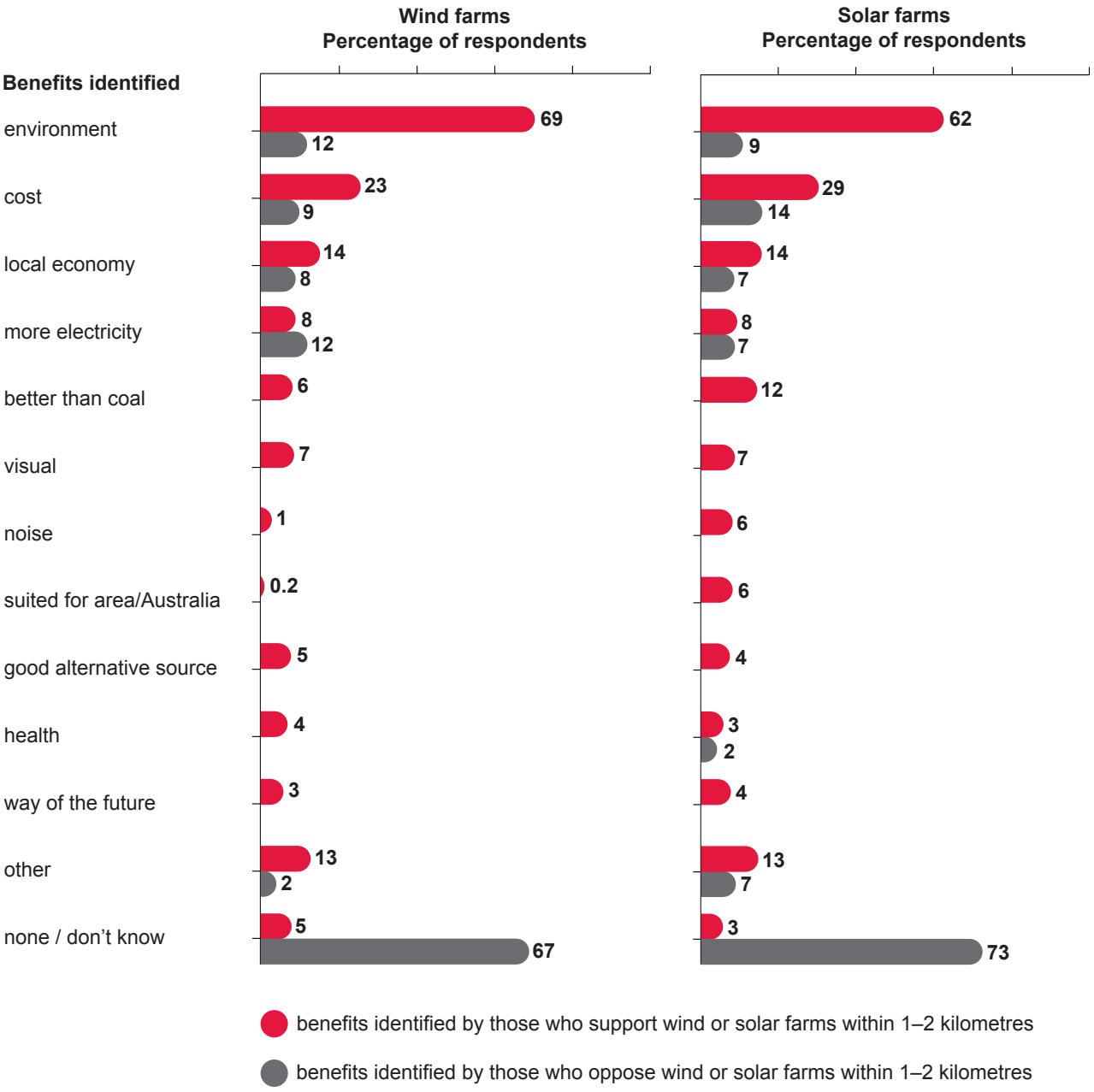


Figure 2.11: Reasons for supporting a wind/solar farm within 1–2 kilometres of where the respondent lived (unprompted).

Question E9a/F9a. For what particular reason would you support it?

Question E10b/F10b. What benefits, if any, would there be in having a wind/solar farm within 1-2 kilometres from where you live?

Survey respondents included adults in non-metropolitan areas; number in support of solar farms = 960; number in opposition to solar farms = 194; number in support of wind farms = 702; number in opposition to wind farms = 458.

Respondents raised a wide variety of reasons why a wind or solar farm within 1–2 kilometres of their residence would benefit them or the wider community. For example:

- **Environment** – Reflecting the perceived advantages of using renewables in general, the two key reasons for supporting local wind and solar farms on environmental grounds were (i) they were cleaner/created less 'pollution' or fewer greenhouse gases, and (ii) sustainability.
- **Cost** – Supporters also believed (or hoped) that local wind and solar farms would (eventually) reduce the cost of electricity, or at least in some way be cheaper.
- **Local economy** – The perceived benefit to the local economy included creating jobs. For wind farms, a small proportion of supporters (2%) also mentioned the potential financial benefit to property owners who hosted a wind farm, and 1% said wind farm could be a potential tourist attraction.
- **More electricity** – Some respondents believed the infrastructure would add to the supply of electricity. (This included some who may have misconstrued that the idea of a local wind or solar farm would be to supply electricity for the local area, but they appeared to be few in number. The potential for this confusion was noted in the pilot study and to alleviate this, the words 'The electricity would be fed into the national power grid' were included in relevant questions.)
- **Better than coal** – This included reducing **reliance** on coal, not burning coal or fossil fuels, or simply that wind or solar was better than using coal or coal-fired power stations.
- **Visual and noise** – There was an interesting contrast in opinion on these issues. Some people supported solar farms because they perceived them as less visually unappealing or noisy than a wind farm – they were more acceptable because they were perceived as relatively unobtrusive. In contrast, some people who supported wind farms found them visually appealing, and a few said 'they're not that noisy anyway'.
- **Suited for the area/Australia** – Some people who supported solar farms saw the inherent logic of using solar in an area with an abundance of sunshine, whether it be Australia ('Australia is one of the sunniest places in the world') or the local area ('We're in a relatively open farming area and we do cop a lot of sun throughout the year'). In some cases solar's suitability for the local area related to the available space ('I live in a small country town and there's paddocks available for it to be set up').
- **Good alternative source of energy** – This refers to people saying that wind and solar were a better alternative to 'traditional' energy sources – which they also linked with the environmental and cost benefits.
- **Health** – These responses fell into two broad categories: (i) the perception that local wind and solar farms had **no negative** health impacts, or none the respondent was aware of, or (ii) local wind and solar farms were healthier because they were cleaner and safer (e.g. no air pollution, nuclear waste).
- **The way of the future** – Some people saw local wind and solar farms as part of 'the way forward' on energy, in terms of addressing the limited supply of non-renewables and also moving toward greater use of cleaner, low impact (environmentally), renewable sources.
- **Need to be built somewhere** – Among other reasons for supporting local wind and solar farms was the view that they 'need to be built somewhere' and local communities should support this ('Someone should have it in their backyard and, if I'm in the area which has the right conditions for it, I should be prepared to support it').
- **Simply a good idea** – Some supporters of local wind and solar farms held the general view that they were a good idea ('It's [wind farms] absolutely doing good and anything we can do to help the natural is much better'), or have no reason to oppose them ('Well, I don't think it's going to harm anyone'). Others had a desire to support renewable energy technologies generally ('Because I endorse renewable energy').

Reasons for supporting wind and solar farms within 1–2 kilometres of where they lived (unprompted) among demographic segments

Regional variations

The reasons for supporting local wind and solar farms within 1–2 kilometres of where the respondent lived were generally quite consistent across regions (Table 2.19). However, there were some differences in degree; for example:

- respondents from the Hunter/Central Coast region (excluding Newcastle) were slightly more likely than respondents from other areas to support wind farms for environmental reasons (76%) and view solar farms to be better than coal (16%), and less likely to see the local economic benefits of solar farms (8%)
- respondents from the North West region were less likely to nominate environmental factors as a reason to support wind farms (60%), particularly in terms of sustainability, but they were more likely to see wind farms feeding energy into the national grid (15%) and saw the potential for solar power to benefit their local economy (21%).

Table 2.19: Regional variation in reasons for supporting wind or solar farms within 1–2 kilometres of a residence (unprompted).

	Total non-metroploitan areas	North East	Hunter/ Central Coast**	North West	South East	South West
Wind farms						
Number of respondents	702	150	122	153	145	132
		Numbers below are shown as percentages.				
Environment	69	69	**76***	**60†**	66	62
Cost	23	20	22	29	20	28
Local economy	14	13	12	16	16	19
More electricity	8	7	5	**15***	5	10
Better than coal	6	6	10	5	2	3
Visual	7	5	6	9	**12***	6
Noise	1	0	0	**3***	**4***	1
Suited for area/Australia	0	0	0	**1***	0	0
Good alternative source	5	7	4	4	5	7
Health	4	6	3	3	**1†**	2
Way of the future	3	5	3	**0†**	4	5
Solar farms						
Number of respondents	960	199	165	205	196	195
		Numbers below are shown as percentages.				
Environment	62	62	66	56	63	56
Cost	29	27	32	30	23	30
Local economy	14	15	**8†**	**21***	18	16
More electricity	8	7	7	11	7	9
Better than coal	12	14	**16***	9	**6†**	**5†**
Visual	7	6	7	6	9	7
Noise	6	**10***	4	5	6	6
Suited for area/Australia	6	**9***	**2†**	5	6	**11***
Good alternative source	4	4	5	3	2	2
Health	3	3	4	2	4	1
Way of the future	4	2	4	4	4	3

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when regions were compared.

** excluding Newcastle.

Demographic variations

Variation in the reasons for supporting local wind and solar farms within 1–2 kilometres of where respondents lived occurred across the different demographic groups (Table 2.20). For example:

- respondents in the 25–34 year old age group were more likely than those in other age groups to view local wind and solar farms as benefiting the local economy (about 25%)
- about four in 10 respondents in age groups 50 years and over were more likely to view local wind and solar farms as lower cost energy options
- respondents with a university education were more likely to support local wind and solar farms for environmental reasons (nearly 80%)
- respondents with no post-school education were less likely to support wind and solar farms within 1–2 kilometres of where they lived (61%, 55% respectively).

Table 2.20: Demographic variation in reasons for supporting a wind or solar farm within 1–2 kilometres of residence (unprompted)

		Gender		Age (years)					Highest education level		
	Total non-metroploitan areas	Men	Women	18–24	25–34	35–49	50–64	65+	Uni degree	TAFE/ appren-ticeship	School only
Wind farms											
Number of respondents	702	370	332	64	75	209	169	185	225	272	205
				Numbers below are shown as percentages.							
Environment	69	70	67	62	76	69	73	62	**79***	73	**61†**
Cost	23	24	22	**11†**	15	**16†**	**42***	24	18	21	27
Local economy	14	17	12	9	**25***	16	11	10	18	14	13
More electricity	8	8	8	8	13	8	7	5	7	10	7
Better than coal	6	7	6	2	5	7	6	9	7	5	7
Visual	7	8	6	**15***	7	8	5	5	**12***	6	7
Noise	1	**2***	**0†**	2	1	2	1	0	1	2	0
Suited for area/Australia	0	0	0	0	0	0	1	0	0	0	0
Good alternative source	5	5	5	6	4	6	4	6	8	5	4
Health	4	4	3	2	0	5	2	**7***	2	3	5
Way of the future	3	3	4	0	3	3	2	**7***	5	3	3
Solar farms											
Number of respondents	960	494	466	76	94	280	243	267	308	380	272
				Numbers below are shown as percentages.							
Environment	62	58	66	53	57	67	64	59	**78***	62	**55†**
Cost	29	26	33	19	**15†**	26	**36***	**39***	24	26	**34***
Local economy	14	17	12	14	**27***	16	**10†**	**9†**	**20***	15	11
More electricity	8	9	7	8	8	8	7	9	7	7	9
Better than coal	12	13	11	**3†**	17	13	13	12	16	13	10
Visual	7	9	5	12	4	9	7	**3†**	8	7	6
Noise	6	6	7	3	6	5	9	6	7	7	5
Suited for area/Australia	6	5	7	8	8	6	6	**3†**	8	6	5
Good alternative source	4	3	4	4	6	3	2	4	4	3	4
Health	3	4	2	4	1	3	5	1	3	2	4
Way of the future	4	**5***	**2†**	2	3	4	2	5	3	2	5

Notes: * † number of survey respondents. Indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when demographics were compared.

2.3.3 Concerns about a wind or solar farm within 1–2 kilometres of where they lived (unprompted)

Mirroring the questions asked of those who supported wind farms in their local area, survey respondents who opposed this were asked what concerns they had. Similarly, those who supported wind farms near their place of residence were also asked what concerns, if any, they had. Parallel questions were also asked about solar farms.

- For those who opposed **wind farms** being located near their place of residence, the most commonly raised concerns were about noise (61%), visual impact (38%) and health (23%). These concerns were also expressed, although at a lower rate, by people who supported wind farms (32%, 11% and 8% respectively).
- The small group of survey respondents who opposed **solar farms** being located near their place of residence gave a cluster of reasons for this such as the lack of suitability of a solar farm for their area (33%), the amount of space required (16%), environmental impacts (16%), and visual impacts (20%).
- Most respondents who supported solar farms in their local area had no concerns (59%).
- Some respondents reported that lack of information or knowledge about solar farms was a barrier to acceptance (13%).
- For wind and solar farms, few people unprompted raised concerns about negative impacts on property values (1–3%).

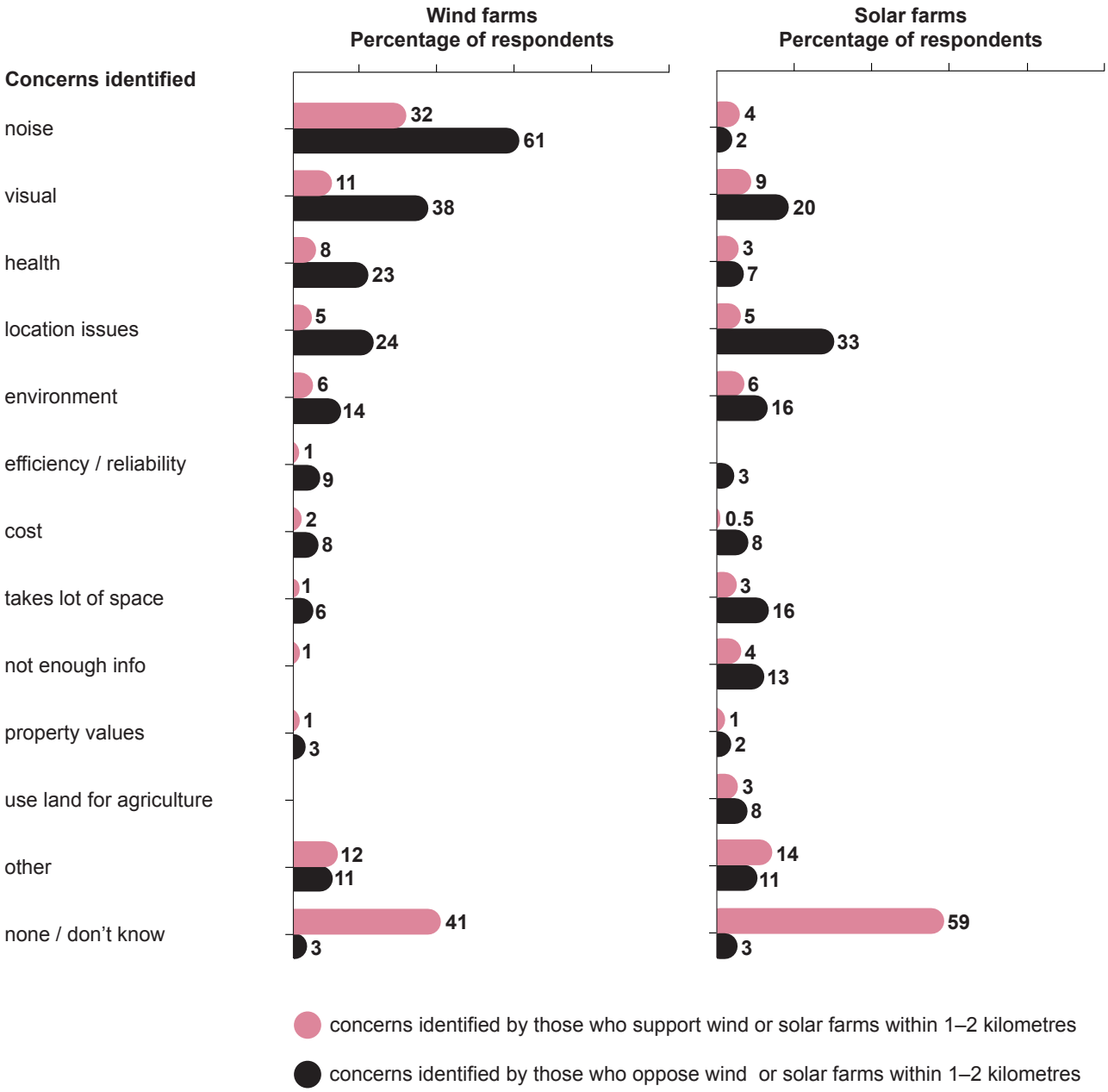


Figure 2.12: Concerns about wind and solar farms located 1–2 kilometres from where the respondent lived (unprompted).

Question E10a/F10a. What concerns do you have with it?

Question E9b/F9b. What concerns, if any, would you have with a wind/solar farm within 1–2 kilometres from where you live?

Survey respondents included adults in non-metropolitan areas: number in support of solar farms = 960; number in opposition to solar farms = 194; number in support of wind farms = 702; number in opposition to wind farms = 458.

Number of respondents = 1200.

Noise

Some survey respondents raised concerns about nearby communities hearing noise from turning wind turbines, especially at night, and particularly when there was a 'farm' of them ('They put them in Victoria on farming land and on hillsides and the people who live there are nearly driven crazy by the sound of them'; 'They are in big groups and when they are in action you get some low frequency humming or buzzing').

There was also some overlap with health concerns, with specific mention of the impact of low frequency noise or 'humming' on human health (e.g. causing migraines, sleep problems) and animal health ('it affects wildlife and birds and it's because of the pitch of the turbines and the blades').

For the small proportion of respondents who mentioned noise in relation to solar farms, issues raised included noise at the construction phase; noise because it was 'industrial', and in some cases people queried whether solar farms were noisy or not ('Are they noisy?'; 'Could be workmen and humming noises or whatever it is that creates the power').

Visual impact

Some people did not like the general look of wind and solar farms ('wind farms are ugly'), or commented on their impact on the look of a specific local area ('They ruin the look of the landscape, there's no hiding them'; 'We are in a residential setting, it wouldn't suit the aesthetics of the area'; 'I do think that would have a big impact on tourism because it is a very pretty area').

Health

For solar farms, rather than mentioning specific adverse health effects, people said there may be associated health issues. However, survey respondents reported a range of specific problems believed to affect those living near wind farms, such as:

- 'because of the vibrations [the wind farm] gives off, people in Goulburn have a lot of trouble with their inner ear… it affects your balance, affects your mood, the noise has been linked to increased anxiety and stress in patients with pre-existing psychiatric imbalances… also nausea.'
- 'I've read a lot about people living near wind farms getting illness… certain types of cancers.'
- 'I heard a lot of people get headaches and that sort of stuff.'
- 'There's been asthma, a lot of respiratory problems, what I've only heard from talking to people'.

Location issues

A number of issues were raised about the general suitability of local communities as locations for solar or wind farms. These included:

- population density ('We are in a residential area and it could not be built 1–2 kilometres from where we live', 'It's just not in the right area… close to people, in built up areas.')
- local industry ('I live in a small country town which is all agricultural… [a solar farm] wouldn't fit in with the industry… it's more for in the country where it's not heavily populated', 'would not be suitable for wind farms… it's a heavily orcharded area.')
- local features ('I am surrounded by national parks and forests. You are not going to cut down a national park to build a solar farm, are you?', '[Our town is] heritage listed so there's older buildings and older houses so it wouldn't suit this area.')
- weather conditions ('[local community] would be a terrible place to put the solar farm – it's cold and miserable', 'I don't think we get a reliable amount of wind here… we're in a small local valley').

Environment

People were concerned about general environmental damage such as destruction of habitat/loss of landscape due to land clearing for the infrastructure associated with wind and solar farms. The impact on animal life was also a key concern – the impact of wind farm noise on the general health of local farm animals, wildlife and birdlife ('there is a lot of talk about wildlife and cows etc. being disturbed by them'), as well as the danger to birds flying over solar and wind farms ('Birds think [the solar farm] is a lake therefore dive into it and kill themselves', '[wind farms] have a good habit of killing birds which fly into them').

Efficiency/reliability

Some concerns were raised about the efficiency of wind farms and the reliability of energy supply ('How can you say that they're viable if you don't get wind. You'd have to revert to some other means', 'They're not viable – you need a thousand of them to run a torch, they don't generate enough power'). To a lesser degree there were reliability concerns about solar, on the premise that no sunlight equalled no electricity.

Cost

There were concerns about high set-up and ongoing costs (including the level of government subsidy), as well as the overall cost-effectiveness of using these technologies versus current non-renewable options. For example:

- 'Their [wind farms] operating and capital cost is too high, requiring too much subsidy.'
- 'When there is not wind, they don't work, and there's no value for money – and if it's too windy, they have to be turned off, there's no value for money.'
- 'They're not cost-effective, sun doesn't always shine so sometimes they will not be generating any power at all.'
- 'We've got heaps of coal and it's very cheap to produce and we should be using it instead of the over-costed renewable stuff.'

Need a lot of space

There were comments made on the amount of space needed for the infrastructure for local wind and solar farms ('you need so much more space in collecting [wind, solar energy] than you do for an existing power station').

Not enough info

Some people said they didn't have enough information about solar farms or did not know enough about them to support one being located in their area. In some cases this linked with concerns about dangers that may be connected with the technologies, including health issues ('I'd have to research it. I'd oppose if it gave off any bad sort of energies to human beings'; 'I guess I don't know enough about it and therefore there are concerns in my mind on whether it is dangerous'; 'there is not enough known about the effects solar farms can have on health').

Property values

A small number of survey respondents raised concerns about decreased land/house values and often mentioned this in conjunction with the visual impact they perceived local wind and solar farms would have ('Could be ugly and decrease land value'; 'Visual impact - impact on property prices arising from that visual impact').

Use land for agriculture

Some people had the view that solar farms should not be built on 'good agricultural land' that is, or could be, used for farming crops or cattle grazing.

Other issues

Other concerns raised included wind turbines falling over, parts falling off or catching fire, as well as problems with glare/reflection and bushfire risk from solar panels.

2.3.4 Concerns of those opposed to wind and solar farms within 1–2 kilometres of where they lived among regional and demographic segments (unprompted)

Regional variations

The reasons survey respondents gave for opposing wind and solar farms in their local area were largely consistent across different regions (Table 2.21). However, there were some differences; for example:

- people living in the Hunter/Central Coast (excluding Newcastle) region were more likely to be concerned about visual appeal (47%) and the amount of space wind farms would require (10%)
- property values were more likely to be a concern for people living in the South East region in relation to both wind and solar farms (12%/13%), and visual impact for solar farms (36%).
- along with visual impact (36%).

Table 2.21: Regional variation in concerns of those opposed to a wind or solar farm within 1–2 kilometres of residence (unprompted).

	Total non-metropolitan area	North East	Hunter/ Central Coast**	North West	South East	South West
Wind farms						
Number of respondents	458	88#	81#	89#	98#	102
	Numbers below are shown as percentages.					
Noise	61	59	58	69	56	66
Visual	38	31	**47***	28	39	35
Health	23	29	20	23	27	20
Location issues	24	29	21	30	19	20
Environment	14	15	13	17	11	13
Efficiency/reliability	9	12	6	14	7	10
Cost	8	9	8	8	10	8
Takes a lot of space	6	**1†**	**10***	5	5	**1†**
Property values	3	1	2	3	**12***	4
Solar farms						
Number of respondents	194	41	35	35	42	41
	Numbers below are shown as percentages.					
Noise	2	0	2	3	3	3
Visual	20	24	13	21	**36***	17
Health	7	11	5	3	10	6
Location issues	33	36	34	28	28	29
Environment	16	15	19	18	8	13
Efficiency/reliability	3	0	2	4	8	4
Cost	8	4	9	11	7	6
Takes a lot of space	16	**6†**	25	20	4	16
Not enough information	13	9	20	15	**3†**	7
Property values	2	0	**0†**	3	**13***	4
Use land for agriculture	8	8	5	7	11	17

Notes: # note the small to very small sample sizes implies these results have a low level of statistical confidence and should be interpreted with caution.

* † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when regions were compared.

** excluding Newcastle.

Demographic variations

The reasons survey respondents gave for opposing wind and solar farms within 1–2 kilometres of where they lived varied across different demographic groups (Table 2.22). For example:

- Opposition to wind farms on the grounds of visual impact (47%) and cost (12%) was higher among men, whereas women were concerned about health issues (28%) and the amount of space required (9%).
- With solar farms, men were more concerned about the suitability of the location (43%), whereas women were more interested in sourcing more information about them (20%).
- In regard to age group, health concerns about wind farms (32%) and visual impacts for solar farms (30%) were higher among people aged 50–64 years.
- Survey respondents aged 65 years and over were more likely to oppose local wind and solar farms (16% and 8%, respectively) due to a perceived lack of efficiency/reliability compared with other age groups.
- University educated people were concerned about negative impacts on property values in regard to wind farms (10%), and the amount of space required in relation to solar farms (32%).

Table 2.22: Demographic variation in concerns about a wind or solar farm within 1–2 km of residence (unprompted).

	Total non-metropolitan area	Gender		Age (years)				Highest education level		
		Men	Women	18–34	35–49	50–64	65+	Uni degree	TAFE/ appren-ticeship	School only
Wind farms										
Number of respondents	458	226	232	**54**#	114	133	157	126	191	141
				Numbers below are shown as percentages.						
Noise	61	64	58	54	63	66	57	66	59	61
Visual	38	**47***	**30†**	40	43	43	**28†**	43	45	**31†**
Health	23	**17†**	**28***	**12†**	19	**32***	23	31	22	22
Location issues	24	24	23	22	24	19	30	25	24	23
Environment	14	13	15	7	14	19	13	19	12	14
Efficiency/reliability	9	12	7	**1†**	**4†**	11	**16***	13	10	8
Cost	8	**12***	**5†**	5	4	10	12	**4†**	12	7
Takes a lot of space	6	**2†**	**9***	**21***	4	**1†**	3	8	7	4
Property values	3	4	3	2	6	4	2	**10***	4	**1†**

	Total non-metropolitan area	Gender		Age (years)			Highest education level		
		Men	Women	18–49	50–64	65+	Uni degree	TAFE/ appren-ticeship	School only
Solar farms									
Number of respondents	194	94	100	**67**§	**56**§	**71**§	**44**§	**79**§	**71**§
				Numbers below are shown as percentages.					
Noise	2	1	2	2	0	4	4	3	1
Visual	20	22	18	15	**30***	15	31	21	16
Health	7	4	8	5	5	9	0	10	6
Location issues	33	**43***	**25†**	36	33	27	25	34	34
Environment	16	20	14	20	15	13	5	15	19
Efficiency/reliability	3	5	1	0	1	**8***	0	5	2
Cost	8	11	5	**2†**	12	10	8	**17***	**1†**
Takes a lot of space	16	10	21	22	9	17	**32***	10	18
Not enough information	13	**5†**	**20***	11	13	17	12	11	15
Property values	2	4	1	3	2	2	3	2	2
Use land for agriculture	8	7	9	9	5	9	11	6	9

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when demographics were compared.

§ the small to very small sample size implies these results have low statistical power and should be interpreted with caution.

due to small sample sizes, age groups were combined in this table: for wind farms, the age groups 18–24 and 25–34 years were combined, and for solar farms, the age groups 18–24, 25–34 and 35–49 years were combined.

2.3.5 Focus on wind farms – perceived impact on local community of a wind farm within 1–2 kilometres of where the respondent lived (prompted)

Survey respondents were asked a series of questions to further explore their views on wind farms being built within 1–2 kilometres of where they lived. This was to test whether concerns they had not previously thought of about the wind farms arose **after prompting** (Figures 2.13 and 2.14). The results showed:

- About half felt that a wind farm within 1–2 kilometres of where they lived would negatively impact on **property values** (54%), or negatively impact on the **visual appeal** (51%) of the local area.
- After prompting, 58% said that **noise** would be of **great** or **some** concern to them, and 42% that **health** issues would be of great or some concern to them.

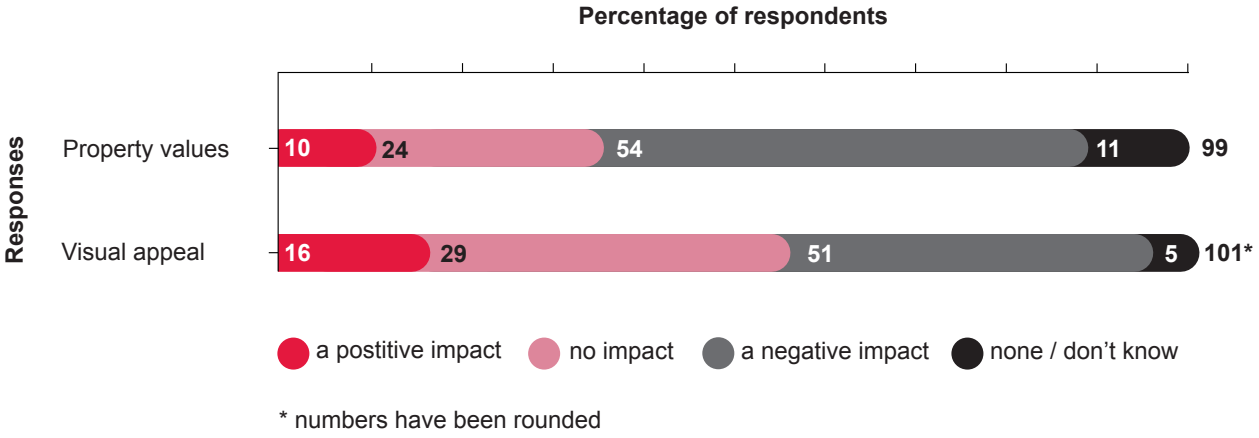


Figure 2.13: Concerns, after prompting, about the impact of wind farms located 1–2 kilometres of where the respondent lived on property value and visual appeal.

Question J1b/J2. What impact would a wind farm 1 to 2 kilometres from where you live have on the property values/visual appeal of your local area?

Number of survey respondents = 1200.

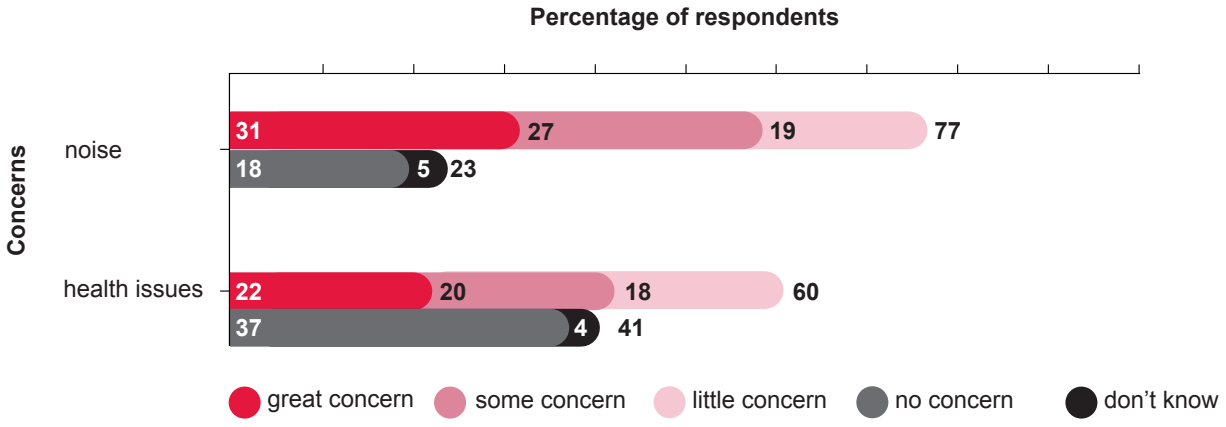


Figure 2.14: Concerns, after prompting, about the noise and health impacts of wind farms located 1–2 kilometres from where they lived.

Question J3/4. To what extent, if any, would noise/health issues be a concern for you living within 1 to 2 kilometres of a wind farm?

Number of respondents = 1200.

The number of respondents who perceived negative impacts or had some concerns about these issues increased with prompting. This was the same among those who supported and those who opposed wind farms within 1–2 kilometres of where they lived (Figure 2.15).

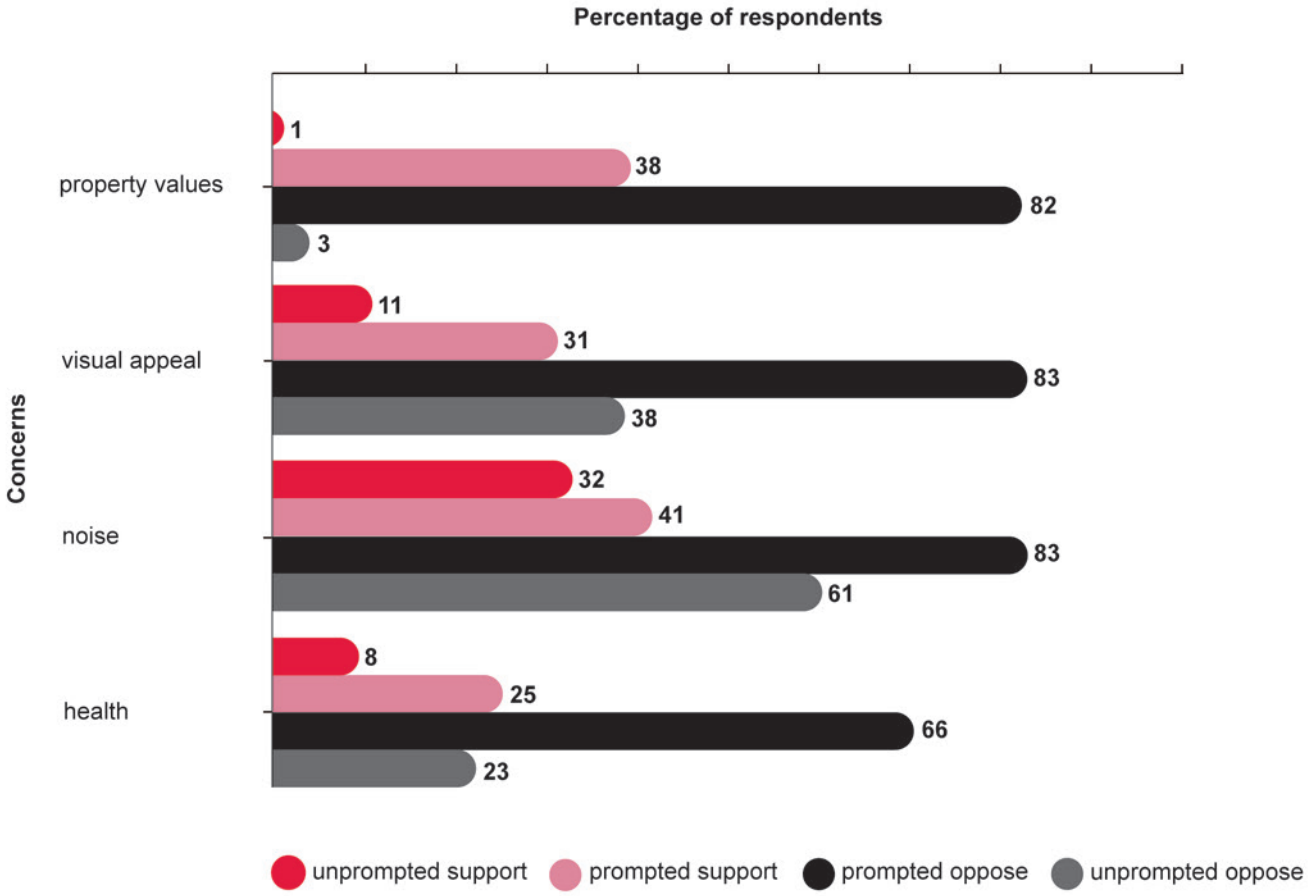


Figure 2.15: Concerns about a wind farm within 1–2 kilometres of where the respondent lived– unprompted versus prompted.

Question E9b/E10a. What concerns, if any, would you have with a wind farm being within 1 to 2 kilometres from where you live? Question J1b/J2. What impact would a wind farm, 1 to 2 kilometres from where you live, have on the property values/visual appeal of your local area?

Questions J3/J4. To what extent if any, would noise/health issues be a concern for you living within 1 to 2 kilometres of a wind farm?

Survey respondents included adults in non-metropolitan areas who supported (702) or opposed (458) wind farms.

In the context of a **real** proposal to place a wind farm within 1–2 kilometres of a community, people will most likely make up their minds based on its exact location relative to their home or community. The location may immediately allay concerns people have, or it could have the opposite effect.

An important factor to note about the difference between the unprompted and prompted level of concern about these issues, however, is that they suggest the in-principle majority support of 59% for a local wind farm may be a **fragile** majority, subject to communication about these issues in a real-world situation.

Perceived impact on local community of a wind farm within 1–2 kilometres of where the respondent lived among segments (prompted)

There were few significant differences between regions or demographic groups when survey respondents were prompted about concerns they may not previously thought of about the wind farms. Some differences included:

- women were more likely to have great/some concerns about noise (65%) and health issues (48%), than men
- people living in the South East region were more likely than others to have great/some concerns about health (49%), and believe that a wind farm would have a negative impact on property values (66%).

Table 2.23: Regional variation in perceived impact on local community of a wind farm within 1–2 kilometres of residence (prompted).

	Total non-metropolitan areas	North East	Hunter/ Central Coast**	North West	South East	South West
Number of respondents	1210	250	210	250	250	250
	Numbers below are shown as percentages.					
Property values						
Positive impact	10	12	10	11	**5†**	9
No impact	24	20	27	28	21	21
Negative impact	54	56	51	50	**66***	58
Visual appeal						
Positive impact	16	19	13	20	12	16
No impact	29	**23†**	28	**36***	29	30
Negative impact	51	53	51	**43†**	56	50
Noise						
Little/no concern	37	36	36	43	38	31
Some/great concern	58	59	56	54	60	64
Health issues						
Little/no concern	54	52	**60***	52	48	**47†**
Some/great concern	41	42	36	43	**49***	48

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when demographics were compared.

** excluding Newcastle.

Table 2.24: Demographic variation in perceived impact on local community of a wind farm within 1–2 km of residence (prompted).

		Gender		Age (years)					Highest education level		
	Total non-metropolitan areas	Men	Women	18–24	25–34	35–49	50–64	65+	Uni Degree	TAFE/ apprenticeship	School only
Number of respondents	1210	605	605	86	116	339	315	354	367	484	359
				Numbers below are shown as percentages.							
Property values											
Positive impact	10	8	11	**18***	13	10	7	8	**5†**	9	12
No impact	24	25	23	28	29	28	**19†**	22	26	24	24
Negative impact	54	58	51	48	50	50	**64***	54	58	57	51
Visual appeal											
Positive impact	16	16	15	23	21	15	14	13	13	13	**20***
No impact	29	29	28	34	32	29	26	27	32	28	28
Negative impact	51	52	49	41	43	48	56	55	50	53	49
Noise											
Little/no concern	37	**46***	**28†**	45	43	35	**31†**	38	40	34	38
Some/great concern	58	**50†**	**65***	47	52	62	63	55	54	61	56
Health issues											
Little/no concern	54	**62***	**47†**	**70***	62	55	**47†**	51	**61***	54	52
Some/great concern	41	**35†**	**48***	29	33	42	**50***	41	36	41	43

Notes: * † indicates statistically significant difference at the 95% level of confidence; * indicates a result was higher and † indicates a result was lower when demographics were compared.

3 Regional summaries

This section of the report provides bullet point and graphic summary of the key survey results about renewable energy technologies for the seven regions in NSW. They are **not** intended to be a report on how people in each region **differ** from each other in relation to awareness, knowledge and attitudes.

3.1 North East Region

(Number of respondents = 250)

Key facts

Renewable energy

- dominant technologies associated with renewable energy were solar 88% and wind 74%
- 93% supported using renewables to generate electricity in NSW
- 86% believed NSW should **increase** the use of renewables over the next five years
- most common perceived **advantages** of renewables (unprompted) were:
  - environmental benefits 84%
  - lower cost 40%
- most common perceived **disadvantages** (unprompted):
  - higher cost 30%
  - concerns about efficiency and reliability 17%
  - no disadvantages 45%
- 63% were prepared to use renewables 'provided I don't have to pay more for my electricity', and 35% were prepared to pay more to support them.

Solar and wind farms in NSW

- solar: 91% supported the use of solar farms in NSW, 82% in their local region, and 80% within 1–2 kilometres of where they lived
- wind: 81% supported the use of wind farms in NSW, 72% in their local region, and 61% within 1–2 kilometres of where they lived
- among the 33% who **opposed** a wind farm within 1–2 kilometres of where they lived, the unprompted concerns most commonly raised were noise (59%), visual impact (31%), health issues (29%) and location suitability (29%).

Renewable energy – awareness, knowledge and attitudes

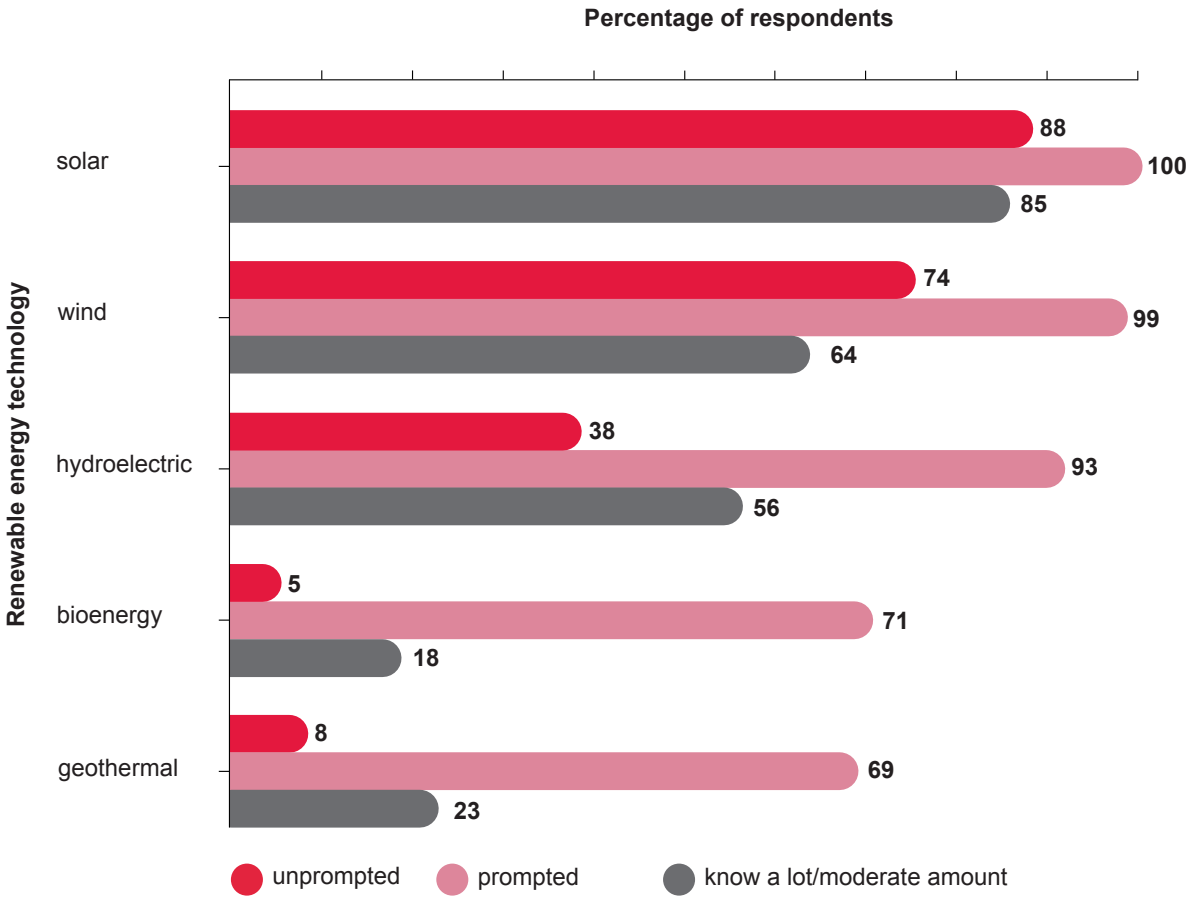


Figure 3.1: North East Region – awareness/self-assessed knowledge of renewable energy technologies by survey respondents.

'Prompted' refers to answers survey respondents gave after being prompted with suggested answers. 'Unprompted' refers to answers survey respondents voluntarily gave to survey questions. 'Know a lot/ moderate amount' refers to the level of knowledge survey respondents reported they had about each renewable technology.

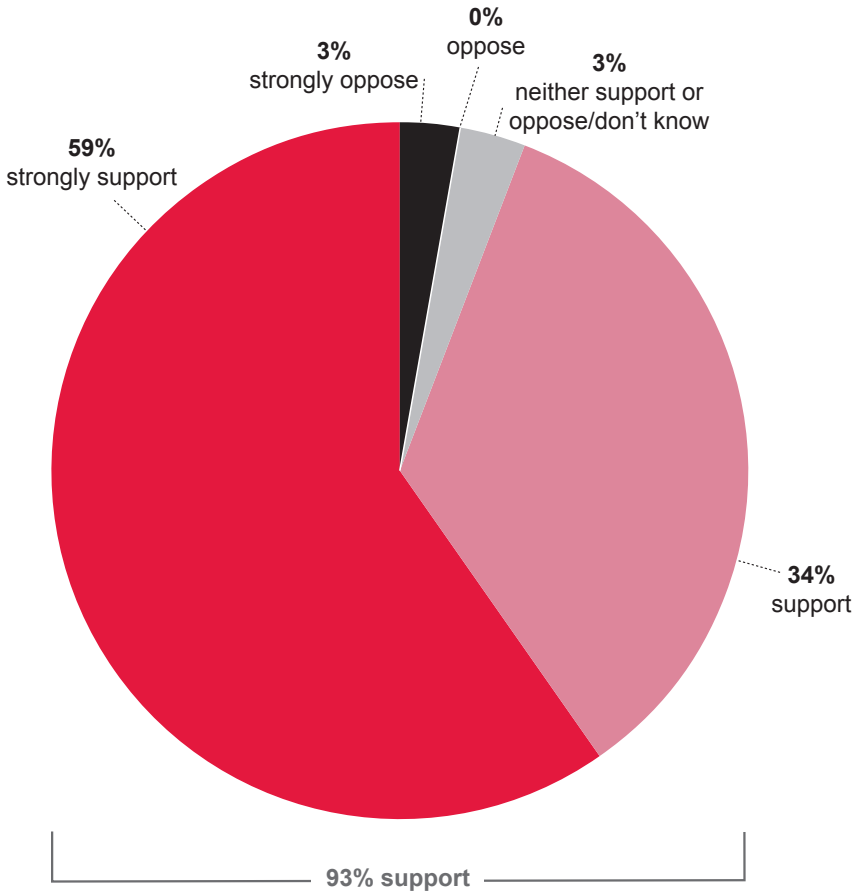


Figure 3.2: North East Region – support for using renewable energy technologies to generate electricity in NSW.

Survey respondents were asked to what extent they supported or opposed renewable energy technologies for producing at least some of the electricity in NSW.

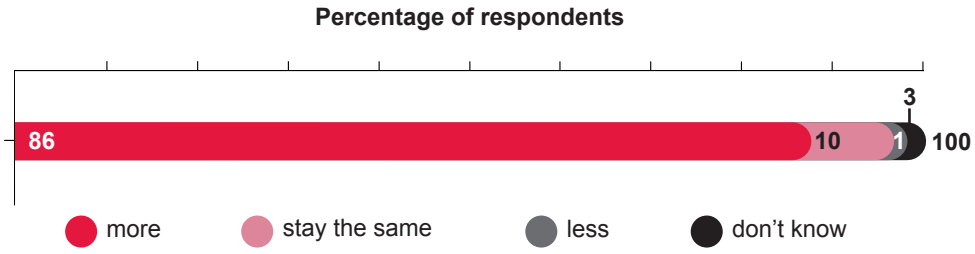


Figure 3.3: North East Region – use of renewable energy technologies to produce electricity in NSW over the next 5 years.

Survey respondents were asked whether, over the next five years, they thought NSW should try to produce more of its electricity from renewable energy, less, or it should stay the same as now.

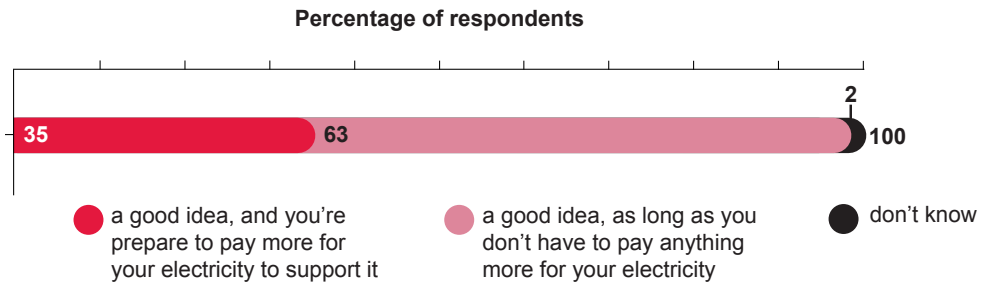


Figure 3.4: North East Region – overall views about using renewable energy to produce electricity in NSW and its cost.

Note that no survey respondents answered 'it's just not a good idea to use renewable energy at all'.

Table 3.1: North East Region – perceived advantages and disadvantages of using renewable energy technologies (unprompted).

	Advantage	Disadvantage
Number of respondents	250	250
	Numbers below are shown as percentages.	
Environment	84	3
Cost	40	30
Efficiency/reliability	0	17
Employment	4	6
Health	4	1
Build energy sector/skills	1	0
Noise	0	4
Visual impact	0	2
Takes a lot of space	0	2
Lack existing infrastructure	0	3
Other	9	8
None/don't know	8	45

Attitudes to wind or solar farms

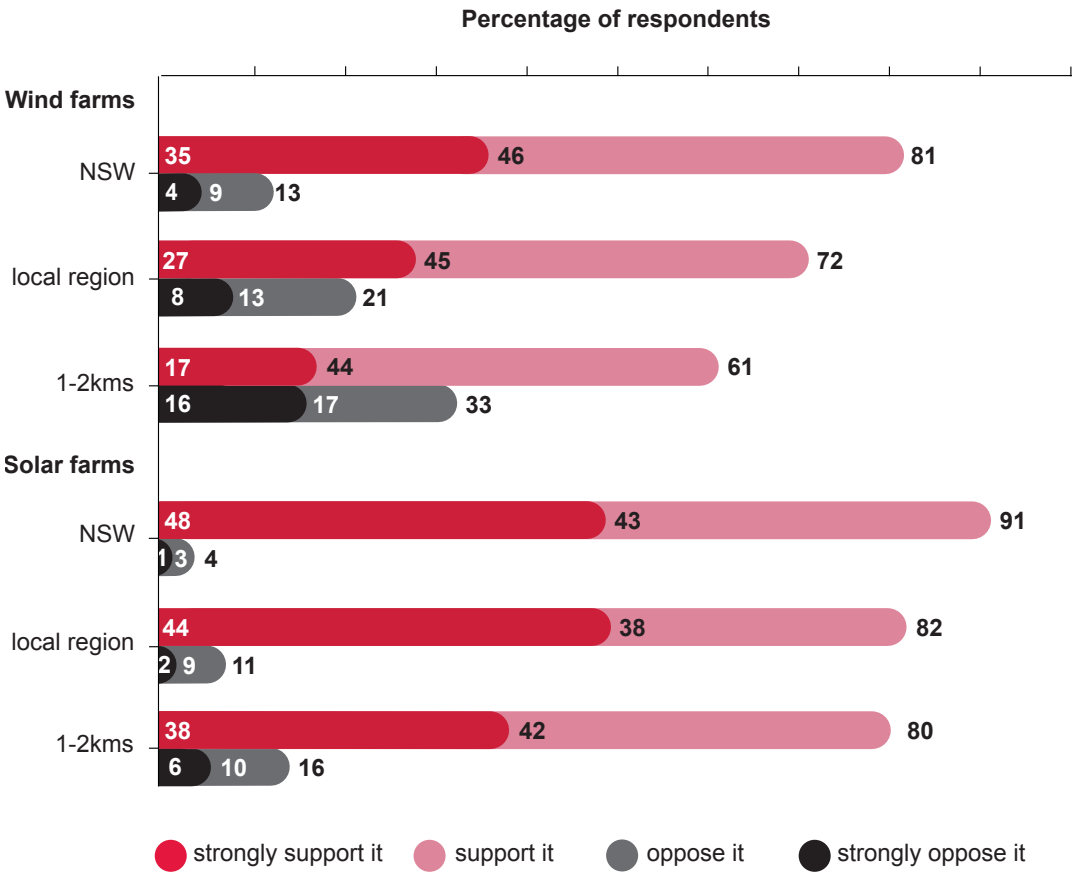


Figure 3.5: **North East Region – support for and opposition to building wind or solar farms in three proximities – in NSW, in the local region, and within 1–2 kilometres of where survey respondents lived.**

Table 3.2: **North East Region – reasons for supporting a wind or solar farm located within 1–2 kilometres of where a survey respondent lived (unprompted).**

Reasons for support	Solar farm	Wind farm
Number of respondents	199	150
	Numbers below are shown as percentages.	
Environment	62	69
Cost	27	20
Local economy	15	13
More electricity	7	7
Better than coal	14	6
Visual	6	5
Noise	10	0
Suited for area/Australia	9	0
Good alternative source	4	7
Health	3	6
Way of the future	2	5
Other	9	12
None/don't know	2	5

Table 3.3: North East Region – unprompted concerns of respondents who oppose a wind or solar farm within 1–2 kilometres of where survey respondents lived.

	Solar farm	Wind farm
Number of respondents	41[1]	88
	Numbers below are shown as percentages.	
Noise	0	59
Visual	24	31
Health	11	29
Location issues	36	29
Environment	15	15
Efficiency/reliability	0	12
Cost	4	9
Takes a lot of space	6	1
Not enough information	9	0
Property values	0	1
Use of land for agriculture	8	0
Other	20	9
None/don't know	1	2

Notes: 1. Caution interpreting results because of small sample size.

Table 3.4: North East Region – perceived impact of wind farms on property value and visual appeal (prompted).

	Positive	Negative	No impact	Don't know
	Numbers below are shown as percentages.			
Property values	12	56	20	12
Visual appeal of area	19	53	23	5

Note: Number of respondents = 250.

Table 3.5: North East Region – level of concern about noise and health issues caused by wind farms (prompted).

	Great/ some concern	Little/ no concern	Don't know
	Numbers below are shown as percentages.		
Noise	59	36	5
Health	42	52	6

Note: Number of respondents = 250.

3.2 Hunter/Central Coast Region

This is a bullet point and graphic summary of key survey results about renewable energy technologies for the Hunter/Central Coast Region of NSW. It is **not** intended to be a report on how people in this region **differ** from people in other regions in relation to awareness, knowledge and attitudes.

Note: People living in Newcastle were not asked questions in relation to local wind and solar farms. Consequently, results about renewable energy were based on the entire region and results concerning local wind and solar farms in the Hunter/Central Coast region do not include Newcastle.

(Number of respondents = 210)

Key facts

Renewable energy

- dominant technologies associated with renewable energy were solar 77% and wind 67%
- 93% supported using renewables to generate electricity in NSW
- 85% believed NSW should **increase** the use of renewables over the next five years
- most common perceived **advantages** of renewables (unprompted):
  - environmental benefits 79%
  - lower cost 34%
- most common perceived **disadvantages** (unprompted):
  - higher cost 36%
  - concerns about efficiency and reliability 14%
  - no disadvantages 40%
- 65% were prepared to use renewables 'provided I don't have to pay more for my electricity' and 30% were prepared to pay more to support them.

Solar and wind farms in NSW

- solar: 89% supported the use of solar farms in NSW, 80% in their local region, and 76% within 1–2 kilometres of where they lived.
- wind: 79% supported the use of wind farms in NSW, 71% in their local region, and 57% within 1–2 kilometres of where they lived
- among the 39% who **opposed** a wind farm within 1–2 kilometres of where they lived, the unprompted concerns most commonly raised were noise (58%), visual impact (47%), health issues (20%) and location suitability (21%).

Renewable energy – awareness, knowledge and attitudes

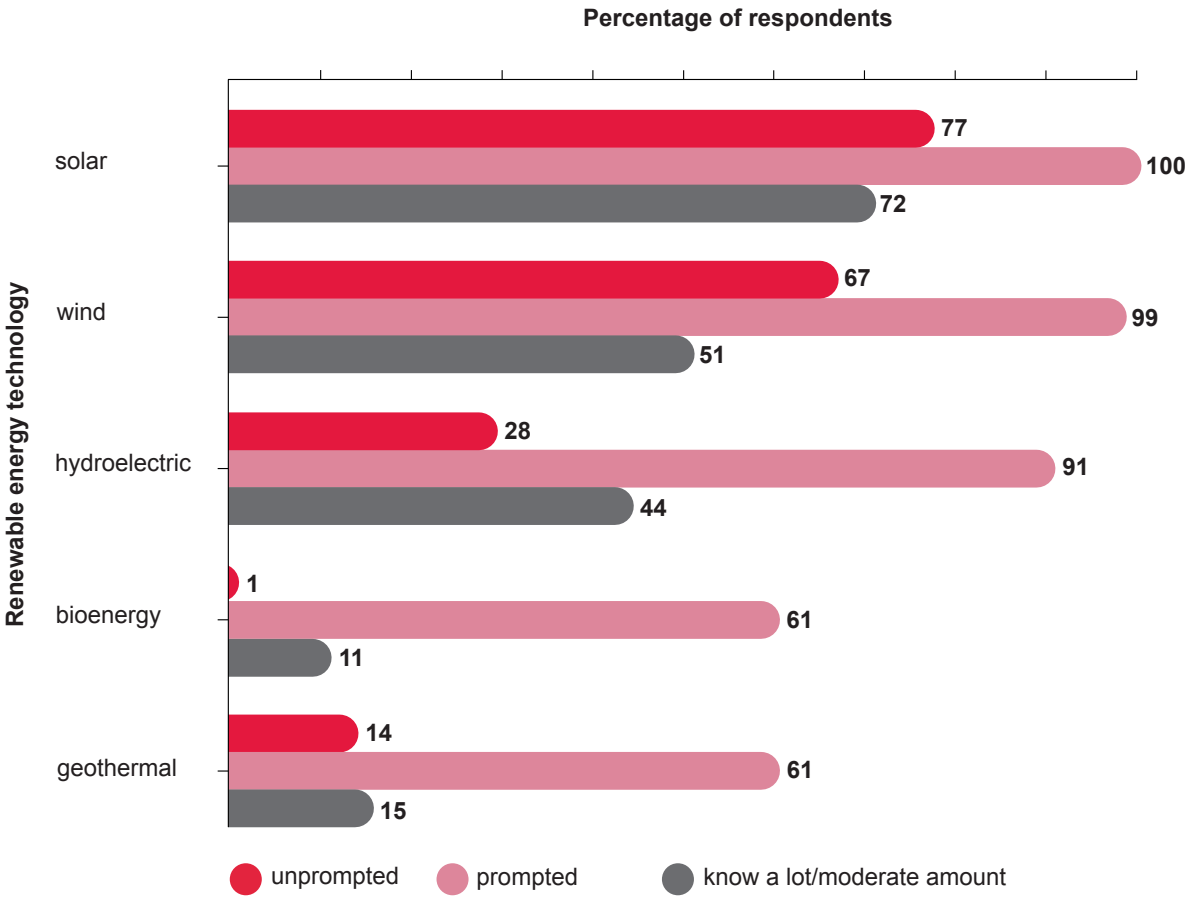


Figure 3.6: **Hunter/Central Coast Region – awareness/self-assessed knowledge of renewable energy technologies by survey respondents.**

'Prompted' refers to answers survey respondents gave after being prompted with suggested answers. 'Unprompted' refers to answers survey respondents voluntarily gave to survey questions. 'Know a lot/ moderate amount' refers to the level of knowledge survey respondents reported they had about each renewable technology.

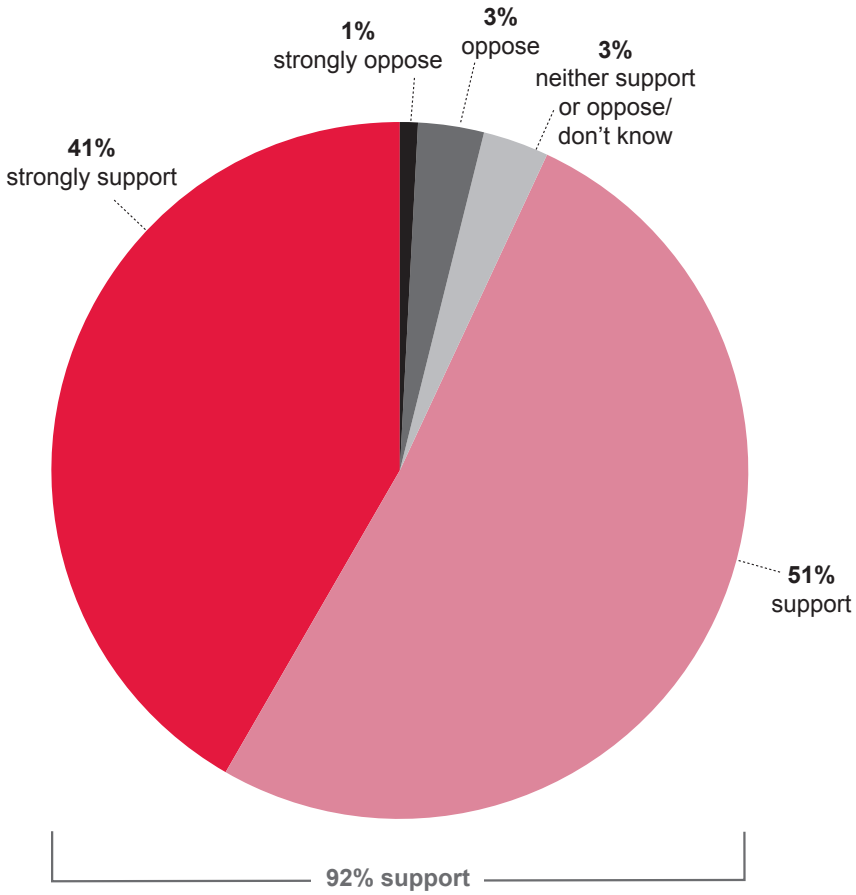


Figure 3.7: Hunter/Central Coast Region – support for using renewable energy technologies to generate electricity in NSW.

Survey respondents were asked to what extent they supported or opposed renewable energy technologies for producing at least some of the electricity in NSW.

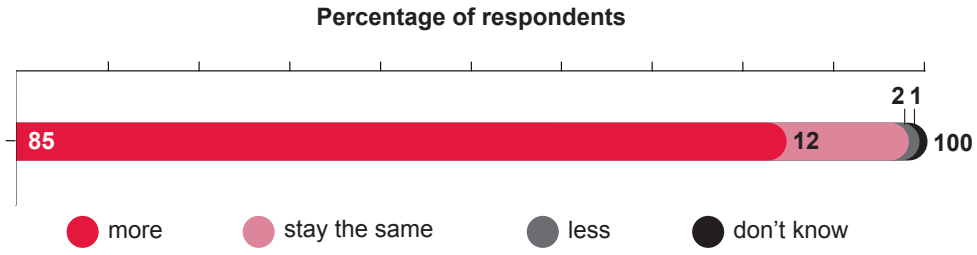


Figure 3.8: Hunter/Central Coast Region – use of renewable energy technologies to produce electricity in NSW over the next 5 years.

Survey respondents were asked whether, over the next five years, they thought NSW should try to produce more of its electricity from renewable energy, less, or it should stay the same as now.

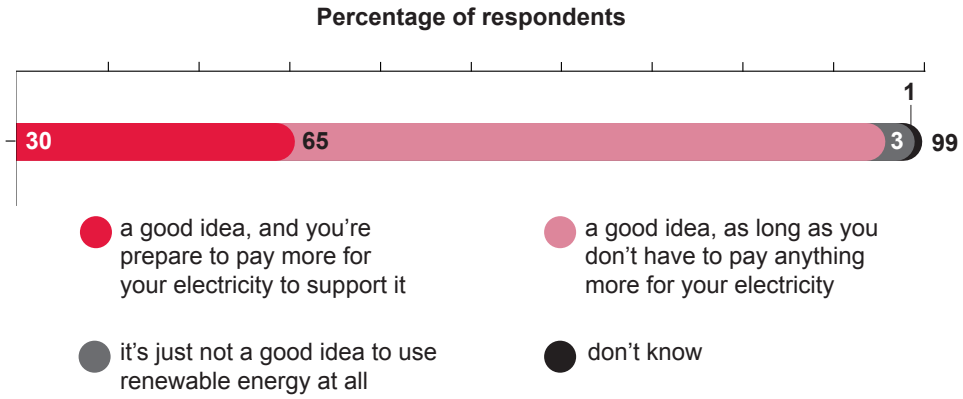
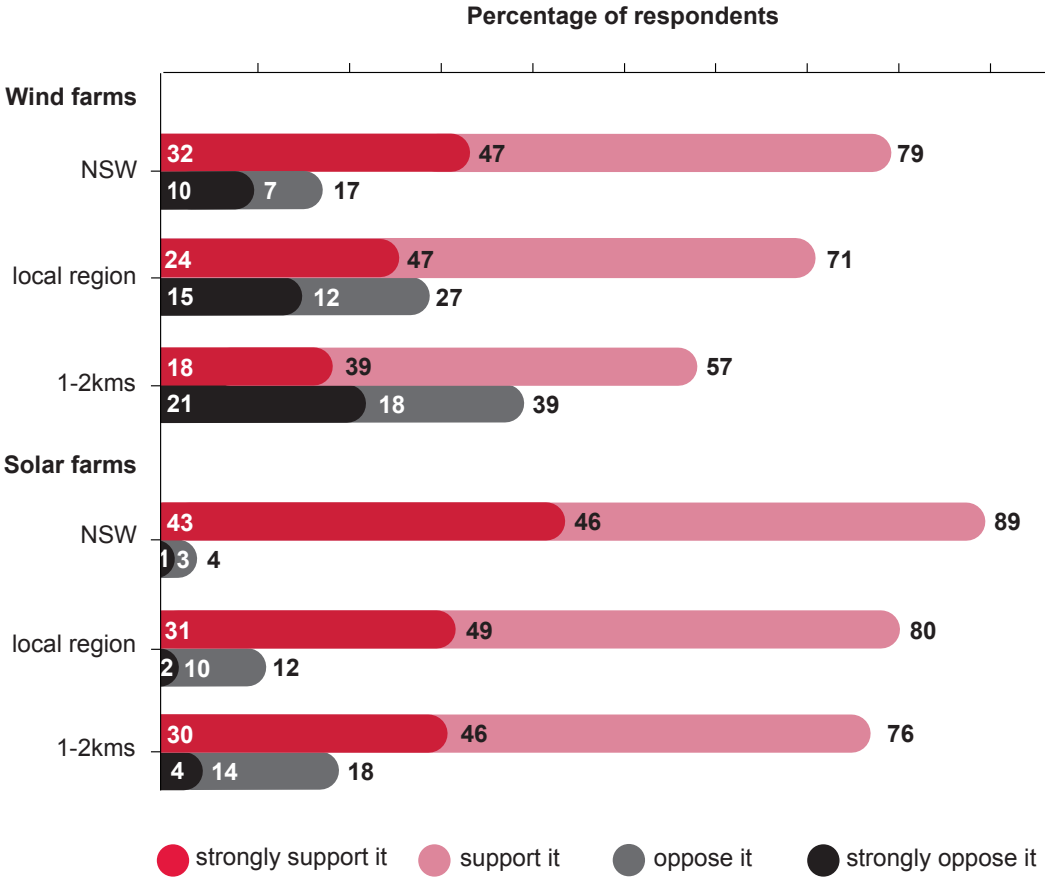


Figure 3.9: Hunter/Central Coast Region – overall views about using renewable energy to produce electricity in NSW and its cost.

Table 3.6: Hunter/Central Coast Region – perceived advantages and disadvantages of using renewable energy technologies (unprompted).

	Advantage	Disadvantage
Number of respondents	250	250
	Numbers below are shown as percentages.	
Environment	79	5
Cost	34	36
Efficiency/reliability	0	14
Employment	7	8
Health	6	2
Build energy sector/skills	4	0
Noise	0	2
Visual impact	0	5
Takes a lot of space	0	4
Lack existing infrastructure	0	0
Other	7	9
None/don't know	12	40

Attitudes to wind or solar farms



*Respondents living in Newcastle were not asked these questions (number of respondents =210)

Figure 3.10: Hunter/Central Coast Region – support for and opposition to building wind or solar farms in three proximities – in NSW, in the local region, and within 1–2 kilometres of where survey respondents lived.*

Table 3.7: Hunter/Central Coast Region – reasons for supporting a wind or solar farm located within 1–2 kilometres of where a survey respondent lived (unprompted).

	Solar farm	Wind farm
Number of respondents	165	122
	Numbers below are shown as percentages.	
Environment	66	76
Cost	32	22
Local economy	8	12
More electricity	7	5
Better than coal	16	10
Visual	7	6
Noise	4	0
Suited for area/Australia	2	0
Good alternative source	5	4
Health	4	3
Way of the future	4	3
Other	16	14
None/don't know	2	3

Table 3.8: Hunter/Central Coast Region – unprompted concerns of respondents who oppose a wind or solar farm within 1–2 kilometres of where survey respondents lived.

	Solar farm	Wind farm
Number of respondents	35[1]	81
	Numbers below are shown as percentages.	
Noise	2	58
Visual	13	47
Health	5	20
Location issues	34	21
Environment	19	13
Efficiency/reliability	2	6
Cost	9	8
Takes a lot of space	25	10
Not enough information	20	0
Property values	0	2
Use of land for agriculture	5	0
Other	1	11
None/don't know	4	5

1. Caution interpreting results because of small sample size

Table 3.9: Hunter/Central Coast Region – perceived impact of wind farms on property value and visual appeal (prompted).

	Positive	Negative	No impact	Don’t know
	Numbers below are shown as percentages.			
Property values	10	51	27	12
Visual appeal of area	13	51	28	8

Note: Number of respondents = 210.

Table 3.10: Hunter/Central Coast Region – level of concern about noise and health issues caused by wind farms (prompted).

	Great/ some concern	Little/ no concern	Don’t know
	Numbers below are shown as percentages.		
Noise	56	36	8
Health	36	60	3

*Respondents living in Newcastle were not asked these questions.
Note: Number of respondents = 210.

3.3 North West Region

This is a bullet point and graphic summary of key survey results about renewable energy technologies for the North West Region of NSW. It is **not** intended to be a report on how people in this region **differ** from people in other regions in relation to awareness, knowledge and attitudes.

(Number of respondents = 250)

Key facts

Renewable energy

- dominant technologies associated with renewable energy were solar 86% and wind 70%
- 94% supported using renewables to generate electricity in NSW
- 81% believed NSW should **increase** the use of renewables over the next five years
- most common perceived **advantages** of renewables (unprompted):
  - environmental benefits 79%
  - lower cost 45%
- most common perceived **disadvantages** (unprompted):
  - higher cost 36%
  - concerns about efficiency and reliability 19%
  - no disadvantages 40%
- 74% were prepared to use renewables 'provided I don't have to pay more for my electricity' and 22% were prepared to pay more to support them.

Solar and wind farms in NSW

- solar: 95% supported the use of solar farms in NSW, 92% in their local region, and 84% within 1–2 kilometres of where they lived
- wind: 86% supported the use of wind farms in NSW, 79% in their local region, and 64% within 1–2 kilometres of where they lived
- among the 34% who **opposed** a wind farm within 1–2 kilometres of where they lived, the unprompted concerns most commonly raised were noise (69%), location suitability (30%), visual impact (28%) and health issues (23%).

Renewable energy – awareness, knowledge and attitudes

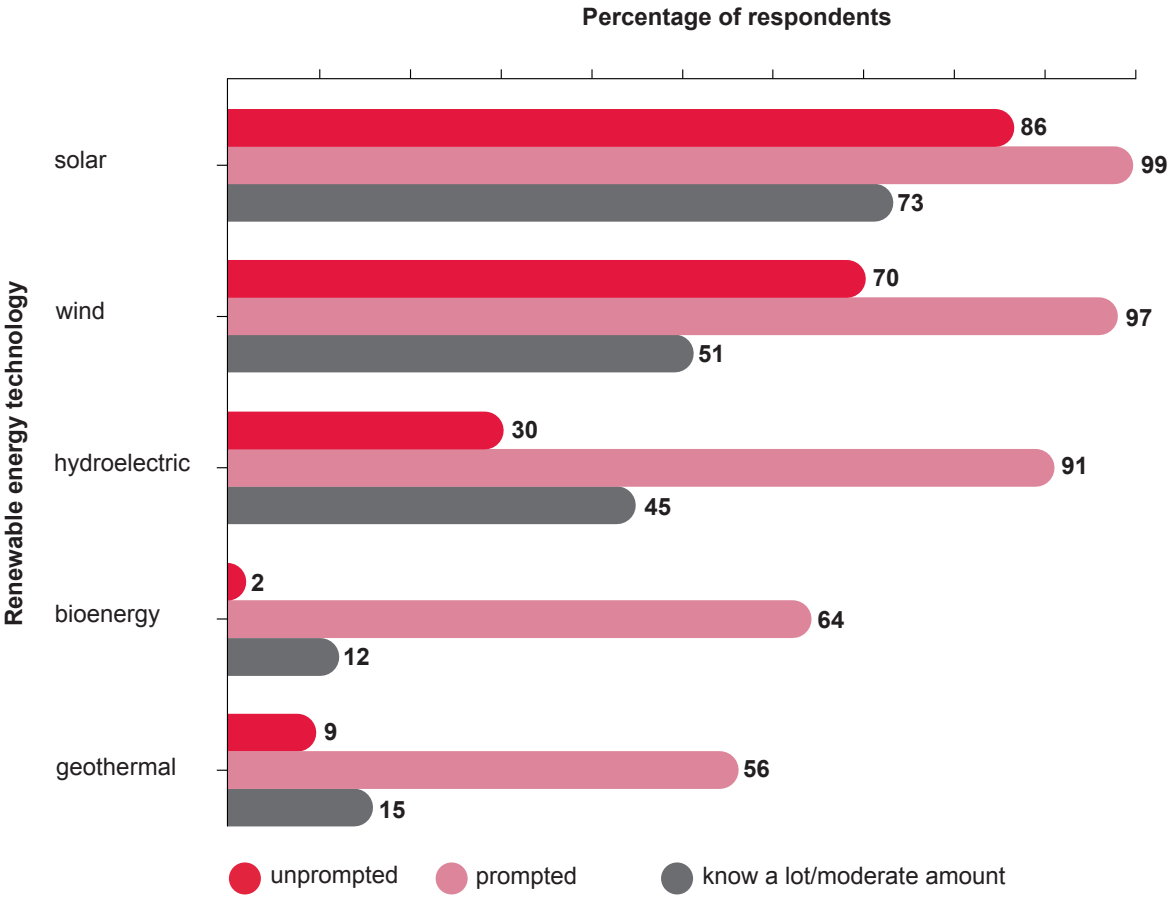


Figure 3.11: **North West Region – awareness/self-assessed knowledge of renewable energy technologies by survey respondents.**

'Prompted' refers to answers survey respondents gave after being prompted with suggested answers. 'Unprompted' refers to answers survey respondents voluntarily gave to survey questions. 'Know a lot/ moderate amount' refers to the level of knowledge survey respondents reported they had about each renewable technology.

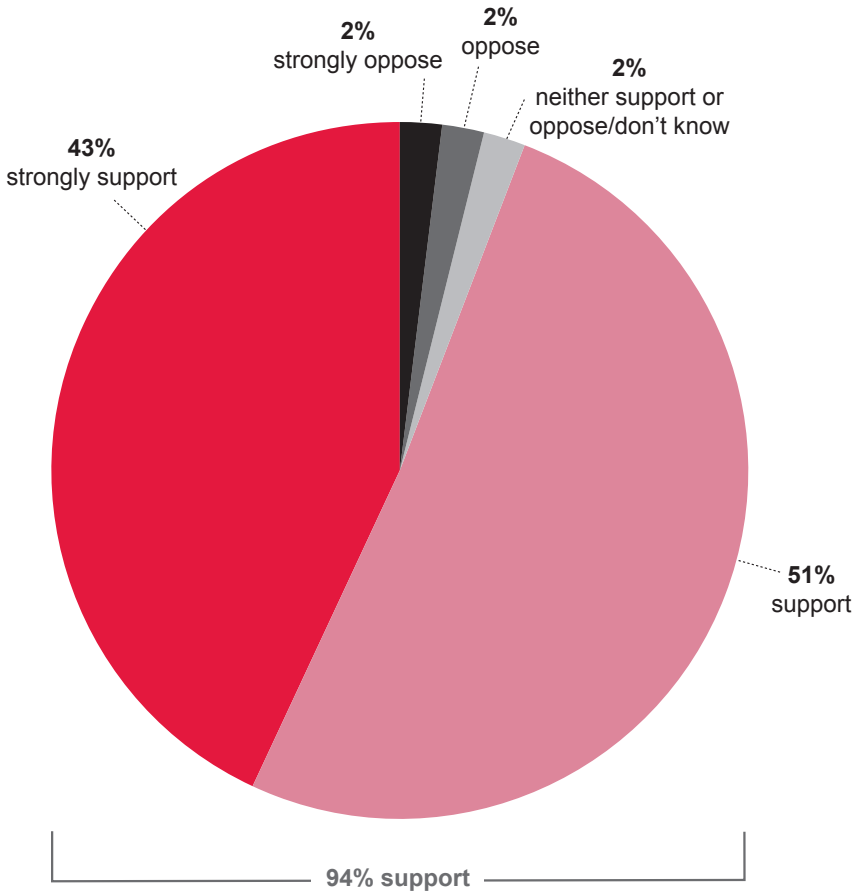


Figure 3.12: **North West Region – support for using renewable energy technologies to generate electricity in NSW.**

Survey respondents were asked to what extent they supported or opposed renewable energy technologies for producing at least some of the electricity in NSW.

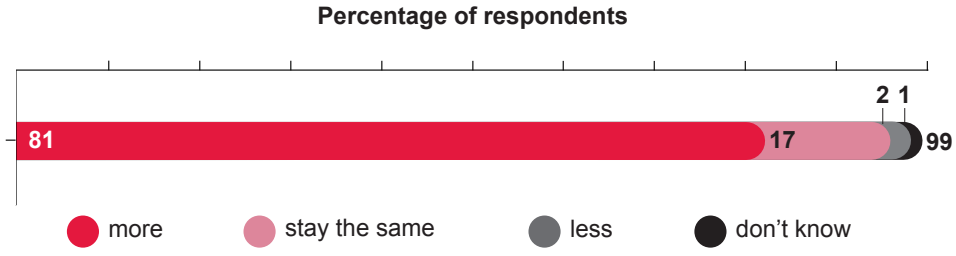


Figure 3.13: **North West Region – use of renewable energy technologies to produce electricity in NSW over the next 5 years.**

Survey respondents were asked whether, over the next five years, they thought NSW should try to produce more of its electricity from renewable energy, less, or it should stay the same as now.

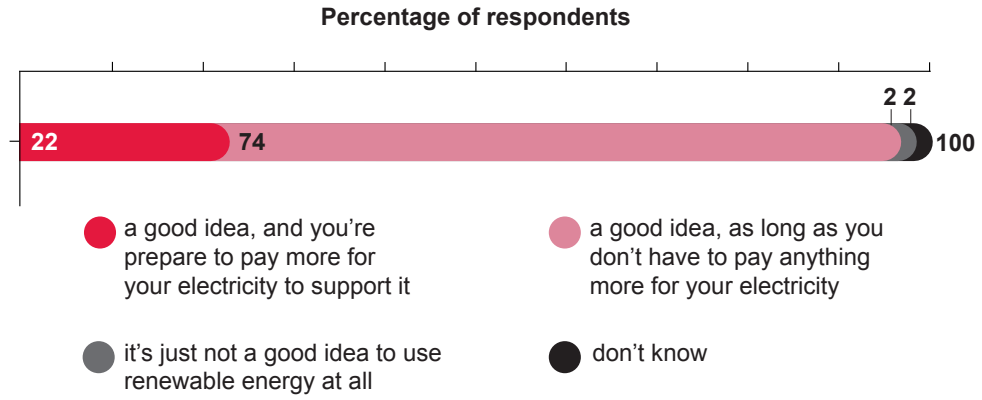


Figure 3.14: **North West Region – overall views about using renewable energy to produce electricity in NSW and its cost.**

Table 3.11: **North West Region – perceived advantages and disadvantages of using renewable energy technologies (unprompted).**

	Advantage	Disadvantage
Number of respondents	250	250
	Numbers below are shown as percentages.	
Environment	79	3
Cost	45	36
Efficiency/reliability	0	19
Employment	6	6
Health	4	3
Build energy sector/skills	2	0
Noise	0	6
Visual impact	0	4
Takes a lot of space	0	4
Lack existing infrastructure	0	2
Other	9	4
None/don't know	11	40

Attitudes to wind or solar farms

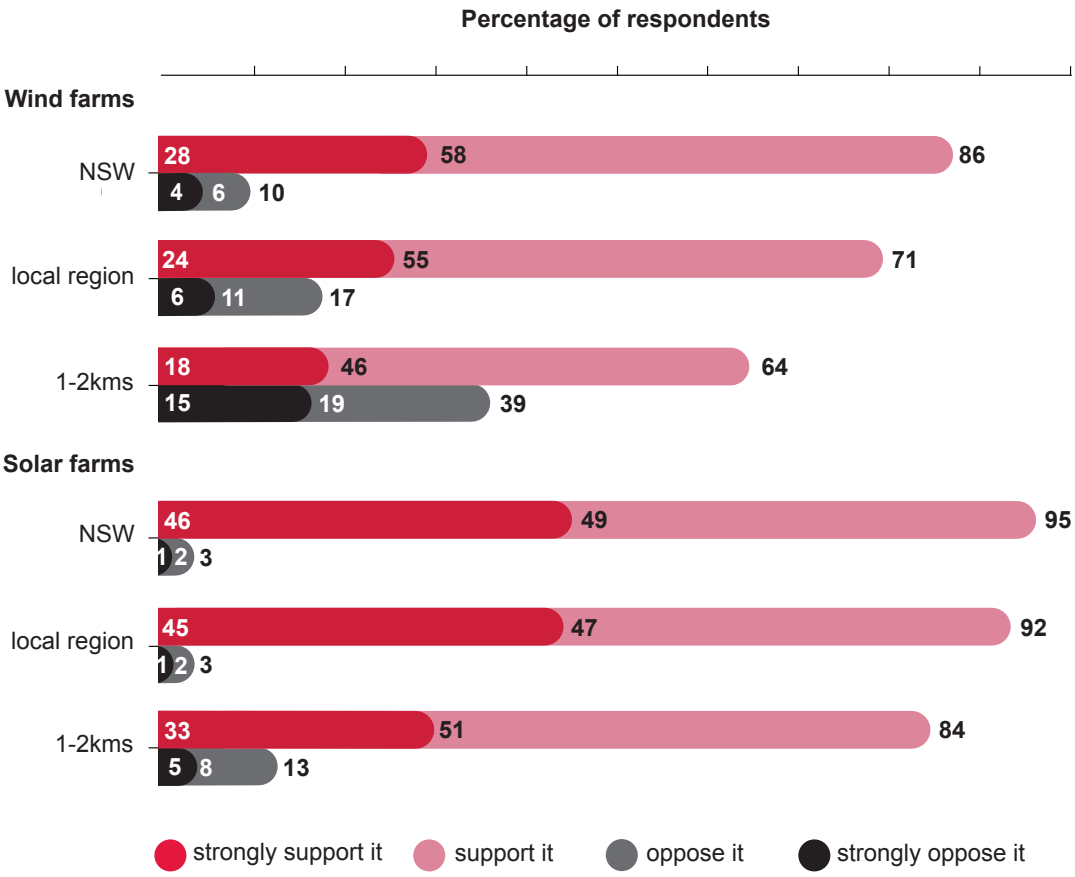


Figure 3.15: **North West Region – support for and opposition to building wind or solar farms in three proximities – in NSW, in the local region, and within 1–2 kilometres of where survey respondents lived.**

Table 3.12: **North West Region – reasons for supporting a wind or solar farm located within 1–2 kilometres of where a survey respondent lived (unprompted).**

	Solar farm	Wind farm
Number of respondents	205	153
	Numbers below are shown as percentages.	
Environment	56	60
Cost	30	29
Local economy	21	16
More electricity	11	15
Better than coal	9	5
Visual	6	9
Noise	5	3
Suited for area/Australia	5	1
Good alternative source	3	4
Health	2	3
Way of the future	4	0
Other	16	12
None/don't know	4	8

Table 3.13: North West Region – concerns about building a wind or solar farm within 1–2 kilometres of where survey respondents lived (unprompted).

	Solar farm	Wind farm
Number of respondents	35[1]	89
	Numbers below are shown as percentages.	
Noise	3	69
Visual	21	28
Health	3	23
Location issues	28	30
Environment	18	17
Efficiency/reliability	4	14
Cost	11	8
Takes a lot of space	20	5
Not enough information	15	0
Property values	3	3
Use of land for agriculture	7	0
Other	17	14
None/don't know	0	0

1. Caution interpreting results because of small sample size

Table 3.14: North West Region – perceived impact of wind farms on property value and visual appeal (prompted).

	Positive	Negative	No impact	Don’t know
	Numbers below are shown as percentages.			
Property values	11	50	28	11
Visual appeal of area	20	43	36	1

Note: Number of respondents = 250.

Table 3.15: North West Region – level of concern about noise and health issues caused by wind farms (prompted).

	Great/ some concern	Little/ no concern	Don’t know
	Numbers below are shown as percentages.		
Noise	54	43	3
Health	43	52	5

Note: Number of respondents = 250.

3.4 South East Region

This is a bullet point and graphic summary of key survey results about renewable energy technologies for the South East Region of NSW. It is **not** intended to be a report on how people in this region **differ** from people in other regions in relation to awareness, knowledge and attitudes.

(Number of respondents = 250)

Key facts

Renewable energy

- dominant technologies associated with renewable energy were solar 86% and wind 82%
- 90% supported using renewables to generate electricity in NSW
- 82% believed NSW should **increase** the use of renewables over the next five years
- most common perceived **advantages** of renewables (unprompted):
  - environmental benefits 83%
  - lower cost 37%
- most common perceived **disadvantages** (unprompted):
  - higher cost 39%
  - concerns about efficiency and reliability 18%
  - no disadvantages 34%
- 70% were prepared to use renewables 'provided I don't have to pay more for my electricity' and 26% were prepared to pay more to support them.

Solar and wind farms in NSW

- solar: 88% supported the use of solar farms in NSW, 85% in their local region, and 74% within 1–2 kilometres of where they lived
- wind: 79% supported the use of wind farms in NSW, 72% in their local region, and 56% within 1–2 kilometres of where they lived
- among the 41% who **opposed** a wind farm within 1–2 kilometres of where they lived, the unprompted concerns most commonly raised were noise (56%), visual impact (39%) and health issues (27%).

Renewable energy – awareness, knowledge and attitudes

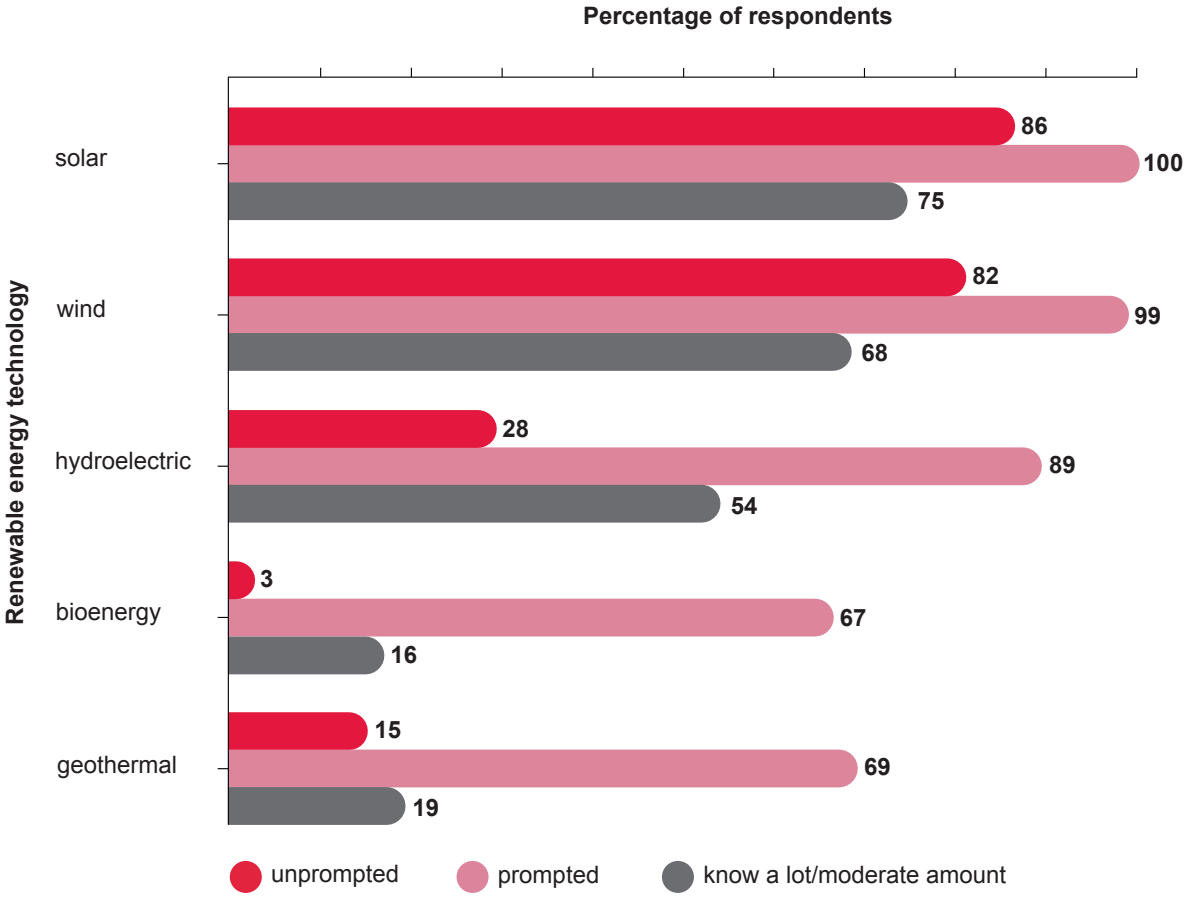


Figure 3.16: South East Region – Awareness/self-assessed knowledge of renewable energy technologies by survey respondents.

'Prompted' refers to answers survey respondents gave after being prompted with suggested answers. 'Unprompted' refers to answers survey respondents voluntarily gave to survey questions. 'Know a lot/ moderate amount' refers to the level of knowledge survey respondents reported they had about each renewable technology.

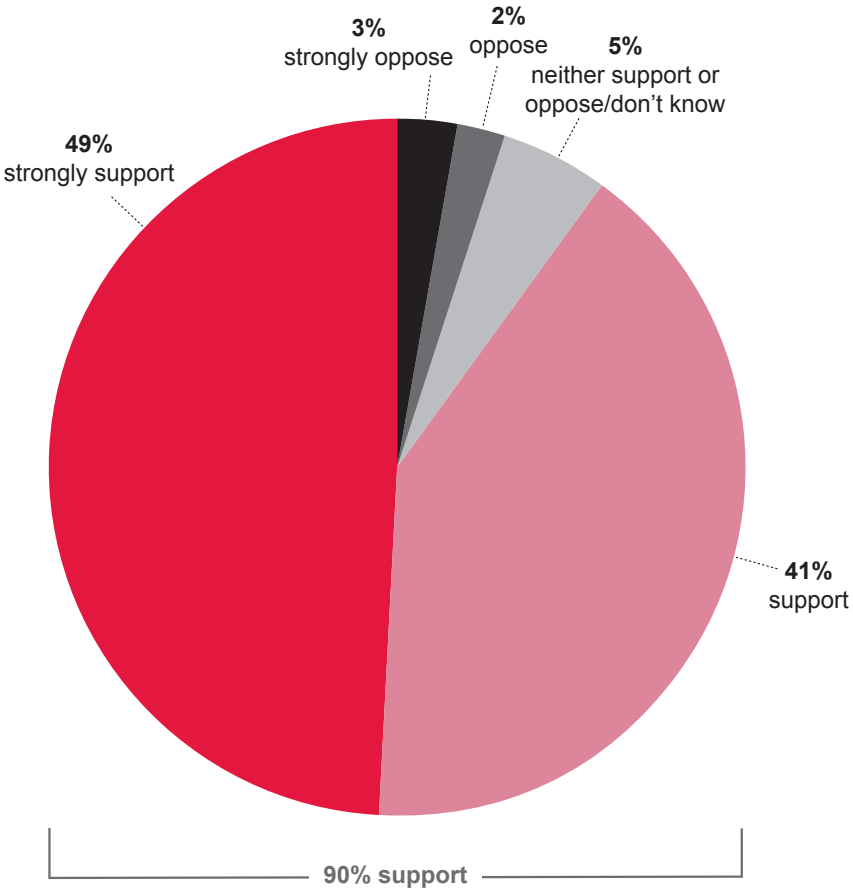


Figure 3.17: **South East Region – support for using renewable energy technologies to generate electricity in NSW.**

Survey respondents were asked to what extent they supported or opposed renewable energy technologies for producing at least some of the electricity in NSW.

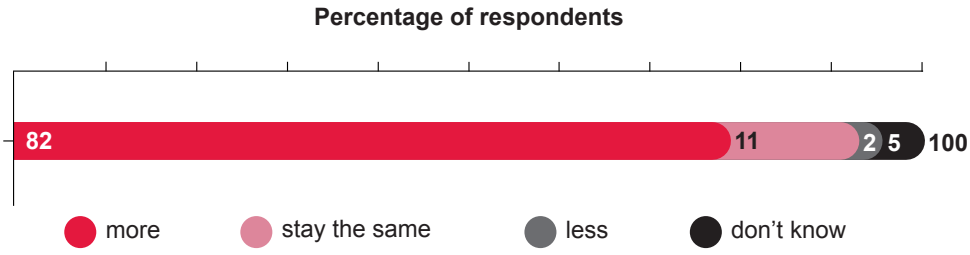


Figure 3.18: **South East Region – use of renewable energy technologies to produce electricity in NSW over the next 5 years.**

Survey respondents were asked whether, over the next five years, they thought NSW should try to produce more of its electricity from renewable energy, less, or it should stay the same as now.

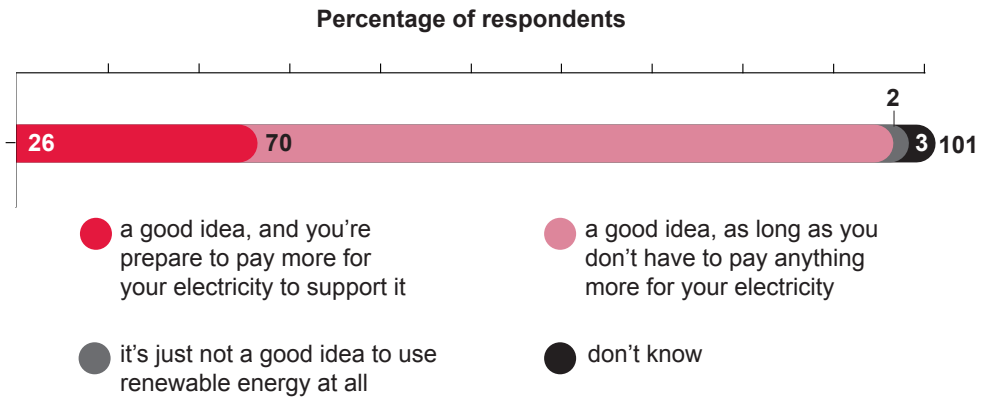


Figure 3.19: **South East Region – overall views about using renewable energy to produce electricity in NSW and its cost.**

Note. Numbers may not sum to 100 due to rounding.

Table 3.16: **South East Region – perceived advantages and disadvantages of using renewable energy technologies (unprompted).**

	Advantage	Disadvantage
Number of respondents	250	250
	Numbers below are shown as percentages.	
Environment	83	5
Cost	37	39
Efficiency/reliability	0	18
Employment	9	3
Health	5	3
Build energy sector/skills	5	0
Noise	0	4
Visual impact	0	8
Takes a lot of space	0	2
Lack existing infrastructure	0	2
Other	6	14
None/don't know	12	34

Attitudes to wind or solar farms

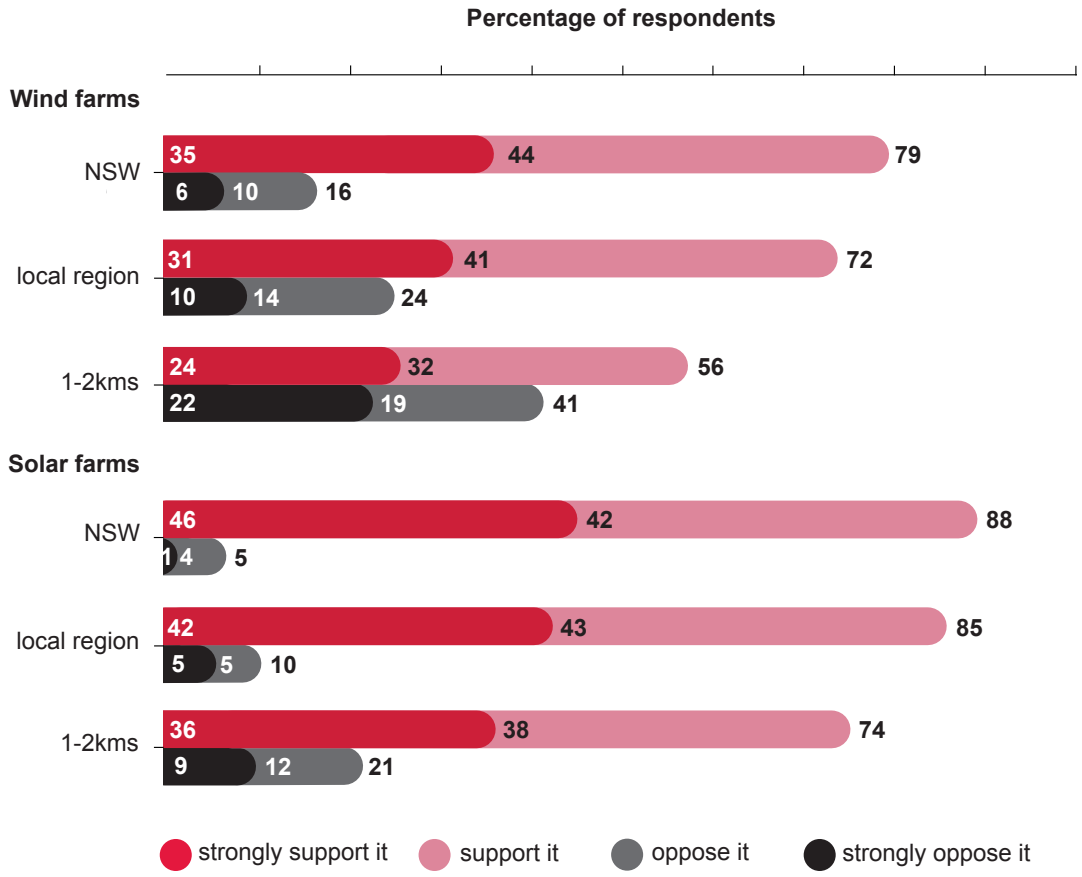


Figure 3.20: **South East Region – support for and opposition to building wind or solar farms in three proximities – in NSW, in the local region, and within 1–2 kilometres of where survey respondents lived.**

Table 3.17: **South East Region – reasons for supporting a wind or solar farm located within 1–2 kilometres of where a survey respondent lived (unprompted).**

	Solar farm	Wind farm
Number of respondents	196	145
	Numbers below are shown as percentages.	
Environment	63	66
Cost	23	20
Local economy	18	16
More electricity	7	5
Better than coal	6	2
Visual	9	12
Noise	6	4
Suited for area/Australia	6	0
Good alternative source	2	5
Health	4	1
Way of the future	4	4
Other	13	7
None / don't know	3	3

Table 3.18: South East Region – concerns about building a wind or solar farm within 1–2 kilometres of where survey respondents lived (unprompted).

	Solar farm	Wind farm
Number of respondents	42[1]	98
	Numbers below are shown as percentages.	
Noise	3	56
Visual	36	39
Health	10	27
Location issues	28	19
Environment	8	11
Efficiency/ reliability	8	7
Cost	7	10
Takes a lot of space	4	5
Not enough information	3	0
Property values	13	12
Use of land for agriculture	11	0
Other	21	13
None / don't know	4	4

1. Caution interpreting results because of small sample size

Table 3.19: South East Region – perceived impact of wind farms on property value and visual appeal (prompted).

	Positive	Negative	No impact	Don’t know
	Numbers below are shown as percentages.			
Property values	5	66	21	8
Visual appeal of area	12	56	29	2

Note: Number of respondents = 250.

Table 3.20: South East Region – level of concern about noise and health issues caused by wind farms (prompted).

	Great/ some concern	Little/ no concern	Don’t know
	Numbers below are shown as percentages.		
Noise	60	38	2
Health	49	48	3

Note: Number of respondents = 250.

3.5 South West Region

This is a bullet point and graphic summary of key survey results about renewable energy technologies for the South West Region of NSW. It is **not** intended to be a report on how people in this region **differ** from people in other regions in relation to awareness, knowledge and attitudes.

(Number of respondents = 250)

Key facts

Renewable energy

- dominant technologies associated with renewable energy were solar 79% and wind 61%
- 91% supported using renewables to generate electricity in NSW
- 79% believed NSW should **increase** the use of renewables over the next five years
- most common perceived **advantages** of renewables (unprompted):
  - environmental benefits 73%
  - lower cost 39%
- most common perceived **disadvantages** (unprompted):
  - higher cost 28%
  - concerns about efficiency and reliability 15%
  - no disadvantages 49%
- 74% were prepared to used renewables 'provided I don't have to pay more for my electricity' and 20% were prepared to pay more to support them.

Solar and wind farms in NSW

- solar: 93% supported the use of solar farms in NSW, 85% in their local region, and 77% within 1–2 kilometres of where they lived
- wind: 77% supported the use of wind farms in NSW, 71% in their local region, and 53% within 1–2 kilometres of where they lived
- among the 41% who **opposed** a wind farm within 1–2 kilometres of where they lived, the unprompted concerns most commonly raised were noise (66%), visual impact (35%), health issues and location suitability (20% each).

Renewable energy – awareness, knowledge and attitudes

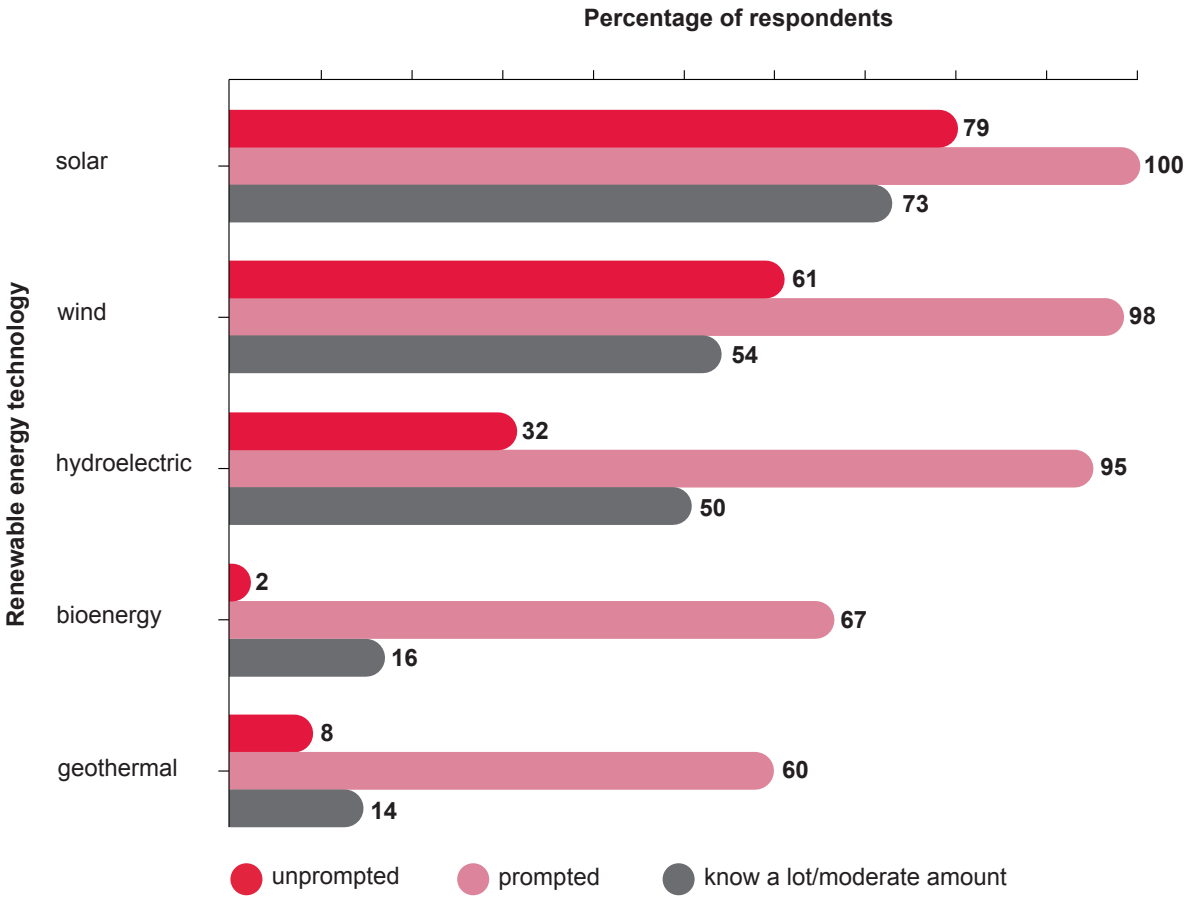


Figure 3.21: **South West Region – awareness/self-assessed knowledge of renewable energy technologies by survey respondents.**

'Prompted' refers to answers survey respondents gave after being prompted with suggested answers. 'Unprompted' refers to answers survey respondents voluntarily gave to survey questions. 'Know a lot/ moderate amount' refers to the level of knowledge survey respondents reported they had about each renewable technology.

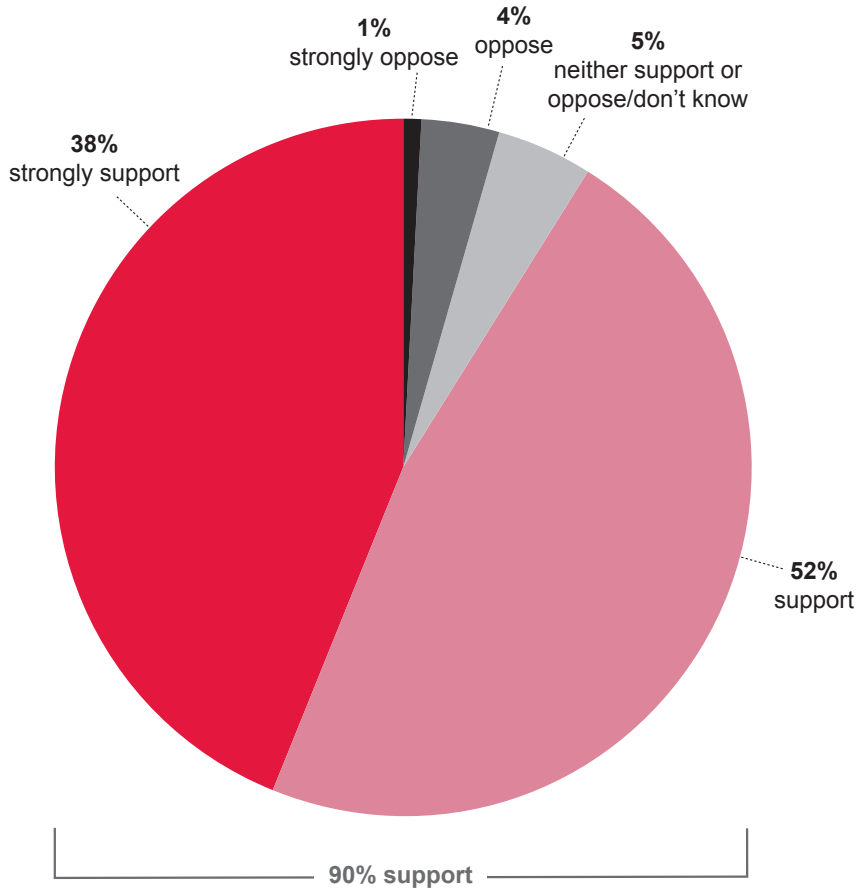


Figure 3.22: **South West Region – support for using renewable energy technologies to generate electricity in NSW.**

Survey respondents were asked to what extent they supported or opposed renewable energy technologies for producing at least some of the electricity in NSW.

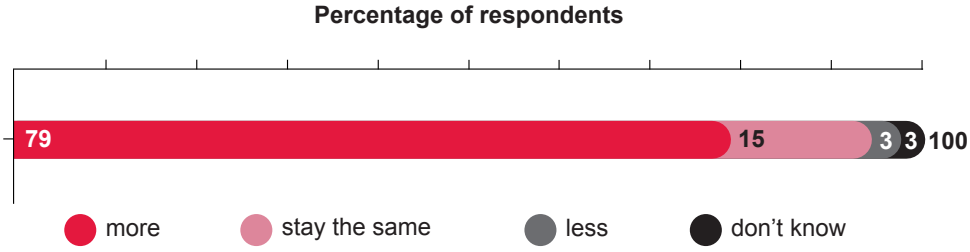


Figure 3.23: **South West Region – use of renewable energy technologies to produce electricity in NSW over the next 5 years.**

Survey respondents were asked whether, over the next five years, they thought NSW should try to produce more of its electricity from renewable energy, less, or it should stay the same as now.

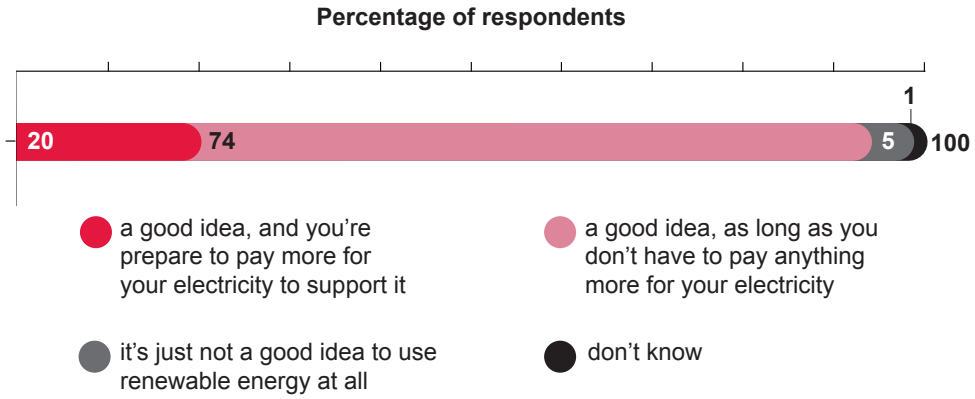


Figure 3.24: **South West Region – overall views about using renewable energy to produce electricity in NSW and its cost.**

Table 3.21: **South West Region – perceived advantages and disadvantages of using renewable energy technologies (unprompted).**

	Advantage	Disadvantage
Number of respondents	250	250
	Numbers below are shown as percentages.	
Environment	73	4
Cost	39	28
Efficiency/reliability	0	15
Employment	6	6
Health	2	2
Build energy sector/skills	3	0
Noise	0	3
Visual impact	0	3
Takes a lot of space	0	2
Lack existing infrastructure	0	2
Other	11	8
None/don't know	13	49

Attitudes to wind or solar farms

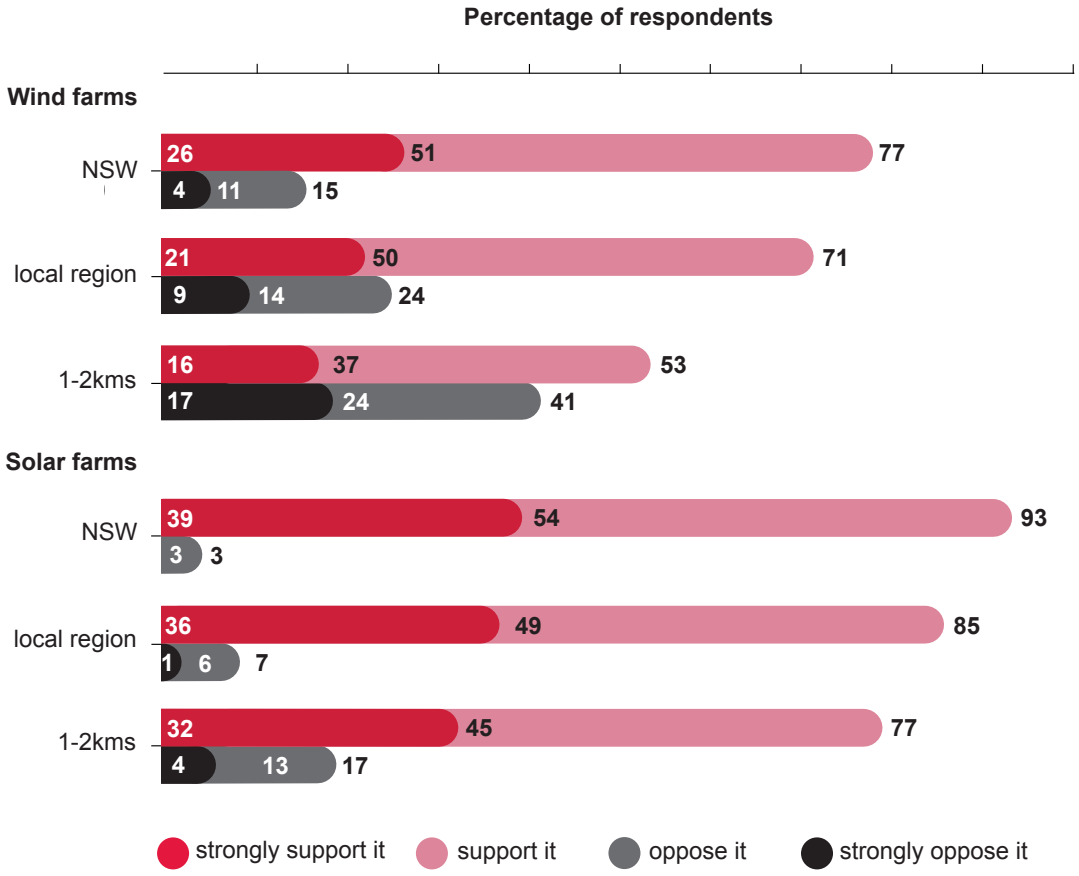


Figure 3.25: **Support for and opposition to building wind or solar farms in three proximities – in NSW, in the local region, and within 1–2 kilometres of where survey respondents lived.**

Table 3.22: **South West Region – reasons for supporting a wind or solar farm located within 1–2 kilometres of where a survey respondent lived (unprompted).**

	Solar farm	Wind farm
Number of respondents	195	132
	Numbers below are shown as percentages.	
Environment	56	62
Cost	30	28
Local economy	16	19
More electricity	9	10
Better than coal	5	3
Visual	7	6
Noise	6	1
Suited for area/Australia	11	0
Good alternative source	2	7
Health	1	2
Way of the future	3	5
Other	9	16
None/don't know	4	6

Table 3.23: South West Region – concerns about building a wind and solar farm within 1–2 kilometres of where survey respondents lived (unprompted).

	Solar farm	Wind farm
Number of respondents	41[1]	102
	Numbers below are shown as percentages.	
Noise	3	66
Visual	17	35
Health	6	20
Location issues	29	20
Environment	13	13
Efficiency/reliability	4	10
Cost	6	8
Takes a lot of space	16	1
Not enough information	7	0
Property values	4	4
Use of land for agriculture	17	0
Other	14	7
None/don't know	4	3

1. Caution interpreting results because of small sample size

Table 3.24: South West Region – perceived impact of wind farms on property value and visual appeal (prompted).

	Positive	Negative	No impact	Don’t know
	Numbers below are shown as percentages.			
Property values	9	58	21	12
Visual appeal of area	16	50	30	3

Note: Number of respondents = 250.

Table 3.25: South West Region – level of concern about noise and health issues caused by wind farms (prompted).

	Great/ some concern	Little/ no concern	Don’t know
	Numbers below are shown as percentages.		
Noise	64	31	5
Health	48	47	5

Note: Number of respondents = 250.

3.6 Illawarra Region

This is a bullet point and graphic summary of key survey results about renewable energy technologies for the Illawarra Region of NSW. It is **not** intended to be a report on how people in this region **differ** from people in other regions in relation to awareness, knowledge and attitudes.

Note: This summary does not contain information about attitudes to local wind and solar farms because these issues were not explored in this region.

(Number of respondents = 250)

Key facts

Renewable energy

- dominant technologies associated with 'renewable energy' were solar 84% and wind 63%
- 91% supported using renewables to generate electricity in NSW
- 89% believed NSW should **increase** the use of renewables over the next five years
- most common perceived **advantages** of renewables (unprompted):
  - environmental benefits 83%
  - lower cost 44%
- most common perceived **disadvantages** (unprompted):
  - higher cost 34%
  - concerns about efficiency and reliability 14%
  - no disadvantages 43%
- 69% were prepared to use renewables 'provided I don't have to pay more for my electricity' and 29% were prepared to pay more to support them.

Solar and wind farms in NSW

- solar: 95% supported and 42% **strongly** supported the use of solar farms in NSW
- wind: 87% supported and 38% **strongly** supported the use of wind farms in NSW.

Renewable energy – awareness, knowledge and attitudes

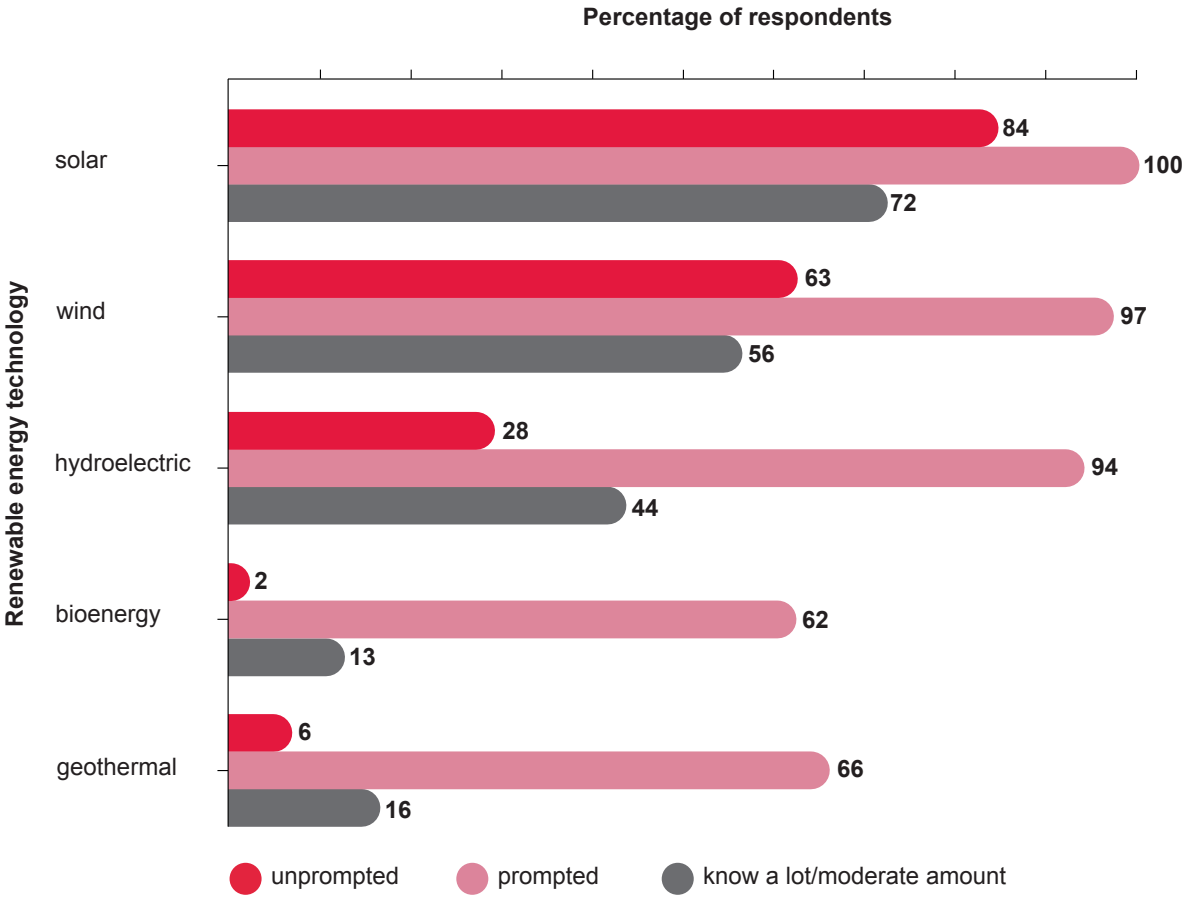


Figure 3.26: **Illawarra Region – awareness/self-assessed knowledge of renewable energy technologies by survey respondents.**

'Prompted' refers to answers survey respondents gave after being prompted with suggested answers. 'Unprompted' refers to answers survey respondents voluntarily gave to survey questions. 'Know a lot/ moderate amount' refers to the level of knowledge survey respondents reported they had about each renewable technology.

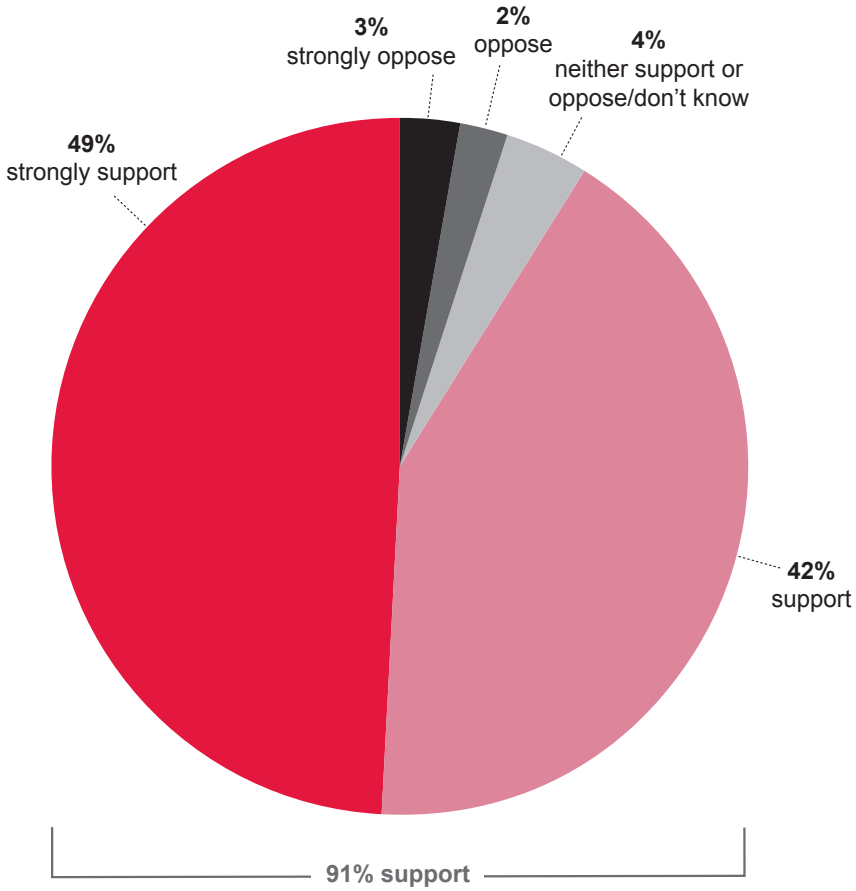


Figure 3.27: **Illawarra Region – support for using renewable energy technologies to generate electricity in NSW.**

Survey respondents were asked to what extent they supported or opposed renewable energy technologies for producing at least some of the electricity in NSW.

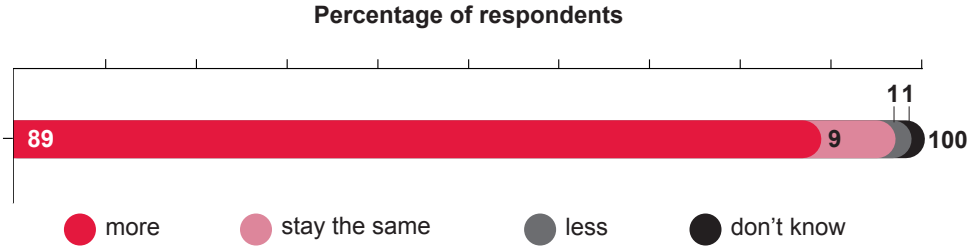


Figure 3.28: **Illawarra Region – use of renewable energy technologies to produce electricity in NSW over the next 5 years.**

Survey respondents were asked whether, over the next five years, they thought NSW should try to produce more of its electricity from renewable energy, less, or it should stay the same as now.

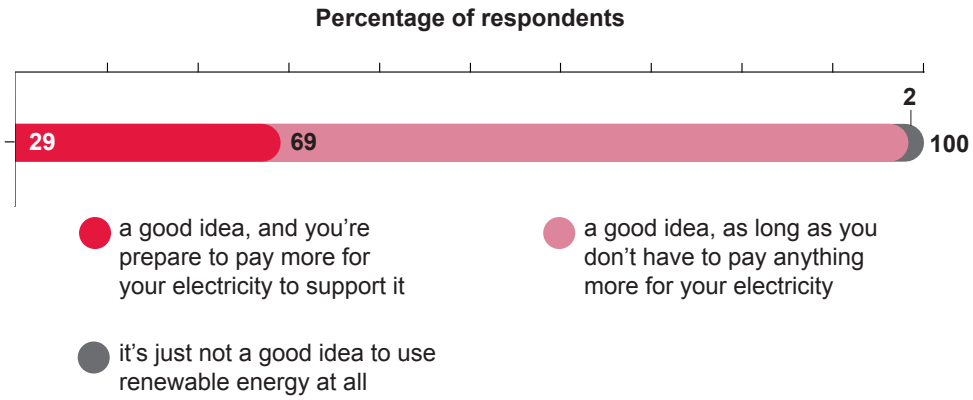


Figure 3.29: **Illawarra Region – overall views about using renewable energy to produce electricity in NSW and its cost.**

Table 3.26: **Illawarra Region – perceived advantages and disadvantages of using renewable energy technologies (unprompted).**

	Advantage	Disadvantage
Number of respondents	250	250
	Numbers below are shown as percentages.	
Environment	83	5
Cost	44	34
Efficiency/reliability	0	14
Employment	4	7
Health	3	1
Build energy sector/skills	3	0
Noise	0	3
Visual impact	0	2
Takes a lot of space	0	1
Lack existing infrastructure	0	0
Other	9	10
None/don't know	8	43

Community attitudes to wind and solar farms

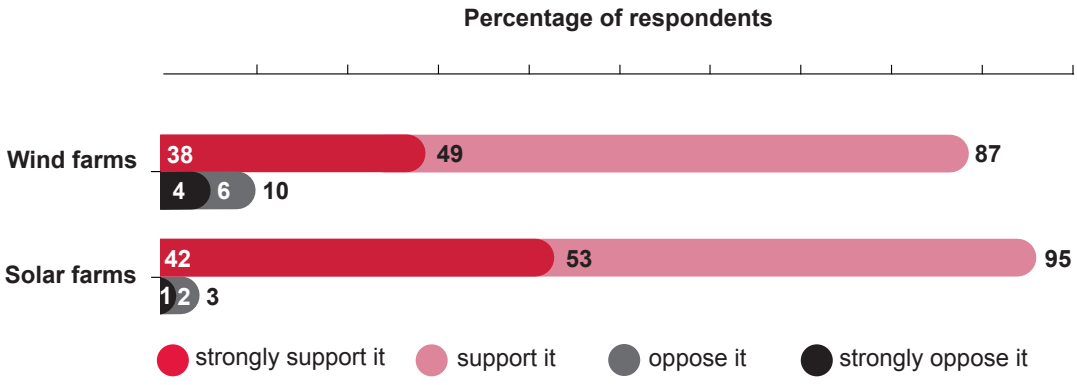


Figure 3.30: **Illawarra Region – support for and opposition to building wind or solar farms in NSW.**

3.7 Greater Sydney Region

This is a bullet point and graphic summary of key survey results about renewable energy technologies for the Greater Sydney Region of NSW. It is **not** intended to be a report on how people in this region **differ** from people in other regions in relation to awareness, knowledge and attitudes.

Note: This summary does not contain information about attitudes to local wind and solar farms because these issues were not explored in this region.

(Number of respondents = 500)

Key facts

Renewable energy

- dominant technologies associated with renewable energy were solar 71% and wind 60%
- 91% supported using renewables to generate electricity in NSW
- 83% believed NSW should **increase** the use of renewables over the next five years
- most common perceived **advantages** of renewables (unprompted):
  - environmental benefits 80%
  - lower cost 35%
- most common perceived **disadvantages** (unprompted):
  - higher cost 43%
  - concerns about efficiency and reliability 19%
  - no disadvantages 35%
- 61% were prepared to use renewables 'provided I don't have to pay more for my electricity' and 34% were prepared to pay more to support them.

Solar and wind farms in NSW

- solar: 87% supported and 43% **strongly** supported the use of solar farms in NSW
- wind: 81% supported and 36% **strongly** supported the use of wind farms in NSW.

Renewable energy – awareness, knowledge and attitude

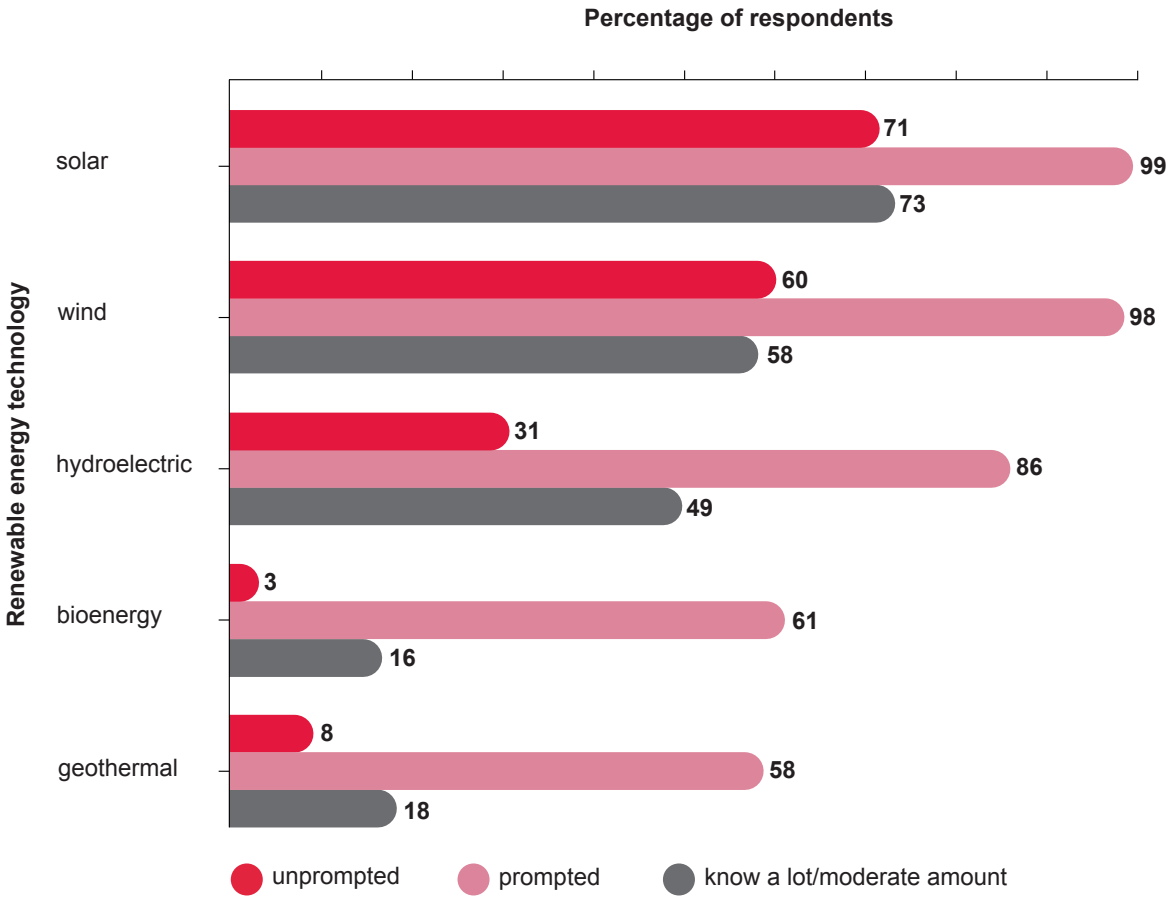


Figure 3.31: **Greater Sydney Region – awareness/self-assessed knowledge of renewable energy technologies by survey respondents.**

'Prompted' refers to answers survey respondents gave after being prompted with suggested answers. 'Unprompted' refers to answers survey respondents voluntarily gave to survey questions. 'Know a lot/ moderate amount' refers to the level of knowledge survey respondents reported they had about each renewable technology.

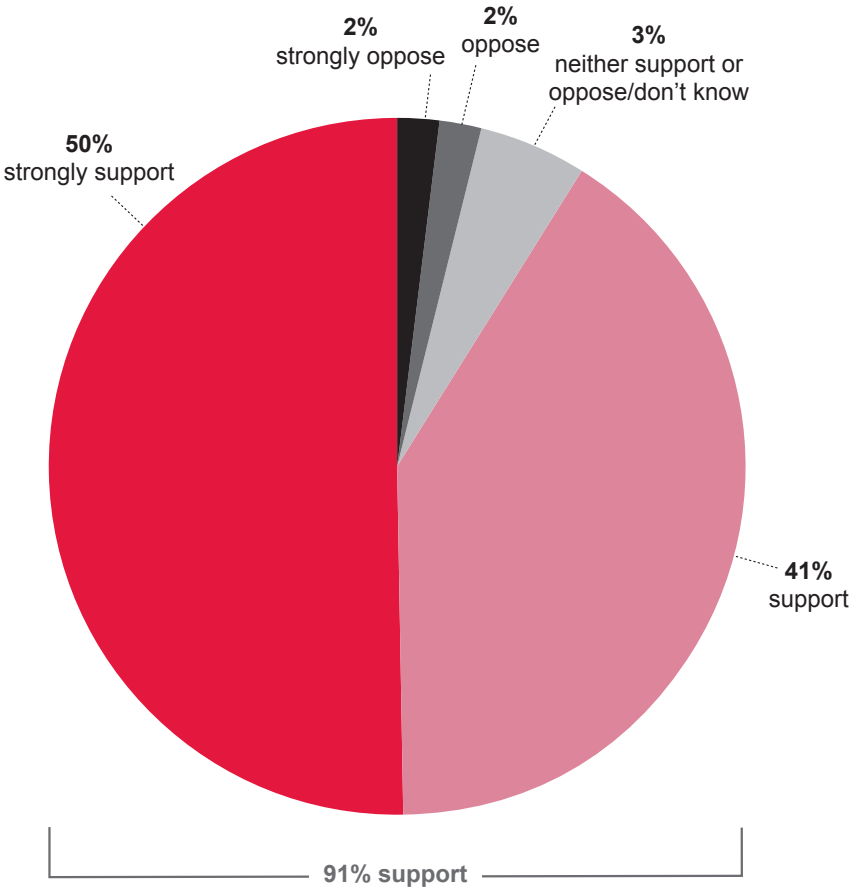


Figure 3.32: **Greater Sydney Region – support for using renewable energy technologies to generate electricity in NSW.**

Survey respondents were asked to what extent they supported or opposed renewable energy technologies for producing at least some of the electricity in NSW.

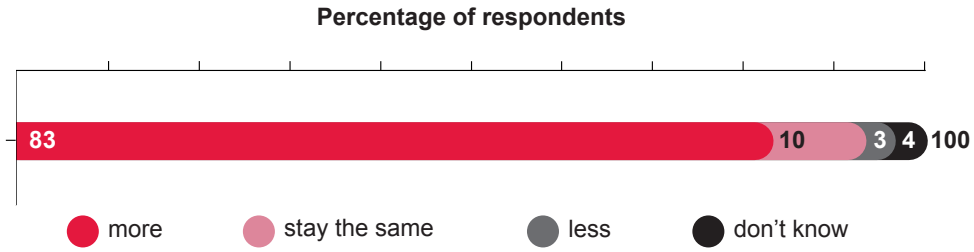


Figure 3.33: **Greater Sydney Region – use of renewable energy technologies to produce electricity in NSW over the next 5 years.**

Survey respondents were asked whether, over the next five years, they thought NSW should try to produce more of its electricity from renewable energy, less, or it should stay the same as now.

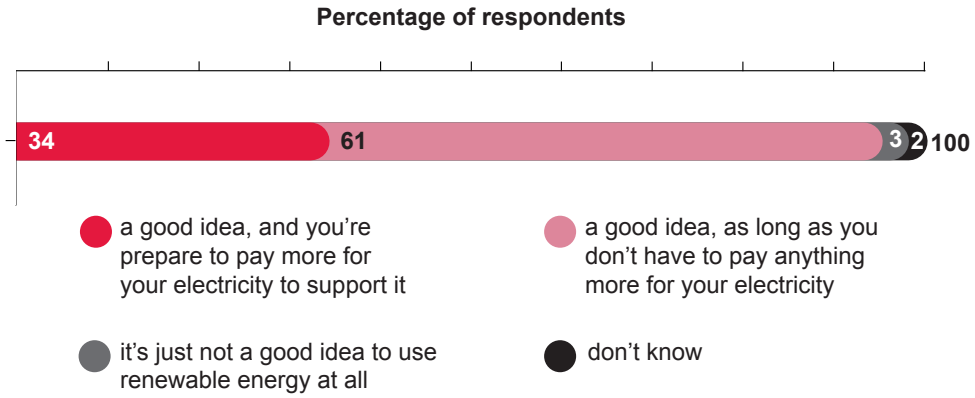


Figure 3.34: **Greater Sydney Region – overall views about using renewable energy to produce electricity in NSW and its cost.**

Table 3.27: **Greater Sydney Region – perceived advantages and disadvantages of using renewable energy technologies (unprompted).**

	Advantage	Disadvantage
Number of respondents	500	500
	Numbers below are shown as percentages.	
Environment	80	6
Cost	35	43
Efficiency/reliability	0	19
Employment	7	4
Health	4	3
Build energy sector/skills	6	0
Noise	0	5
Visual impact	0	2
Takes a lot of space	0	3
Lack existing infrastructure	0	3
Other	8	8
None/don't know	12	35

Community attitudes to wind and solar farms

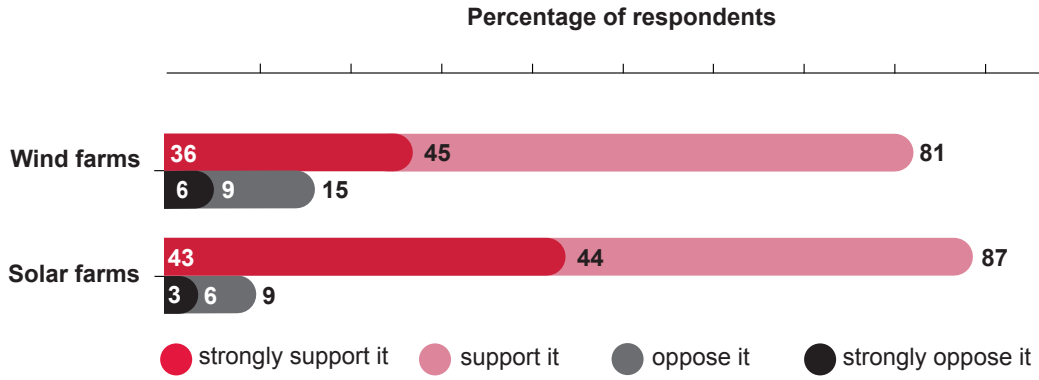


Figure 3.35: **Greater Sydney Region – support for and opposition to building wind or solar farms in NSW.**

Wind Energy Community Session

Thanks for your time tonight. Don't forget that you can make a submission at:
http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

VERY WEAK GULLEN RANGE FIASCO MUST HAVE SPOOKED THE DEPARTMENT. FRAMEWORK IS ALL FOR DEVELOPER. Crookwell

(1) NO SPECIFIC TIME FOR AUTHORITIES TO BEGIN TURBINE ERECTION. 12 years

(2) NO ENFORCEABLE DE COMMISSIONING. TURBINES WILL BE A PERMANENT EYE SORE. Crookwell !

(3) NO POLICEABLE BUSHFIRE PROTECTION FOR NEIGHBOURS

(4) NO ACKNOWLEDGEMENT OF PROVEN NEGATIVE HEALTH EFFECTS ON HUMANS AND ANIMALS.

(5) NO RECOGNITION OF CUMULATIVE MULTIPLE WINDFARM EFFECTS

(6) NO FORMULA FOR DEVELOPERS TO PAY MONEY TO THE COMMUNITY

Name: JOHN CARTER.

Email: [redacted]

Address: [redacted] Crookwell. NSW 2583

Privacy:

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☐ Please tick this box if you do not want your details published in the list of submitters on the department's website

Wind Energy Community Session

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http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

The decide in the community is so great ~~[illegible]~~ why is this being allowed to happen.

Name: [redacted]

Email: [redacted]

Address: [redacted]

Privacy:

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Wind Energy Community Session

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http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

Very well constructed meeting. Please get the planning right and the science will take care of the problems.

Name: BARRY MURPHY

Email: Phone [redacted]

Address: [redacted] BROKEWELL

Privacy:

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Wind Energy Community Session

Thanks for your time tonight. Don't forget that you can make a submission at:
http://www.haveyoursay.nsw.gov.au/consultations/wind-energy-planning-framework

If you have any comments on the proposed Wind Energy Framework please leave them below:

from what i can tell from tonights meeting. The message to take back from tonights meeting is we the community and land owners affected by developments like these.

We want protection from companies abandoning their responsibilities and protection of land for future generations.

Name: Renae Keith

Email: [redacted]

Address: [redacted] Roslyn

Privacy:

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☐ Please tick this box if you do not want your details published in the list of submitters on the department's website

As a Wind farm developer we have great concerns with the New Wind Energy Planning Framework particularly with regards to the visual impact. This framework will discourage development applications for Wind farms in NSW rather than encourage them.

We appreciate that there is difficulty coming up with guidelines to assess visual impact as it is a very subjective and applaud the Department of planning and Environment are trying to come up with a method for doing this. However, the proposed framework does not make it clear that the benefits of an individual turbine (including emissions reduction and local economic benefits) are given enough consideration compared to perceived visual impact.

Whilst we appreciate the need for early and extensive community consultation we are concerned the guidelines ask for developers to announce their intention to build a windfarm when there are minimal details of the project design available as much of the Environmental Impact Study (EIS) would not have been done. Preparation of an EIS takes an extensive amount of time and is very costly. Turbine siting requires extensive work to be done (including wind studies, aerial studies, ecology studies, heritage studies, noise impact studies) as well as visual impact studies so they are placed in the most appropriate place. This is all part of the EIS – and the new framework could force developers to do a lot of this work at a much earlier stage than is economically feasible – or alternatively to walk away from the project.

Another issue is that conducting early community consultation around visual impact could cause uncertainty in the community. This leads to anger in the community and divisiveness and it may also allow windfarm opponents to use this uncertainty to fight the wind farm project.

The draft Framework places unreasonable restrictions on how close turbines can be to residences. Turbines too close to residences and multiple turbines in a large proportion of the residence's field of view – out to 8km away are considered to be of significant visual impact and subject to "further assessment". Wind turbines are a prominent feature of the landscape but in our experience most people (particularly the ones closest to the turbines) do not view them as a negative addition to the landscape. An example of this is the submissions to the NSW Department of Planning and Environment against the proposed Biala windfarm. The majority of submissions complaining about visual impact came from people living 30km or more away who were not impacted at all visually by the project.

The proposed framework imposes unacceptable distance conditions on NSW windfarm developers. In Victoria residences have to be only 1km from a turbine and in Queensland 1.5km. We believe the tools in the proposed NSW framework overstate the visual impact of wind turbines and therefore a reduction in the stipulated distances needs to occur. Under this proposed framework wind farm projects are being subjected to additional restrictions that are not applied to other State Significant developments. The visual amenity of a small number of people would not have a significant influence on other State Significant Developments. As city dwellers we do not have a "right to our view" and it is not fair that rural dwellers are in essence being granted this by the proposed framework.

The positives in this framework are that they shift away from the idea of "buffer zones" between turbines and residences which previously gave a veto over particular turbines to neighbours of windfarms. The noise guidelines are broadly in line with the South Australian guidelines bringing NSW into line with other states. Effective community engagement and also benefit sharing are encouraged.

It is good to see that the Framework is being finalised – it is a step that is long overdue. It is needed to provide some level of certainty for both windfarm developers, investors and regional communities

Annmaree Lavery

Level 15, 222 Exhibition Street T: +61 3 9929 4100
Melbourne VIC 3000 F: +61 3 9929 4101
Australia E: info@cleanenergycouncil.org.au
cleanenergycouncil.org.au
ABN: 84 127 102 443

5 September 2016

Department of Planning and Environment
Attention: Felicity Greenway, Director, Industry and Infrastructure Policy
GPO Box 39
Sydney NSW 2001

By email: Felicity.Greenway@planning.nsw.gov.au
Online: planning.nsw.gov.au/Have-Your-Say

Dear Ms Greenway,

Clean Energy Council submission to NSW Department of Planning and Environment's new Wind Energy Planning Framework

The Clean Energy Council (CEC) welcomes the opportunity to make a submission to the New South Wales Department of Planning and Environment (NSW DPE)'s new Wind Energy Planning Framework (the framework). The CEC supports the development of the framework and the replacement of the draft Wind Farm Planning Guidelines which have remained in place since December 2011. An updated framework which provides clarity and certainty for communities, landowners, developers, operators and regulators is critical.

The wind energy industry can attract significant new investment to NSW, creating jobs and making a material contribution to reducing the state's carbon footprint in the process. As one of the cleanest electricity generation technologies available and with no impact on ground water or air quality, wind energy also protects the health and safety of the community. The role of wind energy in helping to reduce electricity prices and protect consumers from rising fossil fuel prices is becoming more broadly appreciated among the general public. It is easy to understand why more than 80 per cent of people in NSW support the development of wind farms[1].

Australian wind farms pay millions of dollars a year to farming families and other rural landowners. The development of wind energy significantly benefits rural and regional communities, helping them to make ends meet, and remain on the land during tough times. Farmers know it makes a lot of sense to diversify farming activities to include this drought-resistant cash crop.

[1] NSW Department of Environment, Climate Change and Water, *Community attitudes to wind farms and renewable energy in NSW,* page 4

On top of direct payments to farmers, wind farm community funds are spent on projects important to locals like sports club upgrades and conservation projects. The development of wind farms in order to meet the Renewable Energy Target will mean millions more in funding for farmers and local communities.

The Baird Government has an opportunity to position NSW as a leader in a sector that is innovative and can support real employment in rural and regional areas. A clear, transparent and fair wind energy planning framework is an effective way to demonstrate a strong commitment to the industry and will boost investor confidence about the longer term intent of the Baird Government.

There are several very positive aspects to the framework. The CEC supports the standardisation of assessment requirements with other industries, the reduced assessment timeframes, and the decision to adopt the proven South Australian EPA 2009 noise guidelines. The CEC also supports a framework that encourages early, meaningful and ongoing community engagement by developers.

However, the framework's focus on the mitigation of potential visual impacts, including multiple references to deleting turbines, or using smaller turbines, may deter investors and developers, putting the long-term aims of both state and federal governments at risk.

The most economic wind farms are those which achieve maximum emissions reduction at the minimum cost and use the best technology available in the best wind resource available, which tends to make them highly visible. The visual assessment bulletin suggests that protecting the view of a small minority of landholders is more important than a swift and economically efficient switch to renewable energy and the jobs and investment that will accompany that transition.

Assessment Policy

The CEC welcomes the Assessment policy's objectives (page 1) and appreciates the focus on clarity and consistency and the clear and welcome reference to the promotion of community consultation.

While we encourage the sector to consider community outcomes such as benefit sharing, we do not support benefit sharing as 'a one size fits all' approach to community engagement. Rather, we encourage the use of engagement frameworks and methodologies such as the International Association of Public Participation (IAP2) spectrum to deliver tailored community engagement programs.

The strategic context section on page 2 refers both to increasing the use of renewable energy at 'least cost to the energy consumer and with maximum benefits to the State'. It is important to note that this strategy will be achieved by building the best, most efficient wind farms in New South Wales. The best and most efficient wind farms will use the best technology available (often the tallest), and will place turbines in areas with the best wind resource (often on hill ridges). This should be recognised specifically throughout the framework.

The CEC also takes issue with the strategic context's emphasis on the importance of reducing impacts with no recognition of benefits, and the language used. This seems to be a major oversight in such a vital section of the framework. Comments like (paragraph 4) 'The introduction of a wind energy development into the landscape requires careful consideration, including in relation to its impacts on communities', could instead be worded 'impacts and benefits to communities'. There are several cases throughout the Assessment Policy document where language could be updated to ensure readers are aware of both sides of the balancing process this framework sets out to achieve.

The Application of the policy (page 2) includes applications for modification to an existing wind farm approval. This should be reconsidered in the context of minor modifications such as tip height increases. The new framework is a complex and involved process which could result in developers deciding to use older less efficient technology instead of updating their application, and may result in a project no longer being viable. Given that tip height increases have relatively little impact on visual amenity, there should be some measure of degree of change that can be assessed. That way the developer can demonstrate the degree of visual change for variations, and only where there is a significant increase in visual impacts to the residences should the new framework be implemented.

Visual assessment

The CEC recognises the efforts of the NSW Government in trying to find a fair way to balance the needs of neighbouring communities with the transition to renewable energy in the State. The Visual assessment bulletin's objectives (page 1) are in line with the CEC's expectations of best practice wind farm planning. However, throughout the visual assessment bulletin there is emphasis on the need to 'avoid' or 'mitigate' the visual impact of an inherently tall structure with little reference to potential local benefits, and the broader public good that renewable energy can bring.

This issue could be partially addressed by including the strategic preamble from the overarching assessment document into the visual assessment bulletin, referencing the state's renewable energy goals and recognition of the important role wind farms play in reducing emissions and attracting rural jobs and investment. The title of the bulletin should also be changed to 'visual assessment bulletin'.

The 'Background' section on page 2 of the bulletin refers to avoiding impacts, and suggests reducing the size of turbines or relocating turbines, among options for mitigating impacts. All of these suggestions will

a. Hinder any attempt by the State Government to reduce emissions by transitioning the NSW electricity supply mix to renewable sources;
b. Result in fewer, less economic projects, and potentially higher power prices for electricity consumers in NSW; and
c. Reduce the amount of investment and jobs flowing into the local region.

Obviously developers are encouraged to identify and mitigate impacts where possible, but some of the suggested mitigation measures are highly impractical and potentially misguide the reader. All references to the need for impacts to be 'avoided' should be replaced with 'minimised'. The

framework should acknowledge that wind turbines are by nature highly visible, and use language that is consistent with this reality.

Reducing the size of turbines is effectively suggesting that the wind industry use old technology, which is completely out of step with a global push towards larger more efficient machines which deliver cheaper power. Similarly, the suggestion of changing the colour of turbines is inconsistent with a global industry that has practical reasons for painting turbines a matte shade close to white, including temperature control and intentional visibility.

The Visual assessment bulletin's 'Background' section could suggest that developers work to identify and reduce potential impacts where possible, and that mitigation options such as provision of additional vegetation and screening, moving turbines where possible and considering appropriate agreements with neighbours. This also applies to page 15 in the Mitigation and management options section.

The Preliminary Environmental Assessment approach on page 2 says that proponents are required to submit, with the request for SEARS, 'results of community consultation' which the CEC understands refers to a suggested survey of the community about their landscape values (page 4).

It may be more practical at the very early stage of project development for the developer to submit identified landscape features and revisit these assumptions with the community during the Environmental Impact Statement (EIS) phase, which is when there will be a clearer picture of the wind farm including draft layouts. Consulting at this stage may lead to more fruitful discussion and will allow the developer to assist the community in understanding what the wind farm may look like. At that point, the Secretary's Environmental Assessment Requirements could require developers to demonstrate what community input was sourced and how it was considered in the ultimate design. This removes a prescriptive methodology, instead allowing each project to demonstrate that adequate consultation and community input was secured.

The preliminary screening tool on page 6 indicates a distance from a wind turbine within which there are 'potential visual impacts for further consideration'. Although it has been emphasised that this is not an exclusion zone, there remains significant uncertainty among developers, and likely the community, about what expectations the NSW DPE will place on a developer within that zone. This will likely have varied results, which may include neighbours within the zone feeling entitled to unreasonably large financial arrangements. This policy may affect the economic viability of a project, and could also set an unfortunate precedent which could migrate to other infrastructure projects where visual amenity has been identified as a potential impact.

A clear policy statement would be useful, providing the guiding principles and thresholds against which the Planning Assessment Commission (PAC) is to consider recommendations from the Department. Guidelines serve their target audience best where they give a clear description of where the threshold of acceptability lies – in a planning context rather than a political one.

The approach to assessment and mitigation objectives using the Visual Influence Zones requires further refinement as it appears they may not work in practice in some scenarios. As an example a turbine with a height of 160 m will result in further investigation required within approximately 2.2 km under the preliminary screening tool (Fig 1). Following through the assessment steps for a dwelling located within a High Scenic Quality Class using table 5 and table 7 ultimately requires turbines to be avoided between 2.1 and 3.2 km (under table 8). The height of a turbine is not defined in this bulletin, though it is assumed to mean the tip height. This should be clarified in the text.

The assessment and determination of key landscape features valued by the community is overly restrictive. Community input should be limited to areas where there is a level of subjectivity around the local importance of specific features that have a relatively higher scenic value as determined by objective planning and zoning methods. This can then help identify additional photomontages and viewpoints for assessment. If such information is not available, then identification of key landscape features should be undertaken by a suitably qualified landscape professional.

Community input could be obtained on Landscape Character Type, Landscape Character Options and Key Landscape Features only. However objective assessments including zoning are the best approach for Land Use designations, Viewer Sensitivity Level Classification, Visibility Distance Zones, and Visual Influence Zones. The current approach will result in all areas getting highest level of value.

The Viewer Sensitivity Level Classification (table 5, page 21) in particular needs to be objectively defined. Rural Villages and Tourist and Visitor Accommodation should be removed from level 1 and put in level 2. Leaving these in level 1 will effectively require a 3 km buffer from 160 m turbines using the methodology in table 8 on page 26.

In conducting the visual assessment, developers are asked to consider tourism and its associated elevated landscape values. In this case the NSW DPE should consider defining tourist locations as this could unintentionally provide an easy category for opponents to 'game', for example by claiming their house is an Airbnb property.

The Multiple Wind Turbine Tool is a forward-thinking policy and the CEC supports its development. However, the bulletin should carefully consider which projects should be included in the methodology, because while approved projects have statutory approval to be constructed, some may never have an adequate economic case for construction. The undesired side effect then would be for a well-designed and favourable proposal to be ruled out by a nearby economically poor approved project that will never be constructed.

Given that approvals will be ongoing under this new framework, the developer could be required to submit a simple explanation of which projects have been considered and which have not been considered and reasons why.

Measuring cumulative impacts out to 8 km is an unnecessarily large buffer zone. Given the intent of the tool is to prevent where possible a dwelling being 'surrounded', the buffer zone could achieve that outcome at a much reduced distance. The CEC suggests 4 km as defined as the limit of 'Near Middleground'.

On page 13 the reference to 'Landscape scenic integrity' suggests that isolated impacts should be avoided. The CEC understands this refers to wind turbines that may not be part of a larger cluster. This requirement suggests that wind farm design should value a 'cluster' form over a technically and economically efficient layout. The reference should be deleted, allowing developers to justify turbines using the tools already described in this bulletin.

The bulletin needs to more carefully define receiver locations for assessments. It stipulates that views from residences needs to include the surrounding curtilage (land surrounding dwelling, outhouses and areas where domestic or recreational activities take place). This definition of residences is too large and should be tightened up to include only the view from the dwelling itself, and consider any existing screening. The determination of viewpoints on page 25 is too prescriptive. Rather than requiring separate viewpoints for dwellings or areas more than 250 m apart, it would be best to ensure appropriate representative viewpoints are selected, and require that the developer explains how that was determined. This will avoid disputes about the location of viewpoints.

Consideration of screening should definitely not take into account the potential for vegetation to be lost through falling over, bushfires etc. That reference on page 29 should be deleted.

The definition of a dwelling should also be considered and carefully defined, especially following a Victorian Civil and Administrative Tribunal case where this issue was tested at length. The individual orientation of dwellings should also be considered in final assessments of the level of impacts.

Appendix 3: Impact mitigation options revisits in more detail the options which the CEC considers totally impractical and out of step with global practice. The sections on 'Re-sizing' and 'Re-colouring' should be deleted.

An alternative to the entire visual assessment bulletin which the CEC recognises could perhaps be more useful in a future iteration of the framework would be to put in place strategic state plans for wind farm regions. As per South Australia, NSW could identify regions with certain characteristics favourable for wind farm development (like wind resource, transmission access, and relatively low population density) and explicitly write wind farm development into their regional plans and character. This would simplify the need for every single development to go through the lengthy process of defining landscape character and justifying the visual aspects of the development.

Noise bulletin

The CEC supports the adoption of the South Australian EPA 2009 noise standard in NSW. Using a proven and effective guideline is a positive step for NSW and demonstrates the evolution of wind farm planning in the state since the draft guidelines from 2011.

The CEC also supports the Noise and health guidance on page 9. The clear alignment of the advice with the best available evidence is again an encouraging step forward from the 2011 draft guidelines.

The point in the Secretary's Environmental Assessment Guidelines referring to health should be deleted or otherwise brought into line with this guidance.

While the technical intent of the bulletin will facilitate the fair and transparent development of wind farms, some of the language in the bulletin is unreasonably negative and makes unsubstantiated claims. For example, the first paragraph of the 'Background' section on page 2 states that 'Noise generated by wind energy development is therefore a key concern for people living in these areas'.

Given that a survey run by the NSW Government on community attitudes to wind farms[2] found that 85% of residents in NSW support the development of wind farms, with just 17% of supporters citing noise concerns and only 40% of opponents, this statement appears to incorrectly assign an opinion to the majority of NSW residents. Perhaps 'Noise generated by wind energy development is a concern for *some* people living in these areas' would be a more accurate representation of the facts.

Also in the 'Background' section the final dot point should be deleted. Based on the statistics in the report referenced above, this claim that the 'characteristics of wind energy development noise are generally perceived as being different to other noise sources' is unsubstantiated and requires evidence if it is to be included. The same point applies in the paragraph on Tonality on page 5 of the bulletin. How people perceive noise is subjective and the bulletin suggests that people generally find certain noises annoying without any references or evidence.

For the bulletin to maintain credibility and to eliminate suggestions of bias, a more objective document which cites evidence for any claims about noise perception in the community should be adopted.

The bulletin should also be clear in conditions of approval that the modelled noise levels at dwellings will not be adopted to be approved limits, but rather used to demonstrate prior to construction that EPA levels are satisfied by the final layout and turbine selection. The section on determination and post approval regulation suggests ensuring operating in compliance with 'approved noise limits'. This should rather state compliance with the EPA 2009 limits.

Finally, while the industry is reasonably confident that the guidance on low frequency noise will not present a problem, the wording should be considered from the point of view of a concerned member of the community. Rather than writing 'If excessive low frequency noise is found….' Perhaps the bulletin could say 'In the unlikely event that excessive low frequency noise is found….'.

Secretary's Environmental Assessment Requirements (SEARs)

The SEARs is a good opportunity for the NSW DPE to request a strategic justification of a wind farm, including emissions reduction, and likely employment and investment outcomes. This will provide valuable information to the DPE and the community when balancing impacts.

[2] NSW Department of Environment, Climate Change and Water, *Community attitudes to wind farms and renewable energy in NSW,* page 4

The SEARs on page 2 under 'Landscape and visual' request a comprehensive assessment of all components including transmission lines. This might prove to be impractical in terms of timing as transmission lines are often the responsibility of a third party. The SEARs should be edited to require a comprehensive assessment of all components that are the responsibility of the developer.

Under Biodiversity, the CEC recommends the removal of the reference to barotrauma as contemporary international evidence suggests this is not a significant source of impact to avifauna.

As mentioned above, the point about health should be removed or edited to support the guidance in the noise bulletin.

Review of the impact of wind farms on property values

While the NSW DPE has confirmed that property values are not a valid planning concern, the CEC understands that this review was written in response to some community concerns. It is interesting to note that whilst the Valuer General finds for the second time that wind farm development does not impact neighbouring property prices, the Valuer General has omitted to mention capital value uplift for potential wind farm host landholders, and a corresponding rate rise as well as value-added dwelling with annuities attached.

Developers in NSW have seen significant value increases and therefore rate increases passed through to the developer based on agreements alone and often prior to commencement of construction.

The CEC recommends that this situation be reviewed immediately, and any capital value uplift and rate increases be applied only after construction commences, and preferably once the asset is operational to ensure that such payments prior to construction are not seen as yet another levy on wind farm developers, or compromise the economic viability of a project and dissuade investment in the region.

Another possibility to consider is structuring rate payments such that rather than the new rate being levied on the landholder, who then passes it through to the developer, a separate charge could be negotiated between the council and the developer with some standard formulae for calculating a reasonable contribution on an annual basis. This could replace, but should not be additional to any existing planning agreements with councils.

A competitive planning framework

The wider NSW planning system encourages investment and development, especially in regional areas, based on the idea that NSW is 'open for business'. A merit-based planning approach should always ensure that proposed developments are considered based on the interests of all stakeholders. The NSW planning system, as it pertains to wind farms, does not currently encourage development and investment or serve the overarching imperative of the government to reduce emissions. It

appears to be heading in the opposite direction, putting disproportionate emphasis on the views of a minority, rather than focusing on a state-wide strategy to attract regional investment and jobs, to decarbonise the state's electricity system, and to achieve the objectives of the NSW Government's Renewable Energy Action Plan.

If you have any further questions or wish to arrange a meeting to discuss this submission please contact Alicia Webb via telephone on 03 9929 4100 or by email at AWebb@cleanenergycouncil.org.au. For media inquiries, please contact Mark Bretherton on 0413 556 981.

Yours sincerely,

Alicia Webb
Policy Manager
Clean Energy Council

About the Clean Energy Council

The Clean Energy Council (CEC) is the peak body for the clean energy industry in Australia. We represent and work with hundreds of leading businesses operating in solar, wind, energy efficiency, hydro, bioenergy, energy storage, geothermal and marine along with more than 4,000 solar installers. We are committed to accelerating the transformation of Australia's energy system to one that is smarter and cleaner.

NSW GOVERNMENT | Premier & Cabinet

Reference: CMU16-19312

19 August 2016

Mrs Robyn Galvin
[redacted]

Dear Mrs Galvin

On behalf of the Premier I would like to acknowledge receipt of your correspondence regarding wind farms.

The Minister for Planning has portfolio responsibility for this issue and I have forwarded a copy of your correspondence for the Minister's information and consideration.

If you have any further enquiries about this matter please contact the Hon Robert Stokes MP directly on (02) 8574 6707.

Thank you for taking the time to write to the Premier.

Yours sincerely

M. Monahan
Director, Briefings and Correspondence Unit

GPO Box 5341 Sydney NSW 2001
Tel: (02) 9228 5555 ■ www.dpc.nsw.gov.au

From: NSW Premier
Sent: 2016-08-18 12:09:21
To: premier@nsw.gov.au
Subject: WIND ENERGY PLANNING FRAMEWORK

Submitted on Thursday, August 18, 2016 - 12:09

Submitted by anonymous user: [redacted]

Submitted values are:

Title: Mrs
First Name: Robyn
Last Name: Galvin
Phone: 02 9542 2230
Email: [redacted]
Street address: [redacted]
Suburb: Kirrawee
State: New South Wales
Postcode: 2232
Subject: WIND ENERGY PLANNING FRAMEWORK
Type of enquiry: Message
Message:

For the sixth time this year we suffered a blackout. This took place between 11.50AM and 2PM on Thursday 11/8/2016. The areas were Kirrawee and Sutherland with the excuse being "reason unknown".
Unfortunately windmills will not help this situation. Not only are they a blight on our landscape but are highly inefficient and expensive. New South Wales seem determined to follow South Australia who have the most expensive electricity in Australia due to renewable energy.
It will not be long before we return to power rationing as we had in the 1950's. It is an absolute disgrace that with modern technology and an abundance of coal we are unable to operate coal fired power stations for the cheapest form of electricity. Wind power is a rort and foreign owned wind farms are heavily subsidized by the taxpayer which is unacceptable.

I would like a response: Yes, I would like a response
I would like to receive regular updates from the NSW Government: No

End of message

Caleb Ball

From: Peter Fraser [redacted]
Sent: Thursday, 1 September 2016 9:48 PM
To: DPE PS Wind Energy Mailbox
Subject: Crookwell Framework meeting

Sir/Madam

I have just attended the "Wind Energy Community Session" at Crookwell, on the evening of Sept 1st. I was extremely frustrated with the way it was run. I will not be attending any further of these types of meetings because of the poor facilitation, despite the fact that the people running it were well intentioned.

A noisy minority of wind farm opponents dominated the proceedings. It is true that I did not register to ask a question, but as the meeting progressed I did formulate a question and would have liked the opportunity to ask it. I was also under the understanding that, time permitting, there would have been an opportunity for questions from the floor. And if proceedings were conducted properly, this would have been possible.

I will make a submission about the content of the Framework, but from observing the proceedings and the explanation of the Framework by the Planning staff, I couldn't help thinking that there was far too much accommodation of the opponents' views at the meeting, and I suspect this is reflected in the content of the draft Framework. The staff seemed to bend of backwards to give every minor (and sometimes erroneous) viewpoint a disproportionate credibility.

The problem was that at least half the opponents were given more time than was allowed to both make a statement and then re-engage in discussion after their allotted question / statement. Some of them spoke well over the 3 minutes allotted to them - some up to 5 or 6 minutes. Some kept interrupting and making comments numerous times after their initial submission, and the moderator would then re-engage with them instead of stating clearly and unambiguously that the questioner had had their turn.

Not only did people speak too long and kept on interrupting, but people who had attended previous consultations in another town turned up and took more time out of the evening so that local people who had not had any chance to comment were excluded. Why were these out-of-towners not asked to either go to the end of the queue or ask their questions in private after the formal proceedings, to allow all the locals who had not been to a previous meeting able to participate?

This naturally led to the whole event running over time and we, having to drive 50 kms to get home, had to leave without hearing all the questions or being able to put a question from the floor.

I strongly advise you to have much more assertive people running these events and keep strictly to the procedures that were outlined at the beginning of the meeting.

Regards,

Peter Fraser
[redacted] Goulburn

Caleb Ball

From: system@accelo.com on behalf of Don Inkster [redacted]
Sent: Thursday, 8 September 2016 12:09 AM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for Don Inkster (comments)

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Don Inkster
Email: [redacted]

Address:
[redacted]

Moruya, NSW
2537

Content:
I am against any windmills. The noise, flights of bird patterns, the looks, little impact on the energy over all etc. I watched them being erected in Ontario Canada. Nuclear is the way to go. I worked around and in the worlds largest privately owned nuclear plant in the world with 8 reactors supplying Ontario, Quebec and New York state with electrical power for almost 32 years. Úse the CANDU reactor. You will get cheap, clean and reliable energy. This is what Australia needs. Not windmills. Just read about it. http://www.brucepower.com/ and https://en.wikipedia.org/wiki/Bruce_Power plus others.

IP Address: - [redacted]
Submission: Online Submission from Don Inkster (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162060

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Caleb Ball

From: system@accelo.com on behalf of joe sparks [redacted]
Sent: Saturday, 10 September 2016 1:02 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for joe sparks (comments)

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: joe sparks
Email: [redacted]

Address:
[redacted]

Glen Innes, NSW
2370

Content:
Dear Sir /Madam

I'm and environmentalist and pro alternative energy, including wind. I'm concerned that this frame work is to restrictive and is the state government deliberately hamstringing alternative energy industry's because of its links to the coal and gas status quo.

specifically it's totally absurd and hypocritical to set higher criteria for wind farms than for coal mines, but that what this frame work appears to be doing in my opinion, IE requiring 45 decibel limit for coal mines and 35db (at 1500m) for wind farm!, the reality is that the wind farm's noise generation is dictated by the wind and is no doubt generating noise for a lot less of the time in a 24 hour period than a coal mine which will operate as much as possible with in the 24 hour period.

I'd like to see a predictive element set in to the EIS when it comes to BIRD and BAT strikes as far as i can see there is no modeling of mass bird and bat movements/migrations required in the SERS this will be particularly relevant in coastal proposals.
the current ...suck it and see type of condition (ie if there's a problem after the tower/s is constructed/in operation then "look at mitigating the problem") is completely ignorant and neglectful of the potential impact on bird bat populations these projects have.

the impact of the vegetation foot print of these protects is being underestimated as high ground is often un-cleared and perhaps of an endangered ecosystem (IE in locations that are likely to be occupied by these projects (tablelands coastal areas) as they have been mostly cleared)
I'd like to see a component introduced to the EIS/SERS that minimizes the clearing foot print to the absolute minimum required , rather than clearing the maximum and then using offsets.There should be a financial benefit to this as well as a practical /environmental

Yours Sincerely

IP Address: - [redacted]
Submission: Online Submission from joe sparks (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162319

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Caleb Ball

From: system@accelo.com on behalf of Matthew Donoghoe [redacted]
Sent: Saturday, 10 September 2016 2:09 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for Matthew Donoghoe of B.J.Donoghoe &SonPty Ltd (comments)

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Matthew Donoghoe
Organisation: B.J.Donoghoe &SonPty Ltd (Director)
Email: [redacted]

Address:
[redacted]

Woodhouselee, NSW
2580

Content:
Dear Sirs ,I recently attended the Community Information evening in Crookwell and heard comments form parties mostly opposed to the existence of wind turbines in the Crookwell locality. Most of the negativity was aimed at the visual impact of turbines on the landscape, and the noise they make including adverse health effects caused by specific sound frequencys.
I declare myself as a supporter of the renewable energy roll out, including wind, hydro and solar as a means of phasing out coal fired power production. I support the global belief that we need to act against climate change and embrace the new technologies, applying them to our abundant renewable resources.
I am pleased to be a participating landholder in the Crookwell 3 Windfarm. I get a deep sense of satisfaction that my participation is going some way to solving one of the more serious problems in recent history. Man made climate change.
I have inspected existing turbines both operational and during construction to do some first hand monitoring of sound and impacts on the land. From these visits I have concluded that I would willingly live and raise my family among the turbines.
I will be able to continue usual farming practices, once the construction is complete, and the rent I recieved from the Windfarm owners will enable productivity gains in good years and drought proof my operations in dryer seasons.
I believe in our democracy and that everybody has the right to have their opinions heard on matters that effect them.
As Windfarms are exclusively controversial at a local level I recomend the Department of Planning only give consideration to Submissions from FULL TIME RESIDENTS of the areas affected by Windfarm projects.In the same way a NON RESIDENT LANDHOLDER is not eligible to vote in local elections.Submissions on these local matters need to be heard from FULL TIME RESIDENTS of the proposed Windfarm localities . PITT ST FARMERS who are vociferous opponents but NON RESIDENTS are not entitled to vote in local government elections and therefore should NOT have their submissions considered by The Department of Planning , if their land holding falls outside the Departments declared zones.
The local communities of The region of The Southern Tablelands have experienced a considerable injection of funds through wind industry projects.Job growth, small to medium business growth, roads and infrastructure improvements, tourism,local council and community organisations have all benefited from the Wind Industry.
People who are opposed to the benefits windfarms bring at a local level, but who don't reside in the locality should not have a say in the process.
People who object to the sight and sound of windfarms, but are full time residents of the following suburbs Gladesville 2111, Mosman 2088, Wollstoncraft 2065 , are absentee landlords ,NON RESIDENTS of the affected area and should not be entitled to have their submissions counted.
As is the practice in local government elections.
The towns of Taralga ,Gunning, Crookwell and Goulburn are all experiencing growth and renewed prosperity through Wind Industry projects.Now that other communities can see first hand the difference these projects make to local people's lives and wellbeing I hope the tide of acceptance will drown out the arguments of objection, wether they are coming from Roslyn or Mosman.

IP Address: [redacted]
Submission: Online Submission from Matthew Donoghoe of B.J.Donoghoe &SonPty Ltd (comments)

https://majorprojects.affinitylive.com/?action=view_activity&id=162331

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Caleb Ball

From: system@accelo.com on behalf of [redacted]
Sent: Saturday, 10 September 2016 9:40 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for [redacted] (comments)

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: yes

Submitted by a Planner: no

Disclosable Political Donation:

Name: [redacted]
Email: [redacted]

Address:
[redacted]

[redacted]

Content:
I firmly believe Wind Farms are the way to go taking up less land area that Solar Farms, and providing an income to the host farms which then enables those farms to hire extra staff, or do upgrades to their farms thus providing a flow on effect to the community . Most communities in the rural areas are slowly dying, as can be seen by the closure of small schools, so any income that can flow into these communities is a good thing.
A Wind farm is less invasive than a coal mine, creates less dust pollution, as well as noise or traffic issues, yes they are large but when looking at countries like Germany, or the Netherlands the towers are huge, and set amongst villages or towns, I would happily live near 1, especially after seeing the farm at Ravenshoe QLD and the 1 at Warrnambool Vic.
Thank You for allowing me this opportunity

IP Address: [redacted]
Submission: Online Submission from [redacted] (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162339

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Clean Energy Objective

It is becoming ever-increasingly clear that we must develop renewable energies. The extent of climate change demands this. We need effective leadership from government towards this end. This new framework will be in place for some years into the future, during which time the need for renewables will grow. This framework needs to be future-proof, otherwise it will hold NSW back, and require repeated administrative effort to update the framework.

There is a risk that the proposed framework will give too much weight to intangible aspects, like Visual Impact and too little to the tangible and necessary benefits of emissions reduction.

Visual Impact

Too much weight is given to Visual Impact. Many people find the sight of a wind turbine silently turning under the influence of the wind, and producing energy for our use to be soothing and awe-inspiring. We are reminded of the old windmills which stood in Australian paddocks for decades and pumped water for stock or domestic use. Windmills have been part of our landscape for generations.

I personally derive fascination from watching how the blades of multiple turbines turn in synchronism with each other, how some are braked out of use in times of low wind. I am fascinated at how they must be controlled and managed to keep them producing optimally in a wide range of wind speeds.

I also appreciate that wind turbines harvest energy without producing harmful by-products: emissions, dust, deterioration to ground water. These benefits must be held in sufficient regard that subjective aesthetic factors are not given undue prominence.

I think the Victorian measure of proximity to a dwelling (ie 1km) is more suitable than the proposed 8km.

For many farmers, the ability to have some wind turbines installed on their farm, and the consequent income stream is making a big difference to their farm's viability. It also means that farmers can farm more optimally, and not have to over-stock to try to eke out a financial viability. This leads to farms whose visual appearance is more harmonious than barren, tired paddocks.

Project Modifications

Modifications will usually be updates due to improving technology. It is important that these can happen, so that established wind turbines and farms are not locked into old technologies and constraints. Restriction on updating will make some projects become uncompetitive.

Caleb Ball

From: system@accelo.com on behalf of David Griffin [redacted]
Sent: Tuesday, 13 September 2016 12:23 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for David Griffin (comments)

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: David Griffin
Email: [redacted]

Address:
[redacted]

Bowral, NSW
2576

Content:
Thank you for the opportunity to comment on the draft guidelines. I have personally managed the development process for five wind farms in NSW, all of which have received Project Approval and two of which are operational.

If time permits, I will make a subsequent submission on other aspects of the visual impact assessment process. This submission will only refer to one element raised in Appendix 3 to the Visual Impact Assessment Bulletin. This Appendix suggests that 're-colouring' is a feasible mitigation option for wind turbines.

Apart from the fact that far too much weight is provided to perceived impacts of very distant views, the suggestion that changing the colour of wind turbines would reduce their visual impact ignores a few critical issues.

Wind Turbine Efficiency. As with any machine, the proponents of wind farms are keen to operate their wind farms as efficiently as possible. The generation and dissipation of heat is a key consideration for efficiently operating any electricity generator. Wind Turbines are no exception to this. This becomes a more critical issue during long, hot summer days.

The Bulletin suggests that off white is not a good colour as it increases the visual impact of the wind turbines. It goes on to suggest that a darker colour will be less obtrusive on the landscape. However, any departure from off white will lead to increased internal temperatures within the tower and nacelle and therefore reduce the operating efficiency of the wind turbine. In short, darker colours will result in less electricity generation on hot summer afternoons, i.e. precisely the time when more production is required to meet higher loads in the National Electricity Market.

The Bulletin also assumes that wind turbine manufacturers offer a colour palette from which project owners may select a colour. This is a false assumption. The off white colour has been elected due to its positive impact on the operational life of the wind turbine as well as its overall reduced visible impact. The paint is designed to last for the life of the wind turbine. Other colours have not been designed or assessed to last this duration and therefore wind turbine manufacturers would not be able to meet that element of the wind turbine design life. In short, use of colours other than off white in the globally tiny market of NSW will drive up manufacturing and maintenance costs. Therefore the levelised cost of electricity will be increased.

Finally, the Bulletin assumes that off white makes the wind turbines more obvious, except when viewed against white clouds. This may be true. However, given that wind turbines are generally constructed on elevated ridges, most view points for wind farms have the sky as the background to the wind turbine. A blue wind turbine might work for some of the time, however it will look quite out of place against clouds and perhaps still look odd against a blue sky (especially as the wind turbine colour inevitably fades).

The use of 're-colouring' as a mitigation option would lead to reduced electricity production, especially during peak demand on hot summer afternoons, require additional upfront costs as it is not offered by wind turbine manufacturers, require additional maintenance costs as the colour will fade and will not in fact reduce the visual impact as most wind turbines are set against the changing white and blue of the sky.

Discussion of 're-colouring' should be deleted from the Bulletin.

IP Address: - [redacted]
Submission: Online Submission from David Griffin (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162514

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

F. S. HESPE

B.E.(Syd.), C.Eng., M.I.C.E., F.I.E.Aust..(Ret.), M.A.C.E.A., M.A.C.S.E.

Chartered Consulting Forensic Engineer

Strathaird,

Rockley. N.S.W. 2795

Telephone [redacted]

Facsimile [redacted]

September, 2016

The Hon Rob Stokes
Minister for Planning and Environment.
Parliament House,
Macquarie Street.
SYDNEY. NSW 2000.

Dear Minister,

Submission to the Review of the New Wind Energy Planning Framework.

I apologise for the somewhat unfinished nature of this submission; but the call for submissions was only drawn to my attention a very short time ago.

While I appreciate that neither you nor your parliamentary colleagues understand the underlying physics and technology implicit in the above Wind Energy Planning Framework, I do urge that you at least read the following Preamble. If you can find time, amongst the many calls of your duties, to read the whole document; and some of the very few references listed (very few of the hundreds I have perused); you may be further enlightened.

In case you might think that this is simply a diatribe from someone on the other side of politics; let me assure you that that is not the case. I have been a member of the Country / National Party for more than 40 years, have held positions at chairman level within the party organisation and was in fact the party's candidate in the Federal seat of Calare in 1987. I attach as Appendix 2 to this document my short curriculum vitae.

While this submission is upon the Government's wind energy strategy; that strategy itself should be looked at in the context of the other depredations the Baird Government is inflicting upon the people of New South Wales.

Preamble.

Anthropogenic Global Warming (AGW)

"Only a cretin believes in it,
only a crook promotes it."
F. S. Hespe 2008

In its dying hours the Howard government, in a spasm of moral and political cowardice, brought into being the Renewable Energy Target (RET) scheme. The scoundrels of the incoming Rudd government embraced it with fervour; and that government, in its many permutations and combinations, over the next six years squandered billions of taxpayers' money on a variety of schemes said to be for the purpose of "saving the planet".

All that those billions did however, was line the pockets of the foreign suppliers of solar panels and wind turbines, and the local snake oil merchants who promoted them - and cost the

Australian taxpayer many more millions in higher electricity charges. This was an exercise of moral turpitude unprecedented in Australian political history - it, in effect, amounted to treason.

If any further evidence of this is needed it should be noted that last year in Brussels, Christiana Figueres, Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC), let the cat out of the bag when she said that at the climate change conference in Paris environmentalists would be aiming to replace capitalism and the concept of nation states with a New World Order (based on the notorious Agenda 21). (My emphasis and interpolation) Presumably this new world order would be run through the United Nations by Christiana herself and climate change specialists such as Flannery, Gore, Steffen, Karolly, Hamilton, Mann, Hanson, Jones et al. CAVE CANEM!

It should also be noted that at the UNFCCC's Lima conference in December 2014, all Parties (read Nations) confirmed they would bring forward the intended nationally determined conditions setting out the targets they will adopt from 2020 onwards. Everyone knows about Australia's lickspittle performance at Lima. There is very little doubt that under the auspices of the Federal Minister for the Environment and his cronies the Australian government will continue down the same disastrous path as its predecessor. There might have been some semblance of a rationale for a Green Left government to embrace the New World Order policies implicit in the UNFCCC's Paris proposals; but for a government that purports to be at least somewhat to the right to follow blindly down this path is extraordinary.

For as the historian Robert Nisbet has said:-
"The appeal of environmentalism, in its more extreme manifestations at least, becomes irresistible to that permanent cadre of political and social radicals Western society has nurtured ever since the French Revolution. This cadre has never been primarily interested in the protection of nature, but if such a movement carries with it even the possibility of political and social revolution, it is well that the cadre join it; which, starting from the late 1960s, it did."

The present Federal government, headed by the footpads Turnbull and Morrison, have recently introduced a carbon tax by stealth. The immediate result of this has been that, in particular, my present electricity retailer has had to increase its charges by 12.4%! Furthermore, in a recent (July 2016) study by the authoritative market research organisation CME (whose clients include some of the ASX top 50 companies, State and Federal government departments and authorities and AEMO and other regulatory authorities) shows that the price increases of the three major retailers (wholesalers?) in NSW between June 30 and July 1 were as follows; Essential Energy 11.7% , Endeavour 9.3% and Ausgrid 9.2%. Similar increases have been experienced in other states; with the possible exception of the ACT (see below).

The same study shows that household electricity prices, inclusive of taxes and at market exchange rates, are higher in Australia than in all other countries in the world except Germany and Denmark – which are, as everyone knows, the two countries most committed to wind farms. In Australian cents per kilowatt hour Denmark and Germany's prices are 44 and 43 respectively, South Australia and Victoria 35, NSW (and the UK) 32. But, stone the crows! the politicians, bureaucrats, journalists and other mendicants in Canberra get theirs for 22c per kilowatt hour; a discount of 10c, or 31%, on their wretched NSW neighbours.

The former Federal Minister for the environment (the cretin Hunt) seconded, apparently, by his successor, has recently castigated the South Australian government; not, as might have been expected, for its having made South Australia an economic basket case as a result of its disastrous wind energy policy; but because it did not tell its long-suffering constituents that they must (cheerfully?) pay more for electricity to save the world from anthropogenic global warming (AGW)! He then went on a to tell the many businesses in South Australia, which are

on the verge of having to either close down or leave the State because of the outrageous electricity costs, that they too must make sacrifices for the good of the environment.

The above Wind Energy Planning Framework makes it clear that the New South Wales Government is determined to head down the same disastrous track as its preceptors in Canberra. As will be seen below it declares itself be committed to the same ruinous cost burdens necessitated by wind generated electricity. The following excerpts from your Department's policy document, though brief, show clearly that the principal, in fact the only, reason for this policy is the Baird Government's blind determination to cling to the coat-tails of Messrs. Turnbull, Hunt and Co. in their acceptance of the lies of the global warming blackguards; and further destroy the economy.

1.1 Purpose of the policy

The Policy is not intended to be a comprehensive 'how to' manual for wind energy development, nor will all issues be relevant for every proposal. However, the NSW Government's intention is that this Policy becomes the key reference document for decision-making on SSD wind energy development in NSW. This Policy delivers on the Government's commitment in the Renewable Energy Action Plan to implement wind energy planning guidelines in NSW.

1.2 Objectives

to encourage benefit-sharing between wind energy operators and the communities in which they operate.

1.3 Strategic context

The NSW Government supports the development of a sustainable wind energy industry in NSW. This State has valuable wind resources by international standards with many of the best areas located near existing electricity transmission infrastructure.

In addition, the NSW Government has made a commitment to contribute towards the national Renewable Energy Target of 20 percent by 2020. This target has been a **key driver** *of wind energy development in NSW. The NSW Government recognises the importance of reducing greenhouse gas emissions in energy generation, and the opportunities which the renewable energy industry offers for the State.*

The NSW Renewable Energy Action Plan (2013) commits NSW to increasing the use of energy from renewable sources at least cost to the energy customer and with maximum benefits to the State. This presents an opportunity for NSW to invest in wind energy, as one of the most commercially ready and cost-effective renewable energy technologies currently available for use on a large scale.

Dealing with my emphases seriatim: -

1.1 There you have it in a nutshell! The Government's commitment to renewable energy.

1.2 The only benefit deriving from this scheme will go to the foreign suppliers of the equipment and the snake oil merchants running the scheme - and *they* aren't going to share their ill- gotten gains!

1.3 i.) Sustainable? The state has, or did have, valuable resources; namely coal.

ii.) I will be dealing with the RET scheme in Section **2. The operation of the RET** below.

iii.) The RET scheme is not the **key driver**; it, with its taxpayer funded subsidies, is the **only** driver of wind energy development anywhere in the world.

iv.) Has the NSW government any **probative reason** for recognising "the importance of reducing greenhouse gas emissions in energy generation" that could satisfy anyone with the merest scintilla of intelligence? I doubt it. In Section **1. Anthropogenic global warming** below I will be dealing with the absurdities of this dangerous fiction.

v.) The only opportunities offered by the renewable energy industry will go to those I have mentioned in **1.2** the above. And in case you've forgotten, the government commits NSW (i.e. the poor wretched consumers) to increasing electricity costs.

vi.) It is absurd to talk about "least cost" when wind energy costs more than 2 1/2 times traditional forms of energy generation and PV energy more than 5 1/2 times. (See p. 10 below). Furthermore there are enormous hidden costs; in the provision of open cycle gas turbine standby generators, and in the additional running costs and extreme wear and tear in holding traditional coal-fired generators in spinning reserve; or worse, using them on a stop start basis.

All of this causes mechanical damage and drastically reduces the life of the equipment. This is happening, for example, at the Mount Piper power station.

It would seem then that the NSW government is determined to force its citizens to pay highway robbery prices for their electricity. This, in the context of mortgaging the State's future at hire purchase interest rates to foreigners (cf the desalination plant); selling off what is left of its assets and land at firesale prices to other foreigners (cf. the Port of Newcastle, electricity assets, mining and agricultural land etc. and now, it would seem, Wentworth Park once the dog racing industry has been destroyed). The Coalition's Chinese friends must be laughing all the way to the bank.

The State is clearly going to the dogs; even though the Premier won't allow its citizens to do so.

I will attempt below to set out the scientific, economic and social objections to the Government's proposals.

1. Anthropogenic global warming.

This hypothesis, and its proponents, have been thoroughly defenestrated. This is not surprising when it is considered that it was originally based on the so-called "greenhouse" effect of CO2 in the atmosphere; which showed a complete ignorance of the fundamental physics involved, and specifically of the transience of the dipole moment of CO2; see for example [Barrett J. Greenhouse molecules, their spectra and function in the atmosphere. *Energy and Environment,* 2005 , **16**, No. 6, 1037-1045]. When they had to accept that the effect on temperature of further increments of CO2 in the atmosphere were minimal (and unmeasurable), the proponents of AGW changed their tack and said that it was the increase of water vapour in the atmosphere caused by the (unmeasurable) increase in temperature due to CO2 that was the real culprit.This again showed an abysmal ignorance of the basic physics e.g. the latent heat of vaporisation, the adiabatic temperature lapse rate of the atmosphere, cloud albedo etc; see for example [William Kininmonth, A Natural Constraint to Anthropogenic Global Warming. *Energy and Environment* 2010, **21** No. 4, 225-236.], and [Spencer R. W. and Braswell W. D. On the Misdiagnosis of Surface Temperature Feedbacks from Variations in Earth's Radiant Energy Balance. *Remote Sensing*, 2011 **3** 1603-1613] among many other authoritative papers by world recognized researchers.

Professor John R. Christy of the University of Alabama in Huntsville in his evidence to the United States Senate Subcommittee on Energy and Power;[Committee on Energy and Commerce; US Senate Committee Papers] on the 8th. of March 2011 and Professor Richard S. Lindzen of the Massachusetts Institute of Technology in his address to the House of Commons Campaign to Repeal the Climate Change Act on the 22nd of February 2012 [rlindzen@mit.edu] both made extensive and devastating criticisms of the false science promulgated by the IPCC and its self-serving contributors. Emeritus Professor Robert M. Carter in his book "Climate: The Counter Consensus" Tom Stacey International 2010 and Professor Ian Plimer in his book "Heaven and Earth", Connor Court Publishing 2009, both give authoritative commentary on AGW from the Australian perspective and both provide literally hundreds of references to scholarly papers which support the material in their books.

It is one thing for otherwise unemployable " climate researchers " such as Mann in the United States and Jones in the United Kingdom, and their equivalents in Australia such as Karolly**,** Steffen, Pitman, Hamilton et al, of whom Professor Emeritus Garth Paltridge has said that "the government has bought them, and bought them good." (AFR, 3 May 2011); and for carpet-bagging buffoons such as Gore and Flannery; to peddle their mendacious view of climate.

It is an entirely different matter however, when their grossly disingenuous "science" is used as the basis for legislation which is costing the Australian economy, together with other payments of a like nature, of the order of $15 billion per annum; according to some estimates. This is an abuse of process of the worst kind; and is particularly so when all the above mentioned "scientists" have been thoroughly exposed for the fraudulent nature of their assertions. Furthermore, the two first mentioned have been part of a cabal exposed by the "Climategate e-mails" [Costella J. "The Climategate E-Mails" The Lavoisier Group, March 2010]. These charlatans, together with many others, have been incriminated out of their own mouths of having manipulated and fabricated data to support their point of view, conspired to control the literature on the subject by attempting to intimidate various editors of learned publications, further conspired with their employer universities to accrue government funding, etc.

Professor Hal Lewis, a lifetime member of the American Physical Society and former holder of its most senior offices, recently resigned from that organisation in disgust; the following are some verbatim excerpts from his letter of resignation.

"When I first joined the American Physical Society sixty-seven years ago it was much smaller, much gentler, and as yet uncorrupted by the money flood (a threat against which Dwight Eisenhower warned a half-century ago). Indeed, the choice of physics as a profession was then a guarantor of a life of poverty and abstinence—it was World War II that changed all that. The prospect of worldly gain drove few physicists.

How different it is now. The giants no longer walk the earth, and the money flood has become the raison d'être of much physics research, the vital sustenance of much more, and it provides the support for untold numbers of professional jobs. For reasons that will soon become clear my former pride at being an APS Fellow all these years has been turned into shame, and I am forced, with no pleasure at all, to offer you my resignation from the Society."

Lewis went on to describe global warming as *"the greatest and most successful pseudoscientific fraud I have seen in my long life as a physicist."*

Yet when Lewis had gathered two hundred plus signatures from fellow members to protest against the APS's position, they found - "Constitution be damned" - that the Council simply refused to accept their petition.

He concluded:

"*This scheming at APS HQ is so bizarre that there cannot be a simple explanation for it. Some have held that the physicists of today are not as smart as they used to be, but I don't think that is an issue. I think it is the money, exactly what Eisenhower warned about a half-century ago. There are indeed trillions of dollars involved, to say nothing of the fame and glory (and frequent trips to exotic islands) that go with being a member of the club. Your own physics Department (of which you are chairman) would lose millions a year if the global warming bubble burst. When Penn State absolved Mike Mann of wrongdoing, and the University of East Anglia did the same for Phil Jones, they cannot have been unaware of the financial penalty for doing otherwise. As the old saying goes, you don't have to be a weatherman to know which way the wind is blowing. Since I am no philosopher, I'm not going to explore at just which point enlightened self-interest crosses the line into corruption, but a careful reading of the ClimateGate releases makes it clear that this is not an academic question."*

This from one of the United States most distinguished physicists; equally distinguished scientists around the world including Australian Professors Carter, Plimer, Paltridge, Aitken, Franks etc. agree with him.

When confounded by fundamental physics, the charlatans of the global warming fraternity then turn to temperature records; and here they are in their element. Fiddling the data (they call it homogenising) comes as second nature to them; and it is no surprise that all their "adjustments" are upwards. [See, for example, Marohasy J. et al *Modelling Australian and*

Global Temperatures: What's Wrong? Sydney Institute August 2014; and Eschenbach W. *The Smoking Gun at Darwin Zero. www.wattsupwiththat.com/2010/04/14*] The (Australian) Bureau of Meteorology is deeply complicit in the homogenising (read: falsifying) of temperature records in order to justify the anthropogenic global warming fraud.

Then, when confronted with the fact that there has been no warming since 1998 (and all the data sets used by meteorologists and atmospheric physicists agree) they come up with the balderdash that the "extra heat" caused by CO2 is inexplicably added to the already well known cycle of oceanic transfer of heat between the tropics and the poles. Even so, most of the "flow" of heat from the tropics to the poles is transported by the wind. The Earth is a heat engine. Indeed, if it were not so it is unlikely that life would be able to exist. Without going into detail, the insolation at low latitudes is considerably greater than that at high latitudes. Therefore the increase in temperature at the topics is naturally greater than at the poles. This excess heat is distributed partly by the great ocean currents, but to a far greater degree by the winds. Extra tropical cyclones are particularly important in this process. In effect they 'transport' heat from the tropics toward the poles, increasing entropy in accordance with the second law of thermodynamics. Nevertheless, the promoters of the global warming fraud insist that the "extra" heat caused by CO2 has been "stored" in the oceans; and is lurking there to pop out and confound us one day. They completely ignore what is so glaringly obvious; and has been clearly described and quantified by Spencer and Braswell (op. cit.); the excess heat is radiated, as one would expect, back into space. It should be noted however, that while Spencer and Braswell have been unable to distinguish between radiative forcing and radiative feedback because of the limitations of the CERES instrument used, they have shown that the radiation to space distinguished by their observations and calculations accounts for most of the discrepancy between observed temperatures and those forecast by the IPCC.

One further note; of five data sets for global air temperatures, four show a statistically significant temperature decline and one shows a statistically insignificant temperature rise for the period 2005 to 2013. [Remote Sensing Systems NASA, minus 0.0.5°C/decade; NOAA, minus 0.06°C/decade; GISS(NASA), minus 0.06°C/decade; U Alabama, plus 0.01°C/decade; UK Met Office, minus 0.10°C/decade.]

Finally, these "climate researchers" review with approval each other's publications (this is called peer review) and, together with other promoters of AGW, when confronted with unassailable criticism of their work rely on the so-called precautionary principle.

The Precautionary Principle, quoted widely by anthropogenic global warming (climate change) activists, can be defined as what you fall back on when all your predictions have proved wrong, when all your computer programs have been shown to be rubbish, when you have been shown up for the charlatan and intimidator you are (cf Climategate), and have nowhere left to hide. In short, to paraphrase Samuel Johnson, the precautionary principle (and, these days, peer review) is the last resort of the scoundrel.

2. The operation of the RET.

Not only has the RET encouraged additional generation of electricity from "renewable" sources, it has in fact provided the *only* reason for electricity generation by these sources - *subsidies*. The result, of course, is the increase in electricity costs to consumers.

For example, in a speech to the Committee for Economic Development of Australia in Sydney on April 13, 2010, Grant King, the CEO of Origin Energy, said "we think that, by 2020, the cost of electricity will be threefold what it is today, *given the current policy of large amounts*

of renewables being forced into the system, uncosted charges for these renewables, and a substantial increase in transmission and distribution costs" (my emphasis).
See also **3.)** below. Mr King's predictions have been proved only too true.

Broadly speaking the RET has produced two types of so-called "renewable" energy generators. The first, wind turbines and their associated "wind farms"; and the other, small-scale local systems

The small-scale systems referred to are typically panels of photovoltaic cells which have been taken up by those who can afford them. These people have then been rewarded firstly, by government grants and secondly, by outrageously high payments for excess electricity fed into the grid. This is a grossly inequitable system whereby those that have the available capital can create long-term advantages for themselves at taxpayers' expense. It is rather ironic that this scheme was set up by a Socialist government. A typical beneficiary was a wealthy (overpaid) actress who reportedly spent hundreds of thousands of dollars on a PV system "to help save the planet"; and no doubt parades her beneficence before the Chardonnay and goat cheese set.
The reported 1.2 million rooftop PV systems have, no doubt, been good business for China; and at least, or so it would seem, did not cause any deaths - as another government scheme did. In fact, not only have they exported jobs but, have had the enormous advantage of keeping a highly polluting industry offshore. Not only that, but it is a fact that it takes more coal generated electricity to make the polysilicon used in a PV system than it, the system, would generate in its lifetime. That is to say there is more CO2 generated in producing the polysilicon than it would save (that is if that aspect of the matter was of any concern, which it is not) and the CO2 is generated in China, not here - and that must please someone!

The large scale systems (wind farms) have a very great and serious effect on the cost of retail electricity. I have dealt with this briefly in **3.)** below. It must be understood that I have only been able to outline the problems and costs associated with this grossly inefficient method of producing and delivering electricity.

3. The effect of the RET on household power prices.

To address the effect on household power prices it is necessary to understand that they are the end result of the effect of forcing "renewable" energy into the system. Household power prices cannot be isolated from industrial power prices nor from the effect on the national grid of the imposition of unpredictable and relatively small-scale inputs from sources such as wind farms and PV panels.
An example of the latter is that the government recently provided $13 million for a number of universities and CSIRO to "develop a new suite of tools to understand, develop and optimise energy grids of the future." A report from the faculty of engineering at the University of Sydney makes it clear that this further waste of money is to seek means of managing the unpredictability of the entry (and exit!) of solar and wind energy into the grid. This money; and a further $15 billion per annum; could be saved by repealing the RET Act. Predictably, of course, the rent seeking academics that are benefiting from this $13 million are all in favour of it!

3. a.) Understanding generation capacity and output.

It is important to clearly understand the significant difference *in real terms* between the nominal "capacity" of a power source and its "delivery". This is sometimes referred to as a load factor or availability factor. Coal-fired power stations have an availability factor, for all intents and purposes, of 100%; or at least very close to that. On the other hand wind generators have at the most an availability of 30% - in fact for the calendar year 2006 the entire German wind generator fleet only produced 17% of its nameplate capacity. That is to

say, for example, a 3 MW unit produced only the equivalent of 0.51 MW over the period of the year.

According to AEMO (last accessed 27.1.14) the total installed capacity of wind farms in eastern Australia is 2742 MW (Or, at 30% load factor 742 MW).
This compares with 27,159 MW of coal-fired electricity; 7987 MW of Hydro electricity and 9495 MW of gas fired electricity (two thirds of which is produced by open-cycle gas turbines).

The comparable figures for New South Wales are; 281 (or at a 30% load factor 85), 11384, 2744, and 2128.

That is to say, the total installed capacity of wind generation in Australia is something less than the installed capacity of Eraring coal fired station; and is spread willy-nilly from north of Brisbane to Adelaide. More to the point, the total average available capacity of wind generation is a mere 742 MW.

Miskelly [Miskelly P. Wind Farms in Eastern Australia - Recent Lessons. *Energy and Environment* 2012 **23** No.8 1233-1260] has shown that this entire wind generation system failed to produce more than 2% of its installed capacity 109 times in calendar 2010. In addition there were many more occasions when the output "dropped rapidly from high values, requiring the rapid response of fast acting gas turbine generation to fill the gap."
This gives the lie to the promoters of this racket who claim that the geographical spread of the units would "smooth" the output curve. All that the "geographical spread" has done is to prove that the entire fleet has never and never will produce its installed capacity.

If one coal-fired station of the capacity of the wind system failed once to produce more than 2% of its installed capacity it would be the subject of a national enquiry and probably significant penalties.
No engineer worth his salt would want to be associated with this stupidity.

Furthermore, to replace a power station of about the size of Eraring, which had an installed capacity of 2760 MW when constructed, would require 3300 3MW wind units. This is on the assumption of a load factor of 30%, which is generous .

These 3300 units would need 1.66 million tons of steel and their bases would need 4.95 million tons of reinforced concrete. They would need an area of 6600 ha (or16,500 acres). If built in a single line they would extend from Sydney to Dubbo. The energy they would produce would cost 2.5 times that produced by Eraring or its equivalent; and would need equal spinning capacity (coal fired or gas-fired) for when the wind stops blowing; thus increasing CO_2 emissions (if that were important – which it isn't)!

Not only that, but the enormous hidden costs of the extra grid connections necessary to deal with these problems is never mentioned by the proponents of wind or other similar energy schemes. For example Miskelly (op. cit.) points out that:
"As a result of the impact on the South Australian grid of the additional volatility resulting from the addition of the large wind generation fleet, the AEMO has proposed
the building of two very long, high-capacity transmission lines from South Australia
to the eastern States for the sole purpose of balancing the effects of wind's volatility
on that portion of the grid in South Australia. Wind energy penetration has already reached the 20% target in South Australia (AEMO).The cost of this management scheme would be of the order of several billion $AU. Extending such a scheme to deal with the increased penetration of wind energy into the eastern States (proposed by several State governments to address their clean-energy targets), is unlikely to be effective, but clearly would involve very substantial additional costs in construction of additional inter-State interconnectors.

More recently, Chapman of the AEMO has provided costings of the likely transmission augmentations required to deal with this increasing wind penetration. These show estimates of the order of $AUD4 - 10 billion. As far as can be determined, these estimates are based on wind output averages, so are likely to be conservative, that is, low. A recent study by Inhaber [26] indicates that the costs of CO2 savings rise substantially with increasing penetration of wind capacity on the grid. Using the Inhaber (*ibid*.) methodology, Lang [27] has provided an explanation of the cost consequences of increasing wind penetration in the eastern Australian context. The very expensive AEMO transmission augmentation "solution" mentioned above is the kind of prohibitive cost item identified by Inhaber (*ibid*.)"

26. Inhaber, H., Why wind power does not deliver the expected emissions reductions. *Renewable and Sustainable Energy Reviews*, 2011, 15, 2557–2562. Available on-line at: http://www.sciencedirect.com/science/article/pii/S1364032111000864 . Accessed 24 March 2012.
27. Lang, P., CO2 avoidance cost with wind energy in Australia and carbon price implications. 2011. Available at: http://bravenewclimate.com/2011/05/21/co2-avoidancecost-wind/ . Accessed 24 March 2012.

3. b.) A brief look at the international scene.

In Germany, the Rheinisch-Westfalisches-Electritzitstatswerk AG recently disclosed a $4.3 billion loss for the last financial year (down from a $2.2 billion profit the previous year); its first loss since 1949. This was a direct result of Germany's high use of alternative energy sources. RWE has not only had to compete against highly subsidised wind and solar suppliers, but it has had to maintain (by government decree) a large spinning reserve for when the alternative energy sources fail; for which it is unable to make a charge.

Spain, once the doyen of "green" energy producers, has come face-to-face with the harsh reality of having paid well in excess of $40 billion more for this form of power than for conventional power; and has made drastic cuts to subsidies, cutting out most subsidies altogether. This has resulted in, for example, the solar sector laying off 55,000 workers and the wind sector 20,000. A well-known study conducted in the Juan Carlos University in Spain showed that, in that country, for every new job in the renewable energy sector 2.2 jobs were lost in the real world; and every new "green" job cost the economy €1 million.

It is of particular interest to note that the Spanish Supreme Court ruled against the solar industry's arguments that the government's retroactive changes were illegal. The Court's judgement said, inter alia "The evolution of the energy sector…. was putting the financial sustainability (!) of the electricity system at risk." It went on to say that the companies ".. *do not have a right [to expect the government compensation regime] not to be changed."* (my emphases and interpolation)

Similar changes have been made in Italy, Belgium and France. In Italy for example, renewable energy companies are now taxed, not subsidised.

In the United States more than 14,000 wind turbines have been simply abandoned; in an area (in California) that once housed about 80% of the world's wind generation capacity. As one commentator put it "….spinning, post-industrial junk which generates nothing but bird kill ." [http://knoxville.craigslist.org/pol/3746100243.html]

As a further example of the futility of wind generation; in early 2011 Britain was enduring its coldest winter since records began in 1659; and it's electricity generators were operating at their highest recorded level; but the wind generators, on which British governments have squandered billions of pounds, produced something less than 0.01% of the demand! (This was repeated in the northern winter 2011/12.) The result of this was that old age pensioners had to resort to buying second-hand books from charity shops and burning them to keep

warm. Others were using their free travel passes to spend the day riding in buses or were seeking refuge from the cold in libraries and shopping centres. 21% of UK households are in fuel poverty. (Perhaps this is what Labour PM Tony Blair meant when he talked about Cool Britannia!) I pointed this out in August 2011 in a letter to the members of the Parliamentary Liberal and National Parties in New South Wales and asked "How soon will it be when 21% of Australian households are fuel paupers?" It would seem that it had happened as I was asking the question. (See **3.d.)** below)

3.c.) Impact on electricity prices.

Electricity prices increased by 58% from 2011 to 2015; but they increased by nearly double that between 2007 (a significant year?) and 2015. As noted above, apart from other increases, the Turnbull carbon tax by stealth of the first of July 2016 has given rise to a further 11% or 12% increase. No doubt with more to come..

A paper by Dr Lynne Chester of the Department of Political Economy in the University of Sydney entitled "The Impacts and Consequences for Low Income Australian Households of Rising Energy Prices" [lynne.chester@sydney.edu.au] shows that:

"The average increase in Australian household electricity prices from 2007 to 2013 was nearly 83% with the highest experienced by NSW households (108%) and the lowest average increase for those living in the ACT (71%). The good old ACT again!

Table 1: Nominal average increases in regulated household electricity prices, 2007-13 (%)

NSW **107.9**
Victoria **84.0**
Queensland **83.0**
South Australia **77.4**
Western Australia **76.7**
Tasmania **82.0**
NT **78.7**
ACT **70.6**

The average annual change *may* understate the actual increase experienced by a household as does the CPI Electricity Price Index for those who live in the eastern States . Nevertheless, this index shows (except for Canberra!) electricity prices clearly outstripping CPI and average weekly earnings. During the same period the Pensioner and Beneficiary Living Cost Index (PBLCI) increased by 16%."

Naturally, not all of these cost rises are the result of, as Grant King put it, the forcing of renewables into the system and the uncosted charges of these renewables, but many studies have shown that they are a very significant part of them.

Into the bargain, the Productivity Commission has provided the following cost information to the government: -

Coal generated electricity costs $78-$91/Mwh
Gas generated electricity costs $97/Mwh (1.22 x coal)
Wind generated electricity costs $195/Mwh (2.5 x coal)
Solar generated electricity costs $450/Mwh (5.7 x coal)

While I have a high regard for the Productivity Commission, I think they have been misinformed about the cost of coal generated electricity. A number of authoritative sources give a figure of $40 - $45 for modern efficient generators.

Nevertheless, whatever figures are taken for coal, wind and solar simply cannot compete without heavy government subsidies - at taxpayers expense.

The cost of "poles and wires" is disingenuously used as the catch cry of the alternative energy lobby in an attempt to obfuscate the fact that most of the extra costs for poles and wires are a direct result of the penetration of that form of energy into the system as Miskelly (op. cit.) has demonstrated. Also, at a smaller scale, the enormous increase in household appliances, especially air-conditioning, created the necessity to increase the capacity of the whole of the reticulation system. Since electricity supply and reticulation has to provide for peak demand, this led to a very significant increase in the "wires" (the bigger the current the bigger the necessary conductor) and to a parallel but not necessarily equal increase in "poles".

3.d.) Impact on households.

Chester (op. cit.) notes

"There is limited understanding of the impacts and consequences for low-income households of the substantive increases in household energy prices since mid-2007. Households are now dealing with the cumulative impact of annual electricity price increases far in excess of general price and wage movements. The average increase in Australian household electricity prices from 2007 to 2013 was nearly 83% with the highest experienced by NSW households (108%) and the lowest average increase for those living in the ACT (71%)
Nearly all households have tried to reduce their energy use in response to rising energy bills. Many are of the view that they have cut back as far as they could and many are bewildered that their reduced energy use has not produced a commensurate bill reduction.
Those with the lowest incomes have more barriers preventing lower household energy use than those with relatively higher income levels. Predominant barriers to reducing energy consumption are being unable to afford energy saving appliances or household repairs/improvements (which is most problematic for renters), the need for health-related use of heating and cooling and life support equipment, and the presence of children. Households are loathe to cut heating or cooling too much in case it affects the health of children or exacerbates existing health vulnerabilities."

Low income households, generally speaking, have not had the capital required to buy PV systems even with government subsidies; but still have to contribute, through their taxes, to those who have purchased such systems. (See **2.** par.4 supra)

3.e.) Impact on businesses.

Almost by definition, the increase in electricity costs caused by the penetration of renewable energy into the system has materially disadvantaged Australian business as compared with its overseas cohorts, particularly in Asia.

The fact that Australian manufacturing industry is in a near terminal condition is due to a number of factors (such as unsustainable union demands) need not be entered into here; except to say that one of the factors, and a major one, is the increase in the price of electricity (of the order of 80% to 100%, (see **3.c.)** supra). This by its very nature creates a vicious circle; less industry, less demand for electricity, higher electricity costs, more pressure on industry - and so on.

3.f.) The question of subsidies for operators.

There are no merits whatsoever in subsidising any form of so-called renewable energy because of the outrageous extra cost of the electricity so generated. (See **3.c.)** supra.) Any business, particularly the electricity generating business which is a very mature business, should stand on its own two feet. It is an egregious insult to the taxpayers of Australia to force

them to subsidise foreign interests making profits out of an otherwise unviable technology. This is particularly so when the following is taken into consideration.

Coal-fired generation.

Coal-fired electricity generation is a mature technology. World reserves of coal are of the order of 1000Gt [http://www.geohive.com], and are estimated to last more than a hundred years. The Australian horizon, taken in isolation, is well beyond 100 years; since Australia is well endowed with comparatively cheaply available coal. The Australian coal fired electricity generation industry is one of the most efficient in the world; and, until forced to use "renewables", Australia's electricity was among the cheapest in the world. Australia therefore has a reasonable timescale in which to develop, or otherwise accrue, alternative generation technologies. There is, in fact, a very promising technology under development in Europe at the present time - nuclear fusion.

Nuclear fusion.

There are about 450 nuclear (fission) reactors currently in operation, providing about 16% of the world's electricity. Many of these will be decommissioned within the next 10 years. There are a number of Generation III reactors under construction which are claimed to have better operational characteristics than the current reactors from which they have been developed. Further design of Generations III+ and IV is under way. The projected generating costs vary from 1.7 to 4.0 pence per kilowatt hr. ($43 - $100 / MWhr.), and the capital costs from 900 to 1300 pounds sterling per kilowatt ($2,200,000 - $3,200,000 / MW). The economic life of such reactors is projected to be from 20 to 40 years. On present predictions Generation III+ will come on stream in about 2019 while Generation IV (which is still in the research stage) is unlikely to become available until after 2035. [1] Nuclear fission of course carries with it the still unsolved problems of the safe storage of radioactive waste with a half life of thousands of years, and the equal problem of decommissioning.

Nuclear *fusion* on the other hand provides a relatively safe alternative to fission. The raw fuel for a fusion reactor is water and lithium; the waste products are helium which is not radioactive, and tritium, which while being radioactive with a half-life of approximately 12 years is reused in the reactor. The lithium becomes radioactive, with a half-life of 10 years and can be recycled in 100 years. Without going into detail, there is never sufficient fuel in the reactor at any time to cause a meltdown even allowing for the complete failure of the cooling system. A small reactor (16MW) is operational in the United Kingdom and a 500 MW experimental reactor is under construction in France. A full-scale reactor is projected to be operational in about 2045 and commercial reactors some time about 2055. The projected cost of electricity from fusion reactors ranges from 5 to 9 euro cents / kwh. ($80 - $144 / MWhr.) for a lower technology watercooled steel reactor to 3 to 5 euro cents/kwh ($48 - $80 / MWhr.) for a helium cooled silicon carbide reactor. [2]

These figures compare favourably with current fission reactor costs, and as Llewelyn-Smith and Ward have pointed out, if greater investment were available the timescale could be reduced by the use of other devices run in parallel to the main program, which would provide earlier attainment of specific strategic information.

It would seem clear that, if the many billions being wasted on wind power, solar power, carbon sequestration and other futile research were channelled into fusion research, the result would be of great significance to the future of the world.

The experimental reactor being built in France (International Tokamak Experimental Reactor - ITER) is being built by a consortium of the EU, Japan, Russia, USA, China and South Korea at an estimated cost of $5.5 billion. It is a tragedy that the billions that this country has

wasted on "renewable energy" were not spent in taking a stake in ITER. When the time comes for us to need fusion energy we will simply have to join the queue and pay commercial rates; whereas, if we had been partners we would have had preferential access. Other research into nuclear fusion is being carried out around the world; our stake in this is negligible.

[1] Dagnall S. Nuclear Fission: *Proceedings of the Institution of Civil Engineers.*. Civil Engineering **158** November 2005 pp.12-19.

[2] Llewellyn Smith C. and Ward D. Nuclear fusion power: a bright long-term future. *Proceedings of the Institution of Civil Engineers.* Civil Engineering **158** November 2005 pp. 59-63 Paper 14138.

4. The collateral damage of renewable energy.

4.a.) Medical problems caused by wind farms.

This matter in is outside my expertise, but I have to say that my perusal of the literature (as far as I have researched it) leaves me with the impression that the attitudes and misrepresentations of the protagonists of the "safety" of wind turbines, as it relates to the health and other problems of those forced to live even as far as a kilometre away from them, are very much in line with those of the protagonists of "renewable energy" itself.

As noted above, I have no medical or acoustic expertise but, having spent the last 25 years of my professional practice specialising in forensic engineering and as an expert witness, I think I may be excused for believing that I do have at least some expertise in *evidence.* Furthermore, as a result of my formal training I do have some knowledge of the physics of sound and energy propagation in general.

My perusal of, an admittedly small sample of, the available literature on the subject, leaves me with the impression that those wishing to claim that the wave energy transmitted from the rotation of the blades of a wind turbine can cause no deleterious effect on humans leaves something to be desired by way of probative evidence. In fact, some of it appears to be mere assertion. Very briefly, I was left with the feeling that those wishing to advance the cause of wind farms started on the premise that their "study" must provide support for their case; while those briefed by the opponents of wind farms started on the premise that they should find out what was actually happening.

I was intrigued to note that a leading protagonist for the wind lobby, and one of its principal "experts" was one Chapman. Many people, perhaps because he is (or was) employed by the School of Public Health and Tropical Medicine in the University of Sydney, think (and it would seem he allows them to think) that he has medical qualifications. In fact, he has no medical qualifications whatsoever; his qualifications are in sociology. He was one of the coterie of sociologists in the School of Public Health and Tropical Medicine that somewhat disingenuously campaigned against tobacco and grossly disingenuously campaigned for the "decriminalisation" of marijuana. This then is the "expert" put forward by the wind lobby to argue their case.

That sleep interruption and disturbance indicates a real potential for causing significant public harm from nearby wind turbines has been demonstrated by a number of studies around the world. For example a peer-reviewed research paper investigated residents living near GE 1.5 MW wind turbines in Massachusetts USA. Dr. Michael Nissenbaum, Jeffrey Aramini and Christopher Hanning published “Effects of industrial wind turbine noise on sleep and health*”* in the peer-reviewed bi-monthly journal *Noise & Health*, September-October 2012.

The study focused on sleep quality as defined by the *Pittsburg Sleep Quality Index* (PSQI), daytime sleepiness by *Epworth Sleepiness Score* (ESS), and general health according to SF36 ver2; *Mental Component Score*(MSC) and *Physical Component Score* (PSC). Residents received questionnaires based on participant-inclusion criteria for individuals living within 1.5-km (4921-ft) of the nearest 1.5 MW wind turbine(s). Baseline random samples were collected from residents living 3 to 7 km (9840 to 22,965-ft) away. The study conclusion has a strong recommendation for a separation distance of 1.4-km (4593-ft) away from a 1.5 MW wind turbine. This would be especially true for wind turbines located in quiet environments.

(Note that now 3 MW turbines are the norm; i.e. twice the size of those in the above study.)

I have had the opportunity of perusing a recent study of the Cape Bridgewater wind farm by Steven Cooper, which was commissioned by Pacific Hydro. From the epistemological point of view it is my opinion that this paper would stand up to scrutiny by any court; and I would be happy to produce it as evidence.

Notwithstanding the Cooper study (which has been widely acclaimed by highly qualified experts around the world), the National Health and Medical Research Council said there was no consistent evidence that wind farms caused adverse health effects and further research was needed. The NHMRC did not review the Cooper research. It said that research into the complex issue of wind farms and health was limited and of poor quality, with "no consistent evidence" of wind farms causing adverse health effects.

But later, and predictably, the National Health and Medical Research Council chief executive Warwick Anderson, said 'no consistent evidence does not necessarily mean no effect on human health'. The possibility of health effects from wind turbines was an "open scientific question" and public money would fund universities and acoustic experts to conduct high-quality research, the nation's peak health body says**.** (My emphasis) *Source:* News Corp Australia.

Well here we go again, more snouts in the global warming trough!

Finally, attention must be drawn to AGL's disgraceful and contemptible ploy to suborn doctors near its McArthur wind farm in an effort to have them play down their patients' symptoms resulting from the effects that Cooper (op. cit.) described in his study at Cape Bridgewater.

4.b.) The effect of wind farms on wildlife.

As far as wildlife is concerned, there have been a number of studies around the world which indicate that, as mentioned in **3.b.) par.5** supra, wind turbines generate "nothing but bird kill". Conservation group SEO/Birdkill stated that in Spain between 110 and 330 birds per turbine were killed each year, and between 200 and 670 bats. Benner et al (1993) claimed that in Germany 309 birds per turbine per year were killed and the figure in Sweden was 895. In the United States the *Washington Times (2/1/2012)* in an article said that up to 30 million birds and bats were killed every year by wind turbines.

All of which casts a certain amount of suspicion on the Australian Ecological Research Services report that at the McArthur wind farm only 10 birds per turbine per annum were killed. But then it seems that most things around the McArthur wind farm are suspicious. This group did point out however, that on a per capita basis wedgetailed eagles were the most commonly killed. This is apparently due to their habit of soaring at about the same elevation as the turbine blades and looking downward for prey.

It is worthy of note that there has been no cry of horror from the green movement nor from the ABC nor from the Sydney Morning Herald about the "slaughter" of eagles on wind farms. On

the other hand, mirabile dictu, if a farmers boy, for example, shoots an eagle he (or his father) faces a penalty of $10,000 or six months imprisonment!

5. Scoundrels waxing fat on renewable energy subsidies.

On its face there appear to be two types of entity profiting (or otherwise) from what I have repeatedly stated to be the fraudulent use of taxpayers money to subsidise this completely futile enterprise. The first, epitomised by AGL, are usually shareholder based corporations whose management has been quick to spot easy pickings. (It is interesting to note that the American investors' holy man, Warren Buffet, has also jumped on the global warming bandwagon; but has cannily advised his followers to get out of renewable energy the moment there is any indication of the cessation of subsidies.)

AGL, to whose medical misdemeanours I have referred to in the final paragraph of **4.a.)** supra, has adroitly ensured that it gets it both ways. First, it gets all the extraordinary benefits from the forced sale of wind power into the grid (I won't attempt to describe the Byzantine intricacies of the legislation and regulations); and when the wind stops blowing it is able to capitalise on the frequently available spot prices necessitated by the crucial need of keeping supply to the grid. It is able to do this because of its open circuit gas turbine generators specifically built for this purpose (shades of Enron). Spot prices can be from as low as $70 per megawatt hour, if there is sufficient spinning capacity in coal-fired stations, to a norm of about $100 increasing to as much as $2500 for most of a day, and spiking to $12,000 for perhaps an hour! Compare these figures with the cost at most $50 per megawatt hour from a modern coal-fired station.

No wonder AGL and the other corporate highwaymen are all in favour of "renewable" energy!

The second type of wind farm operators are epitomised by Pacific Hydro and Infigen. Whereas AGL is a well-established company with a wide shareholder base (it is in fact the oldest joint stock company in the country): Pacific Hydro and Infigen are newcomers and, certainly in the case of Pacific Hydro, heavily supported by union-based superannuation funds. Pacific Hydro's board for example included such personalities as Messrs Combet, Weaven and Himbury. It was reported last year (AFR 2.3.15) that Pacific Hydro had made a loss of $685 million - although it had not yet disclosed this. Messrs. Weaven and Himbury, two of the founding directors with Combet, have resigned.

I should draw attention to the vicious circle of statutory contributions to, often union run, superannuation funds, which are then paid to taxpayer subsidised wind farm operators, again often closely linked to trade union personalities. It is of course well known that Combet lobbied strongly for the increase of the RET. Finally of course, the employers' statutory contributions would be tax deductible in their hands and not inconceivably passed on to their customers by way of higher prices; so once again the taxpayer/electricity customer pays the piper - but doesn't call the tune!

Turning now to Infigen (ex Babcock and Brown); it posted losses of $55 million, $80 million and $9 million in financial years 2013-15. In its last report it laid blame for its losses on… wait for it... THE WIND! It is not alone in this, a large utility in Germany recently blamed the wind for not blowing enough to explain its losses

Now; on the back of Turnbull's carbon tax by stealth, which, it would seem, is a quasi carbon trading arrangement; Infigen is waxing fat once more. And it is not alone; a Singapore-based company associated with Turnbull's son has, among others, also jumped on the bandwagon.

Furthermore Turnbull's sometime employer Goldman Sachs (of GFC infamy) is hovering around to take advantage of carbon trading.

If, as I urge in my CONCLUSION below, the RET scheme is abandoned, AGL and others like it, might have to tighten their belts for a bit; but the forced investors in Pacific Hydro, Infigen etc would only have their losses stopped.

6.The energy and CO2 costs of so-called renewables.

In actual fact, many studies have shown that the nett effect of these schemes is to produce no less "greenhouse gas" than conventional (coal) sources of electricity. There are many reasons for this, including: -

i.) For many of them, more CO2 is produced in their manufacture than they save in their life cycle. A number of studies have shown a range of CO2 equivalents for different wind turbine structures. The methodology varies from study to study as do the findings. Some find that the CO2 produced during the manufacture is more than can, at least theoretically, be saved during the life cycle of the implement. Others show less CO2 during production. They all, however, show quite a considerable output of CO2 as a result of construction. Common sense is all that is needed to come to this conclusion; 3 MW wind turbines require 503 tons of steel in their manufacture, and 1500 tons of reinforced concrete in their base. Into the bargain, and here we get into real pollution-which CO2 is not - the permanent magnet alternators which are driven by the turbines contain about 2.5 tons of neodymium. Putting aside the mining, refining neodymium is a very nasty business involving repeated boiling in acid, with radioactive thorium as a waste product.

ii.) The major contributors to "renewable" energy - wind generators and PV cells - require stand by power for when the wind stops blowing and / or the sun goes down. This stand by power is provided by spinning reserve in coal-fired power stations and by the use of gas turbine generators on an at call basis. By the very nature of the at call requirement, open circuit gas turbines have to be used; which are far less efficient than the closed-circuit equivalent and are by no means CO2 free.
Spinning reserve is a very uneconomical use of coal-fired generation, it increases the amount of CO2 produced compared with that produced by the maximum efficient running of the generator sets and, into the bargain, increases the wear and hence maintenance requirements of the sets, and the associated furnaces and boilers. This is a worldwide phenomenon, and is particularly of concern in Germany and elsewhere in Europe. c.f. [le Pair et al, DOI:10.1051/epn/2012204 or http://www.clepair.net/windefficiency.html]

An interesting study was carried out by Bentek Energy in the USA. It was of a Colorado utility which owned 3764 MW of coal fired generators; 3236 MW of gas-fired combined cycle and gas turbine capacity; 405 MW of Hydro and 1064 MW of wind generators. The wind generators were brought progressively online from 2006 in accordance with the State's renewable energy legislation. In a study that started in 2006 and concluded in 2009 it was found that as a result of the integration of wind generation, stack gases from the coal-fired plants showed an increase of up to 150%. for sulphur dioxide, up to 9% for nitrous oxide, and up to 9% for CO2. That is to say the real pollutants SO2 and N2O increased more or as much as the non-pollutant CO2.
[http://www.bentekenergy.com/WindCoalandGasStudy.aspx]

Again in the USA, another study showed that when wind power was introduced into a coal-fired generating system stack analyses showed increases of the three above-mentioned gases. As gas-fired backup generation was introduced so the increase in stack gases was reduced. This was of course accompanied by increased cost.[http://www.masterresource.org/2010/02/]

China is an interesting case in point; 80% of its power generation is coal-fired with only 2% natural gas-fired. It added 13 gigawatts of wind power in 2009 making it third in the world in total wind capacity. (China increased its wind generating capacity as a sales pitch in the hope of selling wind turbines to mugs like us.)
China's emissions of CO2 increased 9% in 2009; and have been increasing at an accelerating rate ever since.

It should be noted that the increase in the emissions referred to in this section are on top of the emissions generated by the manufacture and construction of the units.

CONCLUSION

From the foregoing it will be seen that it is my opinion that the RET scheme should never have been enacted in the first place. This is particularly so when it is considered that it is based solely upon a demonstrably disingenuous proposition - anthropogenic global warming (AGW). Furthermore, that this proposition was false was obvious at the time when the scheme was enacted, and it's consequences are so vast as to put the future budgetary situation of the nation at risk.

The global warming lobby suggests that 'renewable' energy will replace existing coal-fired generators; this has been shown to be absurd. Australia, which produces 1.5% of the world's carbon dioxide is to be asked to destroy its economy by reducing these emissions, while China (16%), India (3.5%), Brazil (5.2%), the Soviet Union (5.6%) and Indonesia (8.7%) will be able to carry on more or less as before; the first three, without any restraint at all. The position of the USA (16.8%) is still an enigma.

All the relevant acts should be repealed, and the contracts entered into under the scheme determined. No doubt there will be an enormous outcry from the rent seekers and the snake oil merchants who have benefited enormously from this, what can only be described as a, racket.

No government is entitled to bind its successors in any way, much less bind them by contract for a period of 15 to 20 years. No doubt the incumbent government has been de facto left bound by the outgoing Labour government because of the $400 billion debt it has inherited from them. This is of course inescapable, however reprehensible. Notwithstanding this, there is no reason that the present government should be bound de jure by the RET Acts and their consequent contracts. Note that while the RET was enacted by the Howard government; the budget destroying contracts were effected by Prime Minister Gillard.

Despite the predictable cries of sanctity of contract and retrospectivity, these contracts should be determined. In the first place it is clearly arguable that they are unconscionable; the parties to the contracts knew that the premise on which they were based (AGW) was false - or if they did not know they are cretins - that the electricity generating systems proposed could only compete in the market as a result of heavy subsidies, and that the subsidies were to be provided by the taxpayers of Australia. All of these conditions precedent were reprehensible. Another aspect of the relevant acts is the question of whether they are constitutional.

No doubt the findings of the Spanish Supreme Court come a fair way down the list of precedents; after all Spain is not a common-law jurisdiction. Nevertheless, the thinking behind its ruling in the matter of the Spanish government's force majeure amendment of or determining renewable energy contracts should be looked at closely by the Government.

Putting all this aside, the Government need only consider firstly, the very questionable, at best, terms of these contracts; secondly, the fact that they reward a very small section of the

community (and a section that is already well provided for); thirdly, they are a heavy burden on the economy, the budget, the national debt - and the majority of taxpayers. It is not, I should have thought, a very difficult matter to explain to the electorate.

Finally, I note again that last year in Brussels, Christiana Figueres, Executive Secretary of the United Nations Framework Convention on Climate Change, let the cat out of the bag when she said that at the climate change conference in Paris later that year environmentalists would be aiming to replace capitalism and the concept of nation states with a New World Order (based on the notorious Agenda 21). Presumably this new world order would be run through the United Nations by Christiana herself and climate change specialists such as Flannery, Gore, Steffen, Karolly, Hamilton, Mann, Jones et al. CAVE CANEM!

Yours faithfully,

F. S. Hespe

F. S. Hespe

APPENDIX 1.

EXCERPTS FROM SUBMISSION TO GARNAUT CLIMATE CHANGE REVIEW
THE SCIENCE OF GLOBAL WARMING.

4.1 Introduction.

It would be as well to define what is meant by global warming. In the context of this paper it means the observed increase of global temperatures whether they be atmospheric or surface. That there has been warming over the past century is a reasonably established fact. Exactly how much warming and what are the underlying causes is another matter. This is where the dichotomy occurs between those who, on the one hand, blame man's activities for virtually all of the warming and declare that it is catastrophic, and those who disagree with this proposition.

That there has been an increase in the amount of carbon dioxide in the atmosphere has also been established. Again, how much of this has been due to man's activities, and for that matter what has been the actual increase, are the subject of argument. The relationship between the amount of carbon dioxide and the observed warming is another contentious issue, as is whether in fact all the warming has been due to carbon dioxide.

It will be shown below that there are other major factors which cause climate change, either warming or cooling. It will also be shown that some of these factors are likely, in fact almost certainly, to outweigh the effect of the increase of carbon dioxide.

What is important in any understanding of the question of climate change, global warming, the greenhouse effect, call it what you will; is that the earth's temperature or climate *is* changing, always has changed and, it is reasonable to expect, always will

change. What is more, in the past it has changed much more dramatically than it has in the last century. <u>The real science is telling us that there is nothing to worry about.</u>

4.2 Carbon Dioxide.

Since carbon dioxide is the gas which is the target of the draconian legislation proposed by the Australian government, it is important to understand its place and effect in the atmosphere.

The physics and chemistry of carbon dioxide in the atmosphere are straightforward. On the other hand the interactions of the various atmospheric processes are not straightforward and are largely unknown. They have become the subject of numerous so-called general circulation models (GCM's) which are predictive tools used by the scientists who are forecasting catastrophic warming.

a.) The "greenhouse" effect.

Fundamentally, the atmosphere as a whole is an excellent insulator, and without it the earth would freeze. It is 99.1% by volume oxygen and nitrogen, but a number of other gases add in a minor way to what is called the greenhouse effect. The two dominant "greenhouse" gases are water vapour and carbon dioxide. Methane, nitrous oxide and the second allotrope of oxygen O3 (ozone) are also considered to be "greenhouse" gases.

Their addition to the "greenhouse" effect, is caused by the molecules of the gas absorbing radiant energy and then re-emitting it. To do this the molecules must possess what is called a dipole moment. Such molecules absorb energy at specific wavelengths and allow other wavelengths to pass through without absorption. The depiction of the wavelengths absorbed is called the absorption spectrum of the particular molecule.
It should be noted that there are gaps in the absorption spectra between 3.2 and 4.3 μm and 8.5 to 11.0 μm; which is significant, because earth's temperature is such that it emits strongly in those wavelengths. This is one of the factors which, together with others discussed below, such as cloud albedo, prevent a runaway situation in the earth's climate.

While methane (CH4) and nitrous oxide (N2O) are greenhouse gases, their effect is significantly less than water vapour, for example the dipole moment of nitrous oxide is only about 7% that of water. O3 (ozone) only occurs in significant concentrations in the stratosphere. Ozone is formed by the ionisation and subsequent dissociation of oxygen molecules as a result of bombardment by high-energy radiation of short wavelength some 30 to 60 km above the surface of the earth.

Water vapour is by far the most powerful greenhouse gas and absorbs radiation across a number of wavelengths but principally between 5.3 and 7.7μm and above 15μm. Carbon dioxide, on the other hand, has no dipole moment[1] but as it absorbs energy in the upper near infrared (between about 12 and 17μm) the oxygen atoms commence to vibrate about the carbon atom so creating a transient dipole moment. This transience means that the effective absorption of carbon dioxide is much less than water vapour but also, and very significantly, it means that the effectiveness of CO2 as a greenhouse gas is severely restricted. As Figs. 6 & 7 show (see Appendix A) the radiation/concentration curves for CO2 become nearly asymptotic. Doubling the present concentration of CO2 would only increase the emissions by less than 4 W/m² (about 3.5-3.8).

The effect that this would have on the earth's temperature, is again the subject of dispute. The IPCC uses 0.5K° * per W/m²; while a number of researchers[2], studying volcanic eruptions and other natural phenomena have concluded that the figure should be in the region of 0.15. (one experiment gave a result of 0.15 ± 0.06, and another 0.11) Alternatively, Bellamy and

Barrett[3] have shown that a rough estimate can be made by dividing the present global warming by the total forcing.

The earth emits longwave radiation of 235 W/m²; from which, using the Stefan-Boltzman law, it can be calculated that the surface temperature would be 253.7° K (-19.5° C) if there were no atmospheric "greenhouse" effect. It is generally accepted that the average surface temperature is 15°C (288.2° K.), therefore the global warming is 34.5C°. The earth's energy flux is about 390 W/m² of which 235 are emitted to space, so that the total forcing is 155 W/m². This gives a figure of about 0.22 K° per W/m². Therefore a 'forcing' of 3.7 W/m² would give a temperature increase of 0.8 C°. Using the figure of 0.15 from the experimental data referred to above the temperature increase would only be 0.55 C°. That is to say, that using the *actual measured* global warming and forcing, doubling the CO2 content of the atmosphere would give an increase in temperature of only 0.8 C°**;** and on the basis of observed specific phenomena it would be 0.55 C°.

The present total global warming of 34.5C° is the result of the full effects of all the atmosphere's gases together with the consequential feedbacks, including the possible evaporative increase of water vapour. Why then do the GCM's add an extra feedback from water vapour?

[1] Lippincott W.T. ,Garrett A.B. and Verhoek F.H. Chemistry. *John Wiley & Sons.* New York 1977
[2] Douglas D.H. and Knox R. S. Climate forcing by the volcanic eruption of Mount Pinatubo. *Geophysical Research Letters* 2005 **32** LO5710, doi: 10.1029/2004GL022119.
Idso S. B. CO2- induced global warming: a sceptics view of potential climate change. *Climate Research* 1998 **10** No.1, pp 69-82.
[3] Bellamy D. and Barrett J. Climate stability: an inconvenient proof. *Proceedings of the Institution of Civil Engineers.* Paper 14806, Civil Engineering 160 May 2007 pp 66 -72.
* K= degrees Kelvin, 0°C is 273.15°K.

All the GCMs include positive water vapour feedback, which of course increases their predicted warming. However, there is data from the Atlantic Ocean[1] for the years 1950 to 1972 which show that while the CO2 concentrations increased during that period both the humidity and temperature showed a slight decline.

The humidity trend from the above-mentioned data shows a decline of about 4% per annum, and temperature declined about 2 C°; whereas the carbon dioxide content of the atmosphere increased from about 310 ppmv in 1950 to about 325 ppmv in 1970 a *total* increase of about 4.8% in 20 years. Thus observed data disproves the assumptions made by the GCM modellers.

Data from the Vostok ice cores (see Figs. 1, 2 & 3) show that CO2 concentrations peaked some 400 to 800 years after temperature peaks. This again is the opposite of the GCM modellers' assumption that an increase of carbon dioxide causes increases in water vapour and temperature.

A study of absorption spectra of the earth's atmosphere viewed from satellites[2] shows an overall contribution to global warming by CO2 of about 7-8 C°. This is an instantaneous figure and includes all the warming by CO2 up to the date of the observations, and represents about 22% of the total warming. On the other hand, using the Modtran programme and database the figure derived for the warming due to CO2 is about 10 C°. So here again we see the difference between calculated and observed figures. And again as always, the observed figure is less than the calculated figure.

b.) The concentration of CO2.

The IPCC's 2001 report gave the results of 19 GCMs. These showed that for a doubling of CO2 from 285 to 570 ppmv there would be an increase in temperature of 1.5 C° within a

range of 1-3 C°. That is to say, the range (or possible error) is more than the predicted increase! In 2007 the equivalent figures, as quoted by the Garnaut Review Secretariat, gave an increase of 3C° within a range of 2-4.5C° - *with a possible high of 10C*°! The range of 2-4.5 is said to be within one standard deviation, but it is difficult to see how only 19 results of such complex algorithms as are run by the GCM programs could be considered a reasonable population for the production of a normal distribution curve.

The IPCC had been using an increase in CO2 emissions of 1% per annum up to and including its 2001 report. It is not clear, but it would appear that it has increased that figure for its 2007 report. It claims that emissions grew by 1.1% per annum in the decade 1990 to 1999 and increased to 3.1% pa. from 2000 to 2006. Examination of the raw data on the other hand shows, for example, that the increases in 2002 and 2003 were 2.43 and 2.3 ppmv respectively; and then fell back to 1.5 ppmv in 2004 which had been the prevailing average for some years. Those three increases expressed as percentages are 0.63% , 0.61% and 0.39% respectively. It is difficult to see how the IPCC translated 0.39% or 0.63% to 3.1%; other than by way of its usual tendentious methods of working. It is clear that there is a culture of manipulating data and results endemic in the processes of the IPCC and its trained contributors. Furthermore it is glaringly obvious that its methods of reporting are calculated to create the maximum apprehension and fear in its audience.

On this last point it is instructive to examine the IPCC's development of two statements in its *Summary for Policymakers* of 2001. [3]

[1] Flohn H. Gefahrden Klima-Anomalien die Welt-Ernahrung? *Bild der Wissenschaft* 1978, **12**,pp 132-139.
[2] http://daac.gsfc.nasa.gov (March 2007)
[3] Lomborg B. The Sceptical Environmentalist. *Cambridge University Press* 2006. p.319

The first concerns the "culpability" of human activity in respect of global warming. On this subject, the first draft of the *Summary* in April 2000, said "*the balance of evidence suggests that there is a discernible human influence on global climate."* by October 2000 it became "*it is likely that increasing concentrations of anthropogenic greenhouse gases have contributed substantially to the observed warming over the last 50 years"*

By the time the official summary was published this had become "*most of the observed warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations."*

In the same way, discussing the costs and benefits of global warming, the October 2000 draft stated "*in many developed countries net economic gains are projected for global mean temperature increases of up to roughly 2°C. Mixed or neutral net effects are projected in developed countries for temperature increases in the range of 2-3°C, and net losses for larger temperature increases."* Again, by the time the official summary was issued this had become "*an increase in global mean temperature of up to a few degrees C would produce a mixture of economic gains and losses in developed countries, with economic losses for larger temperature increases."*

Yet despite this extraordinarily tendentious approach to what is an extremely important question the Garnaut Review Secretariat says that "*The IPCC plays an important role in bridging the gap between science and policy and has had considerable influence on the development of international and domestic climate change policy."*

If this "influence" continues, the cost to Australia (and the rest of the Western world) will be of such a magnitude that the economies of many of these countries - and particularly Australia - are likely to collapse.

Historic data show that world temperatures have been higher than present (see Figs.4, 8, & 13), in eras when human activity was very low and man-made carbon dioxide emissions were negligible. Similarly, prehistoric data (see Fig. 1) show epochs where temperatures were considerably higher than present.

Much the same results are shown in historic and prehistoric data for carbon dioxide and methane (see Figs.2, 3 & 14).

All of this confirms what the late Professor Sir Fred Hoyle, one of the most distinguished, if not the most distinguished, astrophysicist of the 20th century, said. He pointed out that "The efficiency of the carbon dioxide trap is insensitive to the amount of carbon dioxide in the atmosphere: increasing the amount five-fold would scarcely change the trap, in spite of the stories that are currently being circulated by environmentalists." [1]

Putting this in the context of man-made contributions to the total amount of CO2 in the atmosphere, it is generally accepted that there are about 730 Gigatonnes of carbon equivalent (730 GtC) in the CO2 in the atmosphere. In the order of 210 GtC per annum is emitted naturally from the surface of the earth and the oceans. By contrast, the emissions from human activity are about 7 GtC. That is to say that man's emissions are something less than 4% of the natural emissions (3.3%) and less than 1% of the total carbon mass. These figures are of a very broad order nature. No one has or can calculate with any real precision what the actual figures might be. Furthermore, the emissions, both natural and man-made are recycled by the natural processes of the earth's atmosphere and thermodynamics.(See Fig.15)

[1] Hoyle F. Ice *Hutchinson* London 1981 p.123

In all, carbon dioxide as a gas comprises 0.038% by volume of the earth's atmosphere, and has a half life of 2-5 years. If man made emissions constitute only 3.3% of all emissions, clearly they can not be responsible for all increase in temperature. Yet the IPCC seems to be taking *all* emissions into account in its calculations of temperature increase, and assuming them to emanate from human activities. This is unreasonable; for, quite apart from the inflated figures used for the increase in emissions, there is no evidence that all of the increase is the result of man's activities.

There is another very telling fact which shows that there is essentially no correlation between global temperature and man-made (anthropogenic) carbon dioxide emissions. Figure 12 shows the global temperature anomaly plotted against global fuel consumption (which is a good analogue for carbon dioxide emissions). It will be seen that the steepest temperature rise was between the years 1918 and 1940, during which time world fuel consumption had more or less levelled. After 1940 there was a decline until 1976, which was, significantly, the year of the Pacific Decadal Oscillation. During the period of this temperature decline world fuel consumption was rising steeply. Since then temperatures rose about 0.4C° until 1998. Since 1998 the world's average temperature has declined slightly, plateaued since 2002 until 2007 *during which year global temperatures FELL 0.6C°*; yet fuel consumption and hence anthropogenic carbon dioxide emissions have continued to rise. Furthermore, and disastrously for the IPCC climate modellers, their prediction of an abnormal heating at about 10 km up in the troposphere at low latitudes has been shown to be completely false. [1] These *facts* in themselves destroy the hypothesis of anthropogenic carbon dioxide being the cause, much less the only cause, of global temperature increase.

Yet despite this, the IPCC (and Garnaut) in a breathtaking display of misinformation say "Global mean surface temperature increase since 1990 has been measured at 0.33°C……." citing Rahmstorf et al 2007. Did Rahmstorf et al switch off their instruments in 1998? It certainly appears that Garnaut made no other enquiry from the many reputable sources available or from the literature; but simply took the word of yet another rentier scientist.

In regard to doubling the amount of carbon dioxide in the atmosphere, that is increasing it from 285 to 570 ppmv, Bellamy and Barrett (op. cit.) have pointed out that on the basis of the known fossil fuel reserves as at March 2007 it would be necessary to burn all the oil, all the natural gas, and nearly 20% of the coal (or whatever other combination would provide the same amount of CO2) to reach this figure. They also point out that this would take a century or more to achieve!

Sir Fred Hoyle (op. cit.) has pointed out that "When a pattern of facts becomes set against a theory, experience shows that it rarely recovers." The theory, if it can be called that, of man-made carbon dioxide causing serious and even catastrophic rises in temperature has had more than one pattern of facts set against it. As a theory it is unsustainable, and as a basis for action such as is contemplated by the Australian government it is preposterous and dangerous.

4.3 Other Factors Affecting the Earth's Climate.

It is clear from the foregoing, that anthropogenic carbon dioxide emissions cannot be the sole cause of the observed warming of the earth, little though that might be (0.6C° during the last century). It remains therefore to examine what other factors might be involved. There are indeed many factors which are *known* to affect the earth's temperature. Many of these factors are complex in themselves but the complexity of their interaction is such that any honest meteorologist or climatologist would admit that how they interact is largely unknown.
Although each discrete system is affected by all the others, for convenience they can be

[1] Hadley Centre for Climate Prediction and Research. United Kingdom.

divided into those which operate within the earth's environs and those which come from outside.

a.) Earth Systems.

(i) The Earth's Path around the Sun.

While this may seem too obvious to comment upon, it is worth pointing out that the path is elliptical, not circular, and therefore earth's distance from the Sun varies, so that the intensity of the insolation varies with the position of the earth in its circuit.

(ii) The Inclination of the Earth's Axis.

The inclination of the earth's axis to the plane of the ecliptic (about 66.5°) has a noticeable effect on earth's climate and temperature. Without it of course there would be no seasons. But it is the variability of the angle that has a subtle long-term effect on climate.

In the first place, the axis of the earth precesses in much the same way as a spinning top. This alters its angle of inclination and thus affects the earth's temperature. The mathematical properties of this precession were first calculated by Sir Isaac Newton; and in the 1860s James Croll calculated the effect of this 13,000 year cycle on the earth's temperature.

Another such effect is the Milankovitch effect, which is the slow, 41000 year, cycle of what might be called the central position of the axis of the earth in the Newton/Croll precession. Milankovitch showed this to vary from between about 22° and 24°. The Croll effect acts in opposite ways in the northern and southern hemispheres whereas the Milankovitch effect is the same in both hemispheres. Sir Fred Hoyle (op. cit.) calculated the combined effect of the two to be that, in the present epoch, the northern hemisphere would be 1% cooler than average and the southern hemisphere 3% warmer than average.

(iii) The Turnover of the Deep Ocean Waters.

It is known that the turnover of the deep ocean waters results in very large-scale 'recycling' of the CO2 held in the water. As the cold deep water comes to the surface there is an out gassing of CO2. In like manner the cold oceans near the poles absorb CO2 and eventually sink. This cycle, of unknown duration and complexity, over time affects the content of CO2 in the atmosphere. The volumes involved far outstrip the amount of anthropogenic CO2 emitted.

(iv) Extra Tropical Cyclones.

The Earth is a heat engine. Indeed, if it were not so it is unlikely that life would be able to exist. Without going into detail, the insolation at low latitudes is considerably greater than that at high latitudes. Therefore the increase in temperature at the topics is naturally greater than at the poles. This excess heat is distributed partly by the great ocean currents, but to a far greater degree by the winds. Extra tropical cyclones are particularly important in this process. In effect they 'transport' heat from the tropics toward the poles, increasing entropy in accordance with the second law of thermodynamics.

What is particularly important in the context of this paper it is that they cannot be fully taken into account by the GCMs because they (the GCMs) cannot resolve any atmospheric phenomenon smaller than about 1600 km., whereas extra tropical cyclones are typically smaller than about 500 km. This means that the results of the modelling are distorted yet again toward the higher end of predicted temperatures.

Mention has been made above (see p. 10) of the use of the incidence of cyclones; particularly in the Caribbean and southeast United States; by the global warming fanatics. These disasters, occurring as they do in highly populated areas, are ideal for the distortion, misrepresentation and fear raising so enjoyed by these people and the media, who assert that there has been an increase of these phenomena as a result of anthropogenic carbon dioxide.

It would be as well to repeat here the true facts. Research meteorologists at the United States National Oceanic and Atmospheric Administration have studied the incidence of hurricanes in the South Eastern United States. Their findings are that the current run of hurricanes, which started in 1994 and which is producing more than 10 such storms a season; with a maximum, so far, of 19 in one season; is not as severe as the period between 1926 and 1970. During those 44 years, hurricane activity was much greater than since 1994, culminating in 1933 with 21. In contrast, the 24 years between 1970 and 1994 averaged less than 2 hurricanes per season. The researchers have found that the change from low to high frequency and intensity of hurricanes coincided with a slight (less than 1 C°) increase in sea surface temperatures which occurred "suddenly" in 1926 and again in 1994. A similar *drop* in sea surface temperatures occurred in 1970. If the sea surface temperature was a result of the increase of man made CO2 in the atmosphere, it is unlikely in the extreme that there would have been a drop in temperature in 1970, or that the changes would have been so rapid. As in all climate change the vast cyclical movements in nature are the underlying cause.

Lomborg (op. cit.) has collated a number of authenticated references which show that in the North Atlantic (which of course includes southeast United States and the Caribbean), despite great decadal variations, "… the trends are generally declining, with a noticeable quiet period in the 70s and 80s. Particularly,…. the number of intense cyclones (those that cause the greatest damage) has been declining, as has the number of cyclone days. Equally,…. the average wind of an Atlantic cyclone has been decreasing over the past half century. Moreover, the record of US cyclone land falls goes back to 1899 and shows no increase either in total or split into East Coast or Gulf Coast land falls."

(v) Volcanic Activity.

There is no doubt whatsoever that volcanic activity has a marked effect on the CO2 content of the atmosphere, and indirectly on global temperature. We have referred above to Douglass and Knox's (op. cit.) work on the eruption of Mount Pinatubo. Volcanic emissions of CO2 are common. As Professor Ian Plimer points out "In 1984 and 1986 CO2 from the volcanic crater lakes of Monoun and Nyos killed thousands and added CO2 to the atmosphere. Near Mount Gambier, volcanic CO2 is commercially extracted from rocks, one small hot spring on Milos contributes 1% of the planets volcanic CO2 and huge quantities of CO2 constantly leak from unseen submarine volcanoes." [1]

Again, more generally, geological data prove conclusively that temperature increases of "… up to 7 degrees C in 50 years - with subsequent falling temperatures - have been a common feature of the atmosphere over the past 10,700 years, much greater and faster than the latest greenhouse forecasts of 1.5 to 4.5 degrees C by 2100. Most flora and fauna evolved before 10700 years ago, and have survived these, as well as earlier warmings of up to 13 degrees C in a decade. Similarly, 8000 years ago it was a rise in sea level at twice the forecast greenhouse rate that *created* the Great Barrier Reef. Coral islands will grow, not be drowned, if sea levels rise by the "forecast" 40cm. by the end of the century. Furthermore, for millennia, Pacific sea levels rose and fell by about 40cm. every three to eight years, principally due to the El Nino effect." [2]

[1] Plimer I. The past Is the Key to the Present. *IPA Review.* March 2003. pp.9-12
[2] O'Brien B. J. Keynote address. 13th Australian Geological Convention.

(vi) Cloud Albedo.

It is common knowledge that cloud albedo is perhaps the greatest modifier of earth's temperature. It is merely intuitive that the more cloud the cooler the weather and vice versa. But of course it is more complex than this. For example, heavy cloud at night reduces cooling.

It is also widely agreed that the effect of cloud albedo is not well understood and more importantly in the context of the present discussion it is far from well represented in the current GCMs. This failure, or rather inability, to take proper account of cloud albedo is a further factor, and a major factor, in the distortion of the results toward the high end of temperature predictions.

A very significant factor in the development of cloud albedo is sunspot activity. This will be dealt with in **4.3 b.)** (iii) below, but here it is sufficient to say that it has been shown that sunspot activity has a marked effect on the amount of low-level cloud in the atmosphere. This of course has a direct effect on the temperature.

Bellamy and Barrett (op. cit.) comment that Wild [1] described the input parameters of 20 GCMs concerned with solar radiation."The input for incoming radiation absorbed by the atmosphere varies from 58 to 87 W/m²; and that absorbed by the surface varies from 148 to 180 W/m [2]. These are important quantities and, with the published variations, it is not surprising that the eventual results differ greatly. These are the calculations on which future climate predictions are based and do not offer a great deal of confidence in their present state."

They also point out that neither do the GCM predictions for global distribution of cloud coverage compared with the observed data inspire any confidence in their use for predictions of future climate changes.

[1] Wild M. Solar radiation budgets in atmospheric model intercomparisons from a surface perspective. *Geophysical Research Letters* 2005 **32** L 07704 doi:10.1029/2005GL022421
[2] IPCC 1996 a: 117. Wilson 1997. Cubasch et al 1997: 765

b.) Extra Terrestrial Effects.

(i) General Planetary Effects.

The earth's path around the Sun is affected by interaction with the other planets, particularly the gas giants. This in turn has its effect on the insolation received and hence the temperature. In itself the consequent variation is perhaps insignificant, but combined with other factors can have a noticeable effect. This is particularly so when considering changes in temperature as small as 0.6C°.

(ii) Solar Irradiance.

The Sun is classed as a G2 yellow dwarf and as such its rate of 'burning' is increasing. This is the usual process for this class of star and leads to it becoming a red giant and eventual extinction

Einstein's theory of general relativity shows that the energy output (irradiance) of the Sun has increased by the order of 30% since the Lower Archean (i.e. over the last 3.8 billion years). (See Hoyle (op. cit.) p.78.) Recent studies have shown that solar irradiance has increased by approximately 0.4% over the last 200-300 years causing an increase in temperature of about 0.4C°; and that the increase in solar irradiance over the last 30 years has been responsible for 40% of the observed global warming. [2]

These are small but very significant effects. If the figure of 40% of the observed global warming can be extrapolated for the full century it means that the increase in solar irradiance has caused an increase in temperature of 0.24C° out of the total of 0.6C°. Soon et al [1] have concluded that the combined effect of the variation in solar irradiance and sunspot activity had been responsible for 70% of global warming during the 20th century. This has been confirmed by research at the Max Plank Institute for Solar Research.

(iii) Sunspot Activity.

It has been established for well over a decade that there is a significant correlation between sunspot activity and earth's average temperature. Late 20th-century work by Svensmark and Friis – Christensen, Lassen and others has shown this in some detail. However records are available comparing central English temperatures with sunspot activity going as far back as 1750. Other data go back as far as 1550.

This correlation showed that as sunspot activity increased so did the earth's temperature and vice versa. The correlation was such as to give confidence that the relationship between sunspot activity and temperature was valid. What was not known was why this relationship held.

In 1997 new work by Svensmark and Friis- Christensen [2] provided a brilliant exposition of the physics behind the phenomenon. Very briefly, it had been known for many years that the earth's atmosphere had been subject to bombardment; not only by the electromagnetic spectrum of the Sun's irradiance (see **4.2 a.)** above) but by high-energy particles from space. These high-energy particles are commonly called cosmic rays, and it is generally agreed that they are the result of supernovae. Stars usually end their lives by either collapsing as black holes or by enormous explosions called supernovae. It has been estimated that there have been 100 million such supernovae over the history of the earth; i.e. about one every 40-45 years (Hoyle op. cit.). It was once suggested that a supernova only 30 light-years away was the cause of the Cretaceous extinctions 65 million years ago, since disproved by Hoyle and others.

Svensmark and Friis- Christensen, by experiment, showed that these particles (or rather their derivatives after collisions in the upper atmosphere) cause low-level clouds by providing the nuclei for the condensation of water vapour up to a height of about 3000 m. They confirmed their experiments by comparing detailed analyses of cloud cover data from a number of geo-stationary satellites with cosmic ray data. It was found that the cloudiness followed the sun spot activity with great exactitude - quite sufficient to provide a sound scientific basis to the theory. They also showed that the reason for the variation of cloudiness; and hence temperature; with sunspot activity was because the magnetic storms which are sun spots had a significant effect on the solar wind.

[1] Soon W. H., Posmentier E. S. and Baliunas S. L. Inference of solar irradiance variability from terrestrial temperature changes, 1880-1993: an astrophysical application of the sun-climate connection. *The Astrophysical Journal* 1996, **472,** No.2, 891 –902

[2] Svensmark H. and Friis-Christensen E. Variation of cosmic ray flux and global cloud coverage-a missing link in solar- climate relationships. *Journal of Atmospheric and Solar Terrestrial Physics.* 1997, **59**, No.11, 1225-1232.

The solar wind, first postulated by Parker, is the Sun's constant discharge of high-energy particles from its corona. As this 'wind' reaches the earth it is shaped by the earth's magnetic field into a shield against the general bombardment from space by cosmic rays. The stronger the wind, the greater the protection from cosmic rays, the fewer such rays reach the lower atmosphere, and the fewer the clouds. This completes the system of sunspot activity, and its effect on earth's temperature.

The effect of low-level cloud is of major importance in determining the temperature of the earth's surface and of the troposphere. Yet the IPCC saw fit to completely disregard the work of Svensmark and Friis- Christensen and the other workers in this field, the results of which

have received universal acceptance. Usoskin et al [1], for example, have shown that the late 20th-century and early 21st. century high activity level of the Sun is very unusual compared with that of the last 7000 years.

All of this points to the sunspot cycle being a major factor in the variability of earth's climate, and that some earlier and the present century have seen significantly high sunspot activity. The sunspot intensity varies through a double cycle of 22-23years (i.e. two cycles of about 11.5 years) and is thought to be caused by the velocity of the highly electrically charged winds at the Sun's equator being greater than those at its poles. This difference in velocity causes the lines of flux of the Sun's magnetic field to twist and ' dive' into (and out of) the surface. The location of these dive points are sun spots. After about 11.5 years the flux lines become so twisted that they 'snap' and realign themselves in the opposite polarity - so that the Sun's polarity reverses every 11.5 years.

These cycles are called Schwabe cycles. A number of scientists are concerned that the next Schwabe cycle is likely to be the weakest in the last 200 years. Kenneth Tapping at the Canadian National Research Council has found that the sun has entered into a quiescent phase reminiscent of the Dalton Minimum. Professor R.T. Patterson at the Geoscience Centre at Canada's Carleton University agrees. He says "I, and the first-class scientists I work with, are consistently finding excellent correlations between the regular fluctuations of the Sun and earthly climate." [2] These findings are confirmed by a number of scientists from around the world. The next two sunspot cycles, numbers 24 and 25, have been predicted by NASA [3] to be the quietest for many hundreds of years.

[1] Usoskin I. G., Solanki S.K., and Korte M.. Solar activity reconstructed over the last 7000 years: the influence of geomagnetic field changes. *Geophysical Research Letters.* 2006, **33** L 08103,doi: 10. 1029/2006GL 025921.

[2] Reported in BrookesNews.Com 11th February 2008.

[3] Hathaway D. H., and Wilson R.. M. What the sunspot record tells us about space climate. *Solar Physics*, 2004, **224**, pp.519, NASA/Marshall Space Flight Centre.

Caleb Ball

From: system@accelo.com on behalf of Philip Fowler [redacted]
Sent: Tuesday, 13 September 2016 2:50 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for Philip Fowler (comments)

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Philip Fowler
Email: [redacted]

Address:
[redacted] Blakney Ck NSW 2581

Blakney Creek, NSW
2581

Content:
Property Value impact study totally misleading: The published studies and data the department relies on seem to be mostly desktop studies of a very limited and almost irrelevant sized data base. Very few properties are included in the land value impact studies and these ignore the changing nature of rural development in NSW. For example the local proposed windfarm at Blakney Creek left out half the properties that exist on its impact maps. Our house has been there since 1900 but was not included in their assessment and neighbours assure us their house didn't exist according to the wind farmers either. If such large numbers of impacted residents are left out of scientific data analysis then these studies findings and their conclusions are basically irrelevant. The studies were designed to give a desired conclusion - not a relevant or real one. Wind farms can make properties almost unsellable you could conclude if you picked the right data to give the desired outcome.
Ecological Impacts ignored deliberately. My family has naively invested $1million in cash and labour input into our property that is now a 120ha conservation reserve. We invested our family assets in protecting critically endangered species and endangered ecological communities. We have been supported by ongoing research funds from the Commonwealth Government's Biodiversity Fund since 2012. This has been totally ignored in the Rye park wind farm development application. The fact that all our adjoining neighbours have since received State government support for protection of their biodiversity assets or undertaken their own privately funded work is also ignored in the Rye park windfarm EIS. This protection of EEC and Endangered species on local private land has become a definite trend extending in all compass directions that is totally ignored by the wind farm proponents. Our plans and projects and willing participants extend to Dalton, Yass, Boorowa and Biala and the aim is to form a recognised Commonwealth Environment Department "established corridor community". This should provide a real chance for the recovery of critically endangered species and Endangered Ecological Communities. The local momentum is to protect and enhance biodiversity assets using proven on ground works and methods. This is all real money and real positive demonstrated outcomes for the entire state and commonwealth EEC and Endangered species recovery efforts. Our local and regional efforts have been totally ignored by the wind farm proponents - the Yass windfarm EIS basically states that these species are all going to die out eventually and so why try to save them and stop the windfarms.? The work we are doing is real and other real local and regional efforts are having a positive impact on these species and EEC so is why is totally ignored by wind farm proponents across the entire SE of the state.? Do wind farm proponents deliberately leave out local land care efforts to disguise their truly ecologically destructive nature? Is this why the department allows them to rely on theoretical and desktop studies instead of real on ground work and real on ground community consultation.? The clearing of hundreds of kilometres of roadside EEC's are ignored in all local windfarm EIS's. This amounts to thousands of kilometres around the ACT border.
Erosion impacts ignored - wrong soil types used in study.
The ridgelines proposed for local windfarms are the steepest and have the highest erosion potential that exists. That is why most of these ridgelines north of Yass have not been cleared and retain their original pre European woodlands. These slopes and woodlands are illegal for the land owner to clear so why is a wind farm allowed to clear them.? The Rye Park wind farm even describes the wrong soil type in its EIS - it states it is a basalt ridge - not a highly erodible sedimentary ridge.? How can these desk top studies be realistic if they cannot even get the basic soil type right? This is a classic case of "cut and paste" from one project to the next ignoring the real world and relying on a government not to pick it up. I could guess most wind farm EIS's are of such poor quality because they still seem to be approving them no matter how poor and irrelevant these studies are.? Poor quality plans and planning? Irelevant, incorrect data?
Social impacts - Our neighbourhood around Blakney Creek to Yass, Rye park and Boorowa has been clearly divided by the Rye Park wind farm proposal. The landholders hosting the wind farms number 40 and they have a dozen or so supporters. The rest of us numbering hundreds of families and land holdings are totally opposed. We now have hundreds of new local friends united in our

opposition to these turbines but we do not trust our wind farm neighbours who deceived us and kept the proposal secret until the last possible minute - NSW planning notification in 2014. Trust is crucial in a rural landscape with fire management requiring neighbours to co operate and co ordinate efforts. Wind farms destroy this trust among neighbours as soon as they are proposed. City based planners would seem to have no idea what this trust means in an Australian rural landscape. Wind farm proponents deliberately destroy this crucial social cohesion and divide and rule. Wind farms have an extremely negative and permanent social impact on the entire local landscape.
The Eonomic impact of windfarms is wide spread and negative for all involved except the wind farmers themselves. The local impacts are we no longer invest anything in a property that has no value to any but the cheapest buyer. Why invest in a massive loss - why waste money you can never recover and only continually loose? Our personal plans have been shelved since 2014 - costing local business $100 000's +. The investment decisions of all neighbours will most likely be negatively effected costing the local economy tens of millions multiplied by hundreds of properties directly effected and billions statewide. We will be living under an industrialised ridgeline that resembles a shabby outer city suburb and yet there is no recognition of this by the State. Local government zonings should reflect the change in land use from rural and conservation to industrial but they don't. A paddock full of wind turbines is considered exactly the same as a paddock full of sheep or trees - reality is totally ignored and why? The best example of this local negative economic impact is the fact the ACT government that is prepared to fund wind farm disasters refuses to allow them in the ACT!
The economic impact on the state is reflected in the economic disaster that is now the European union. Europe has duplicated its power generation capacity multiple times to make up for the fact the wind only blows when it wants to not when consumers demand it. Power line infrastructure is multiplied unnecessarily and because of the erratic nature of wind power most of it is not used most of the time. This is excellent for Hong Kong's richest man - the power line company builder. The inherit inefficiency has sent a whole continent broke - to no - ones advantage except the wind farmers. A local example of this distortion of the economy is Infigen energy - 2014/15 - $800 million foreign debt in Australia, $150 mill costs and $120 million income in Australia - $30 million tax write off in Australia, and $120 million cash in Bermuda. ? An unviable company serving as a large tax write off for its owners?
The investment in wind has diverted resources from the solar and on site energy sector - industries that can stand on their own and be economically viable. They exist without the economic support required by wind farms. Wind farms are a deliberate attempt to divert and delay the new energy market and are keeping coal in business - as described by Australia's biggest greenhouse polluter in its last 5 annual reports. AGL Annual general report 2010 to 2015. AGL demands wind farms but describes it's competitors as "rapidly expanding divergent and emerging technologies" that is solar, on site storage, local distribution, digital technologies, energy efficiency. Why is Australia's biggest greenhouse producer so keen on these redundant and economically damaging wind farms?
Australian business, industry and residential consumers have all been reducing energy use every year since 2010. Is this the real threat to greenhouse gas reliant energy producers? If it continues there will be continually less demand for base load power? If wind farms are constructed and $billions wasted on these unreliable, erratic base load producers will that keep coal in business - as a 80-90% permanent back up for wind?
A modern 21st century state could choose to avoid the economic, social, environmental and ecological disaster that is wind farms. Why invest in a proven disaster?

IP Address: - [redacted]
Submission: Online Submission from Philip Fowler (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162540

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

13 September 2016

[redacted]
MUDGEE NSW 2850

Director
Industry and Infrastructure Policy
GPO Box 39
SYDNEY NSW 2001

Dear Sir/Madam

WIND ENERGY FRAMEWORK

Thank you for the opportunity to make a submission regarding the new policy framework for wind energy in NSW. I have two concerns I wish to raise in my submission:

1. Attendance of wind energy companies to community information sessions.
   Last week I attended the community information session held in Mudgee. I was hoping to have the new policy framework explained and to listen to any concerns from the community and the replies to these concerns from the Department of Planning and Environment staff present. I was extremely disappointed that the second question raised from the audience was from Megan Richardson of Infigen Energy. I feel strongly that any questions wind farm proponents wish to raise with the NSW Government regarding wind energy policy should be raised elsewhere, not within a "community" information session.

2. No determination within the framework of clear and decisive guidelines to protect existing landowners/residents.
   From reading the wind energy framework information released by the Department of Planning and Environment and from attending the community information session I understand that the assessment of an application to construct a wind farm will be a merit based assessment and that there will be no buffer zone between the proposed wind farm and surrounding landowners and their residences. As stated the graphs presented in the framework for visual and noise impacts are to act as an indicator only when assessing the impact of a wind farm on nearby residences. This is an indicator to the Department of Planning and Environment but nothing has been presented which gives a determination for nearby residents.

How is an existing resident to be sure that they will be protected from the construction of such an industrial development within land zoned by local council as primary production? If, prior to a wind farm being constructed, a landowner meets all local council requirements for the granting of a subdivision and dwelling entitlement on their land, what measures within the framework will address the changes to this status by the construction of the wind farm? From my research into this concern it has been confirmed that the construction of a wind farm on nearby land will add to the list of criteria that must be met when a local council assesses such an application. Therefore if the potential land use/zoning changes, due to the construction of a wind farm, and the landowner were to discover that local council can no longer approve a dwelling entitlement on their land near a newly constructed wind farm, how will this be addressed by the new wind energy policy? Perhaps, given the loss of value of their land, the landowner should be afforded a reduction in rates to the local council.

As stated at the community information session, relative topography will not be taken into account when the Department is initially considering an application to construct a wind farm. This is another particularly important aspect when assessing the effects of wind turbines on neighbouring landowners. If the wind farm is constructed on a ridge line, how will the turbines project visually and audibly across the valley below containing residences? I understand that the Department of Planning and Environment will select residences they feel will need consultation during the assessment process, however it is unclear, due to the lack of a determined buffer zone, when a residence will be included in this process.

Yours faithfully

ALICIA HAWKINS

Caleb Ball

From: system@accelo.com on behalf of Craig Southwell [redacted]
Sent: Tuesday, 13 September 2016 7:53 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for Craig Southwell (comments)

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Craig Southwell
Email: [redacted]

Address:
[redacted]

Rye Park, NSW
2586

Content:
To Whom it May Concern;

Thank you for the opportunity to make a submission concerning the proposed Wind Energy Planning Framework.

I am in generally in favor of this framework, as I hope it will give more certainty to both the community and developers, and speed up the approval or rejection of wind farm developments.

My main concern about the framework is that such weight is given to the visual impact assessment. In essence, my view is that when you purchase land you donâ€™t own the view from that land. I believe it is unreasonable to expect others to forgo a legal business opportunity because it might spoil your view. I understand that wind turbines are tall structures that impose themselves in the landscape but if we reject them because they impact on views, we will not build any. By all means minimize the impacts on people by re-siting, resizing, screening or other measures, but I fear the framework is appeasing those who shout the loudest. Rural landscapes are already industrialized, by the agricultural industry, it just happens that allot of people donâ€™t mind looking at this industry and the changes it makes to the landscape. The agricultural industry and wind farm industry can co-exist well together.

In the section headed, â€oekey issues for wind farm developmentâ€ . The framework suggests, â€oethere are certain assessment issues that are unique or particularly relevant to wind energy developmentâ€ . The framework identifies these issues as, visual impacts and noise impacts. Surely these two issues are not â€oeuniqueâ€ to wind farm developments. I was told at the planning departmentâ€™s information night that other projects, are assessed for visual impacts and surely some projects, like mines, are assessed for noise impacts.

The earlier and more comprehensively developers engage with local communities the better. Some developers at the moment seem to believe this step is optional. I believe with better consultation many problems for the community and developers could be solved earlier on in the development process. Developers should be required to contact nearby landholders immediately after the development process begins.

In describing the assessment requirements of developers in respect to community consultation the word â€oeshouldâ€ is often used. Whereas when referring to other requirements, for example environmental assessments, the word â€oemustâ€ is used. The framework, then is giving developers room to wiggle out of requirements. â€oeMustâ€ is the stronger word and needs to replace â€oeshouldâ€ .

Community Consultative Committees in my experience become stacked with those against the proposal and there is no mechanism which encourages information to be disseminated out to the broader community.

The framework states, â€oeThe preferred means of administering community enhancement funds is under a voluntary planning agreement with the relevant local council/s, and proponentsâ€ . However there seems to be no mechanism for holding councils accountable, to ensure they deliver the benefits of community enhancement funds to those impacted by the development. A developments impacts can be isolated to one geographical area within a councils boundaries, but councils may choose to ignore this fact.

Yours Sincerely

Craig Southwell.

IP Address: [redacted]
Submission: Online Submission from Craig Southwell (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162571

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Please find below my comments regarding the wind farm framework made at the Yass and Crookwell meetings. I am happy to discuss further, in person, as always.

Re: property values

The reviewed document states "there is **insufficient** data **to provide a definitive answer** to the question of whether wind farm development in New South Wales impacts on surrounding land values utilising statistically robust quantitative analysis techniques".

I question why the review then goes on, if there is insufficient data to provide a definitive answer? This review should have stopped with this statement, however the report goes on to say that based on its **"expert opinion"** having conducted a **literature review** and the preparation of 6 case studies of property sales in New South Wales and Victoria wind farms "**may not significantly impact** rural properties used for agricultural purposes".

In saying they **may not** significantly impact property values, the report implies that they may also significantly impact property values in some circumstance.

Given that there are 38 wind farms operating in Australia currently (http://energy.anero.id.au/wind-energy) with the review considering only 6 area case studies, why should this review be considered adequate by the public? And as the majority of wind farms are in South Australia, which prides itself on being the wind farm capital of Australia, it is interesting and concerning that no case study was made from that State. Why not? What impact have they had on property values there? Why wasn't a report considered from Australia's largest wind farm, Macarthur?

Locally, a Yass real estate agent spoke at a town meeting in October 2015, saying that even the proposal of wind farms is already having a detrimental impact on property values, not only on rural agricultural properties, but also closer to town. Two other Yass Real Estate agents have confirmed this viewpoint.

Locally, there have been a significant number of properties sold, without the agent or owner disclosing to the vendor that a wind farm is proposed for the area eg five properties with a 3km radius of turbines 92-100 of the proposed Rye Park Wind Farm, have been sold within the past 6 years, whilst the wind farm has been in various planning stages. One property has sold twice in this time, the second time as recently as 6 weeks ago. If the proposed Wind Farm is not going to have an impact on Property Value, as indicated by the Review, then why did these owners/real estate agents neglect to tell the buyers about the planned wind farms.

These sales, had they been included in the case study data would also skew the results, as these sales were made at no depreciation in value, as the new owners were unaware of the wind farm and therefore paid a premium for a property with a view of uninterrupted countryside. If they were indeed included in the review, their values would indicate that

there is no impact of wind farms on sales. Only one of these new owners has indicated that they would still have purchased the property if they had known about the wind farm, but it is known that the price had been reduced to attract the buyer, even without disclosing the wind farm plans, as the property had been on the market for a while, and once prospective buyers learnt of the wind farm, pulled out of negotiations.

The Review rejected case studies for 10 wind farms as there were insufficient sales in the area. Three of these case studies are in the local Southern Tablelands area and further investigations should have been undertaken to examine why properties were not selling. It is not clear from the Review whether Real Estate agents were asked about why properties were not selling. Interestingly, Crookwell 1 was rejected and is the longest running wind farm in the area. It is known locally that the wind farm has decreased the likelihood of attracting a buyer to a wind farm impacted property and to attract a sale, the owner may need to drop the selling price by as much as 70%.

It is also under question whether the case studies and review, consider the cost impact of compulsory acquisition of properties by Developers/Proponents and whether that data is included and how it is used?

It would have been useful if the study had considered the number of properties that could not attract a buyer due to the proposed development or the proximity to turbines rather than simply reporting on the sales that had occurred.

A Google study of my own has found the following articles in the press from recent years that appear to be in contrast to the Review findings.

http://www.theaustralian.com.au/national-affairs/climate/value-of-land-cut-by-wind-farms/story-e6frg6xf-1226566270371

Excerpt: Feb 1, 2013

"A VICTORIAN council has conceded that a wind farm development still in its early stages has slashed the land value of its neighbours, and agreed their land rates should be cut.
In what is believed to be an Australian first, South Gippsland shire council has amended the rates notice for one neighbour of the Bald Hills wind farm project, which is yet to erect any of its 52 planned turbines.
The move is being cited as a victory by wind farm opponents, who claim the visual impact and noise of turbines, as well as possible health effects, drive down land values for neighbours.
South Gippsland Council chief executive Tim Tamlin said the value of a property adjacent to the Bald Hills site at Tarwin Lower, 170km southeast of Melbourne, was considered different from surrounding farm blocks because it was a coastal block bought for "lifestyle purposes".
"This person, from what I can understand, paid a premium when they purchased it," Mr Tamlin said. "They're saying, 'Hey, this isn't fair now there's a wind farm and I'm not going to be able to sell it to the market at that value any more'.
"We've gone and had a look and said 'Yeah, that's actually a fair call, you're not going to get that any more', which is sad really because the money he is going to save on his rates is never going to compensate for the capital loss."

The neighbour, who declined to be named, has had his capital improved value assessment reduced by 32 per cent, from $662,000 to $450,000.
….Don Jelbart has owned property near the site since 1985 and now plans to make his own appeal to the council for a rate reduction based on lower land value. "I bought more land in 2002 just before the wind farm raised its head, with the sole purpose of that land being our superannuation," Mr Jelbart said. "Once you put wind turbines there, the coastal value is removed."
Mr Jelbart and his neighbours estimate the wind farm development will wipe $20 million from the value of nearby properties. "Our land is being used as a buffer zone for an industrial site," he said.
….
The British Valuation Office Agency, which decides council tax valuations, last year ruled wind turbines built near homes could sharply decrease their value, moving some homes into a lower council tax band.
Mark Burfield, who is awaiting turbine construction within 1km from his property, has already received a verbal knockback from South Gippsland council after asking for a rates adjustment.
He is trying to sell some of his property, receiving one offer for $200,000 less than he advertised.
"The people came over, looked at the house and said 'That's fantastic'," Mr Burfield said. "I said: 'That's where the wind farm will go.' They went to see the wind farm manager, then came back and roasted the real estate agent.
"They said there is no way they were going to buy here and what a pity it was. I have $2.5m worth of farmland, and right now its unsellable."

http://www.theaustralian.com.au/national-affairs/climate/value-of-land-cut-by-wind-farms/story-e6frg6xf-1226566270371

Excerpt: 10 July 2015

"Mr Keogh's property is situated on the border of the approved White Rock wind farm, between Inverell and Glen Innes, and said, for all their green energy potential, the project has left him unable to sell his land.

"From the minute I heard about it, I put the place on the market and everybody walks away," he said. "I have agents who have had buyers come in, and they have asked why they said no, and two of the buyers have actually put in writing that it is because of the wind farm. There are two sides to this story. I can't stop it, and I'm not trying to stop it, but I just feel that both sides of the story has to be put across."

http://www.goulburnpost.com.au/story/1633835/turbines-at-saturation-point/

Excerpt: 12 July 2013

"UPPER Lachlan Shire mayor John Shaw is concerned about the abundance of wind farms appearing in the area.

He is worried that the shire is starting to suffer from what he calls "wind farm overload".

"Land values in the shire have actually decreased because of the amount of wind farms in the area," he said."

Re: the Assessment Process

As a member of the Rye Park Community Consultative Committee, I have experience of the current Wind Farm Assessment Process on which I would like to comment, to ensure the Dept is aware of the impact on Community. These are my own opinions and not those of the CCC.

The Proponent seems to hold all the cards as far as the length of the process. They can take as long as they like to prepare their Premlinary Environment Assessment. They pay consultants to help prepare their arguments and write the Assessment.

When it gets to Public Exhibition, The Framework proposes a minimum 30 days for the public to read, review and respond to the document, which can be some hundreds of pages.

For many landowners, this is done after their daily work is completed, often using their own funds to check the claims of the Environmental Assessment, and must be completed in a 4-8 week timeframe.

The proponent then has opportunity to respond to public expression submissions. Currently there is no time limit this stage of the process.

Why is there no time limit for the proponent to respond when they have paid workforce, including consultants, who can work on the 36 hours a week then leave their investigations at 5 PM get on with their lives.

In the recent Rye Park wind farm process, the proponent had over 2 years to respond 109 submissions to the EA, which were alerting the department to a range of deficiencies in EA.

The proponent was then given another opportunity to address a number of the community's concerns and the deficiencies to which the community got only 3 to 4 weeks to respond. Again it took more research, time, money and energy away from our families, farms businesses. It would appear that the developer or proponent is given a 2nd bite of the cherry despite there being number of objections at the 1st stage of the process.

I wish to retain the right to add further to this submission. This is likely to occur after the close of submissions on September 16, 2016

Caleb Ball

From: system@accelo.com on behalf of Stacey Brodbeck [redacted]
Sent: Wednesday, 14 September 2016 10:15 AM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for company Envisage Consulting (org_comments)

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Stacey Brodbeck
Organisation: Envisage Consulting (Director)
Govt. Agency: No
Email: [redacted]

Address:
[redacted]

Swansea, NSW
2281

Content:
A guideline focussed on improving the siting and visual outcomes of windfarms is long-awaited and welcome. A notable shortcoming, however, is a heavy reliance on assessment teams to determine landscape character types and scenic quality values based on other documents that are not readily available nor directly applicable (e.g Regional Landscapes of Australia: Form, Function and Change (1971) & Australia's bioregional framework). This aspect increases both complexity and subjectivity, as well as the level of uncertainty for proponents.
This highlights the need for state wide mapping of NSW's scenic values as this would address this fundamental issue as well as being beneficial at all levels of the planning process. Such mapping is currently underway across Victoria and an integral part of planning in other countries such as the United Kingdom. It is recommended that a paper that provides more relevant mapping information (yet still is not as comprehensive as what is needed) is Characteristic landscapes and visual landscape regions of NSW (Thorvaldson, 1996, in Landscape Australia (journal of the Australian Institute of Landscape Architects)).
It is also noted that the national guidelines, as put forth in 2010 and never finalised, would have provided a single national assessment process that would have been inherently far more efficient, and preferable, for this developing industry.

IP Address: - [redacted]
Submission: Online Submission from company Envisage Consulting (org_comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162602

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Caleb Ball

From: system@accelo.com on behalf of [redacted]
Sent: Wednesday, 14 September 2016 11:07 AM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for [redacted] (comments)

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: yes

Submitted by a Planner: no

Disclosable Political Donation:

Name: [redacted]
Email: [redacted]

Address:
[redacted]

[redacted]

Content:
Dear Sir/Madam

I support the New Wind Energy Planning Framework in that it will provide more certainty and assistance to companies in the renewable energy and wind energy sectors.

I was disappointed to read that NSW is the worst performing state in terms of renewable energy. I believe that NSW and Australia as a whole should make more ambitious strides towards 100% renewable energy, as soon as possible.

I support the Framework, where it allows this to happen. In particular, I agree that communities should be better engaged and consulted, that there should be a move away from strict buffer zones and that there is a clear understanding that there are no adverse health impacts from wind turbines.

However, I do not support the Framework's unnecessary focus on the visual impacts of wind turbines. It appears illogical to place such emphasis on this, when you consider the multitude of developments and constructions that are equally as visually obstructive - such as high rise developments and open coal mines. The focus on the visual impact of wind turbines should not be a ground for a stricter assessment of wind farms.

I urge the NSW government to improve the Framework such that it allows an easy and more balanced process for wind farm approvals and their investors.

IP Address: [redacted]
Submission: Online Submission from [redacted] (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162625

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Caleb Ball

From: system@accelo.com on behalf of Les Johnston [redacted]
Sent: Wednesday, 14 September 2016 1:06 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for Les Johnston (comments)

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Les Johnston
Email: [redacted]

Address:
[redacted]

Balmain, NSW
2041

Content:
I support the finalisation of the guidelines for the establishment of new wind farms. Wind farms are long term investments and require a consistent and stable assessment process.
I note that the guidelines includes a methodology for the assessment of visual impact. I am concerned that this methodology overstates the visual impact of wind farms. The numbers of persons within sight of large scale wind farms is typically much less than that for inner city high rise residential developments. Planning NSW does not have a visual assessment methodology for the assessment of visual impacts arising from high rise residential developments, such as, the Harold Park Meriton development.
I support the establishment of wind farms located in highly altered landscapes, eg pastoral areas. In these locations, wind farms have much less visual significance than wind farms located in "naturally evolving" landscapes. The extensive vegetation clearing that has preceded the establishment of pastoral lands results in wind farms becoming more noticeable. In such instances, the altered landscape should have its visual impacts substantially reduced. This means that the visual influence zones should be greatly reduced to 2km in such instances.

IP Address: - [redacted]
Submission: Online Submission from Les Johnston (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162636

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

Wednesday, 14 September 16

Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

To whom it may concern,

NSW *Wind Energy: Assessment Policy*
Submission on noise assessment requirements

Thank you for the opportunity to provide a submission regarding the Department of Planning and Environment (DPE) *Wind Energy: Assessment Policy* released as a Draft for Consultation in August 2016.

As an acoustic consultancy, our submission relates to the *Wind Energy: Noise Assessment Bulletin* released as a Draft for Consultation in conjunction with the Policy.

Resonate Acoustics

We are an acoustic consultancy, with acoustic engineers who have been involved in the assessment of noise from wind farms over the past decade. In all, we have undertaken acoustic assessments for fifty wind farm projects in all Australian states, as well as internationally. This has provided us with a strong familiarity with the assessment procedures and guidelines used for wind farm noise.

A significant focus of our work has been in the area of post-construction noise monitoring for wind farms based on the various procedures recommended by different authorities in Australia. Therefore, we have a strong understanding of the difficulties involved in the measurement of noise from operational wind farms, which must invariably be carried out in the presence of wind. We also have extensive experience in the assessment of “special noise characteristics” of wind turbine noise, in particular tonality and low frequency noise.

We also conduct research into the assessment of wind turbine noise, authoring papers on the accuracy of noise predictions for wind farms, the differences that result in measured levels under different compliance measurement techniques, and the effectiveness of wind shields for controlling wind noise induced noise on microphones.

Submission

We have considered the Draft *Noise Assessment Bulletin* based on our experience with wind farm noise assessments in both NSW and around Australia.

Overall, we welcome formal NSW guidance on wind farm noise assessments and are broadly supportive of the guidance provided in the Draft *Bulletin*. We note that it is consistent with the current procedures under which wind farm noise has been assessed for existing and proposed sites in NSW and consistent with the noise assessment requirements included in EPA-issued Licences for existing wind farms in NSW.

Our comments on specific aspects of the Draft *Bulletin* are provided below:

Item	Comment
Special noise characteristics – Tonality	The definition of objective tonality assessment criteria is welcome, particularly as the SA 2009 Guidelines are vague on this aspect. While we acknowledge that the tonality criteria applied in the Draft *Bulletin* are the same as those applied to other industrial noise sources in NSW under the *Industrial Noise Policy* (INP), we have a concern that these tonality criteria are not sufficiently stringent to identify audible tones that should warrant application of a penalty. This is particularly the case at low frequencies where an 8 to 15 dB difference is required to both adjacent one-third octave bands in order for a 5 dB penalty to be triggered. A comparison study we carried out into different tonal assessment methodologies[1] found that a low frequency 100 Hz tone that resulted in audibility of 10 dB under the IEC 61400-11 methodology and 13 dB under the narrowband ISO 1996-2 methodology (which would imply a 6 dB penalty), did not trigger a penalty under the NSW INP tonal criteria. In our experience, if audible tones arise from a wind farm at a receiver location, they are most likely to occur due to mechanical noise in this lower frequency range (~100 to 200 Hz) where the one-third octave band approach recommended in the Draft *Bulletin* is unlikely to penalise even clearly audible tones. We note that our concerns around the tonality criteria applied in this instance would also apply equally to the tonality criteria applied to industrial sources of noise under the NSW INP. An alternative to the one-third octave band method is the narrowband methodology from Annex C of ISO 1996-2. This is the reference methodology for the assessment of tonality in NZS 6808:2010 and has the advantage that it is supported by dose-response studies and a defined penalty scheme. The adoption of narrowband tonal assessment criteria for wind farms obviously increases the complexity of any such assessment and we acknowledge it would be more stringent than that applied to other industries in NSW. However, we note that it is standard practice for contracts between wind farm developers and wind turbine suppliers to include reference to narrowband tonality assessment procedures and such procedures are also in common use for wind turbine noise in both Victoria and SA. As a result, acoustic consultants who have experience in wind turbine noise will generally also have experience with narrowband tonal assessment procedures. With respect to tonality, it is fair to say that wind turbine noise assessment procedures in Australia are typically well ahead of other industrial noise assessment procedures. We also note that the *Bulletin* suggests that the presence of tonal characteristics in wind turbine noise is normally a result of a turbine maintenance issue. Our experience suggests that, in those cases where audible tonality is detected at a residence, it is normally a consistent feature of the particular turbines at that site, suggesting that, where it occurs, it is a design rather than maintenance issue.

[1] Evans T & Cooper J, "A comparison of tonal noise regulations in Australia", *Proceedings of Acoustics 2015*, Hunter Valley, 15-18 November 2015.

Item	Comment
Special noise characteristics – Low frequency noise	Little guidance is provided on the measurement of low frequency noise. Additional guidance should be provided on: • Metric – is an L_{eq} or L_{90} metric the basis for any low frequency noise post-construction monitoring? • Wind direction – are measurements to be conducted under downwind conditions as for A-weighted noise levels? Also, we note that ambient low frequency noise levels (in the absence of wind farm noise) within an environment may approach 60 dB(C) during periods of high wind. Therefore, an intermediate monitoring location approach may be required for any low frequency noise assessment in a similar manner to that noted in the Draft *Bulletin* for monitoring of A-weighted noise levels.
Special noise characteristics – Penalties for special noise characteristics	A defined procedure for the application of penalties for special characteristics of wind turbine noise is welcome as this is not well defined in other guidance. However, further definition is required for: • "Assessment period" – if a characteristic occurs for more than 10% of the time during one day but not for any other days of a monitoring campaign, is that one day considered to be an "assessment period"? • Conditions resulting in characteristics – if a characteristic is identified to occur regularly only under crosswind or upwind conditions, or only under low or high wind speeds how is the 5 dB penalty applied? If it occurs only under crosswind conditions, it would not appear reasonable to apply it to the wind farm noise level measured under downwind conditions as the actual wind farm noise level under crosswind conditions would be lower. Similarly, if it only occurs at low wind speeds, it would not seem reasonable to apply the penalty to all wind speeds. Additionally, we have some concern regarding the requirement that the characteristic is required to be present for 10% of an entire day, based on only up to one week of data from a monitoring campaign. In our experience audible tonality can be highly direction and wind speed dependent. Similarly, low frequency noise levels will be higher under downwind conditions. If a week-long monitoring campaign only includes very limited periods of those conditions that are conducive to a characteristic occurring then no penalty may be applied, even though those conditions may occur much more frequently at other times. It is typically impractical to monitor for tonality and low frequency noise for very long periods of time. However, consideration should be given to requiring an assessment of special characteristics over a representative range of wind conditions.

Item	Comment
Noise monitoring – Use of supplementary/intermediate noise monitoring locations	As acknowledged in the Draft *Bulletin*, it can be difficult to accurately measure wind farm noise levels at receiver locations due to the relatively low signal-to-noise ratio. This is particularly the case for locations where wind farm noise levels are expected to be 35 dB(A) or lower. Therefore, we agree with the recommendation of closer supplementary / intermediate noise monitoring locations as a potential alternative technique in determining wind farm noise levels at a more distant receiver site. As noted in the Draft *Bulletin*, the selection of any supplementary site would need to be subject to consideration of factors such as: • consistent line-of-sight and direction to turbines between the supplementary and receiver sites • consistent topography between the turbines, supplementary site and receiver site. We note the Draft *Bulletin* suggests sites where noise levels vary from 45 – 55 dB(A). 55 dB(A) is quite a high level in the context of a wind farm and would typically only be measured at the base of the turbine. In our experience, supplementary locations at a distance representative of nearby residences can work quite well for compliance monitoring provided a location is selected sufficiently far from vegetation. Rural houses are typically surrounded by trees which increase background noise levels in the presence of wind. However, there are commonly paddocks nearby where a monitor can be located at a couple of hundred metres from the house in a location that would experience similar levels of wind turbine noise but much lower levels of background noise.

Item	Comment
Noise monitoring – Duration of monitoring	We agree that, for some receivers around a wind farm site, the "worst case" wind direction will be a relatively uncommon occurrence. In these cases, it is unlikely to be practical to gather 500 data points in the WC direction. Where this occurs, it is suggested that guidance be given on the appropriate method to assess the wind farm noise level based on the six weeks of gathered data. For example, should the wind farm noise level be determined from: • the measured noise levels gathered in the worst case direction even though only a limited number of data points are available OR • the measured noise levels gathered in all directions even though this may involve averaging periods when the receiver is upwind of the wind farm OR • a wider wind direction range around downwind for which 500 data points are available (e.g. downwind ±90º)? We also note that some care needs to be taken in considering seasonal trends in wind direction when determining whether it is practical to gather 500 data points in a worse case direction. For example, if the worst case direction predominantly occurs during summer, it may be possible to undertake six weeks of monitoring in winter without gathering 500 data points in that direction. However, if the monitoring was repeated in summer then those data points may be readily obtainable. This would need to be considered at the outset of any noise monitoring program. If it is determined necessary to wait for a season when a worst case wind direction is more likely to occur, then this would need to be taken into account when determining timeframes for the provision of a post-construction assessment report.

Please do not hesitate to contact us if you require any additional information.

Yours faithfully,

Resonate Acoustics
Level 7, 657 Pacific Highway
St Leonards NSW 2065

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14 September 2016

Felicity Greenway
Director, Industry and Infrastructure Policy
Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

By email: Felicity.Greenway@planning.nsw.gov.au
Online: planning.nsw.gov.au/Have-Your-Say

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www.infigenenergy.com

Dear Ms Greenway,

Infigen Energy Limited (Infigen) develops, owns and operates renewable energy generation assets in Australia. Infigen own six wind farms and a solar farm with a combined installed capacity of 557 megawatts operating in New South Wales, South Australia and Western Australia. Infigen's operating assets generate enough power to meet the needs of over 250,000 homes saving over a million tonnes of carbon dioxide emissions each year. Infigen's development pipeline comprises approximately 1,100 megawatts of large-scale wind and solar projects across Australia.

Infigen welcomes the opportunity to make a submission to the New South Wales Department of Planning and Environment's (DPE) draft wind energy planning framework (framework). Infigen generally supports the content of the framework and thanks the DPE for their thorough approach to consultation on the framework.

To date Infigen has contributed comments and feedback to the framework at industry consultation meetings during July and August 2016 and via the Clean Energy Council's (CEC) submission letter which is fully supported by Infigen. Infigen would like to in particular highlight its support for the following points outlined in the CEC submission:

- the need for a balance between the design and efficiency of a wind farm and its potential visual impact;
- the frameworks promotion of community consultation;
- the reconsideration of the suggestion to apply the framework to all modifications to projects with existing approvals;
- the need for the framework to outline a balance between the overall benefits of wind farm development (clean, green power) and local visual impacts;
- the reconsideration of the suggested and impractical Visual Impact Assessment (VIA) mitigation measures;
- the stage at which the local landscape receptors consultation takes place with the local community;
- the creation of strategic state plans for wind farm regions; and
- the redrafting of the noise bulletin to include fairer and transparent language.

ABN 39 105 051 616

In addition, Infigen has the following comments and suggestions to make on the framework.

Wind Energy: Assessment Policy

- Infigen supports the elements of the framework that seeks to reduce consenting timeframes, front load community consultation and create standard assessment guidance for Wind Farm planning applications.
- The language used in the Assessment Policy, VIA and Noise Bulletins should be neutral and factual. It is also important to note that impacts can be positive or beneficial as well as negative. Infigen suggests that the framework is reviewed for any language that is potentially misleading. We have provided two examples below to illustrate this point.
    - Example: Section 3 (page 6) *"This can alter the character of the landscape and people's enjoyment of the landscape"*. No evidence is provided to support this statement. It could be reworded to *"This may or may not alter the character of the landscape and individuals perceived enjoyment of the landscape"*
    - Example: Section 4.1 (page 8) *"…and seeking the views of affected landowners at the scoping stage will result in…."*. It is presumptuous to refer to landowners as affected at this stage since no detailed assessment has been undertaken and therefore the effect of the wind farm on the landowner has not yet been determined. This could be reworded to *"….and seeking the views of potentially affected (or local landowners) at the scoping stage…".*
- Section 1.4 of the Policy outlines that the Policy will apply to applications for modifications to existing wind farm approvals. Infigen suggest that this should be reconsidered to only apply in the case of minor modifications to existing approvals to ensure that these approvals can be progressed with appropriate updates to technology without incurring significant delays or cost in preparing additional detailed information.

Wind Energy: Noise Assessment Bulletin

- The language used throughout this Bulletin should be reviewed to ensure that the language used is neutral and where appropriate evidence is cited for statements made about the potential effects of, or perception of, wind farm related noise.
    - Example: Background section (page 2*) "Wind energy developments require high quality wind resources which are often located in quiet, rural areas."* This is a broad statement and could be amended to *"….that are often located in rural areas, which have a lower background noise level than most urban environments"*
    - Example: Background section (page 2*) "Preliminary studies of the relationship between wind energy development noise and annoyance levels indicate a greater level of annoyance than for most other environmental noise sources at the same level".* We caution against using preliminary studies as evidence to support this statement but if it is retained then those studies should be referenced in the Bulletin.

Wind Energy: Visual Impact Assessment Bulletin

- Infigen welcomes the DPEs approach to produce a standard set of VIA guidelines to be used for all wind farm applications in NSW.
- Whilst Infigen recognises the value of early engagement with communities local to proposed wind farm sites, we are concerned about the proposed consultation with communities to determine landscape values at the pre request for Secretary's Environmental Assessment Requirements (SEARs) stage of the planning process. Infigen suggest that this local landscape values study should be undertaken by the DPE to inform a baseline for all State Significant Developments in NSW. The local landscape values study is intended to be a non-wind farm related baseline study about local landscape values and this cannot be executed without bias if it is undertaken by individual wind farm developers in advance of a planned wind farm development. There needs to be a statewide or set of regional studies undertaken at a government planning level.
- The VIA preliminary screening tools are useful, however it should be highlighted in the Bulletin that these are preliminary screening tools. They are not a standard to be met but rather an indication of potential for significant effects.
- The Bulletin is potentially restrictive to wind farm design and makes reference to deleting turbines or a reduction in turbine tip height to mitigate potential visual effects. Whilst these measures in some instances can reduce potential visual impacts, it is important that a balance is achieved to ensure that NSW remains an attractive place to develop efficient and cost effective wind farms.

Wind Energy Framework: Standard SEARs

- Infigen has no specific comments regarding the SEARs

Review of Impact of Wind Farms on Property Values

- It should be clearly outlined where this review fits into the wind farm framework or if it is a standalone document intended for information only.

Thank you for the opportunity to consult on the draft wind energy planning framework.

Yours sincerely,

Megan Richardson
Development Manager
Megan.Richardson@infigenenergy.com

Caleb Ball

From: system@accelo.com on behalf of Greg Butler [redacted]
Sent: Monday, 15 August 2016 9:53 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for Greg Butler of Yass Valley Council (comments)

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Greg Butler
Organisation: Yass Valley Council (Councillor)
Email: [redacted]

Address:
[redacted]

nil, NSW
2582

Content:
Approval authority in all cases should be local council

IP Address: [redacted]
Submission: Online Submission from Greg Butler of Yass Valley Council (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=157557

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

RES Australia Pty Ltd
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Department of Planning and Environment
Attention: Felicity Greenway
Director, Industry and Infrastructure Policy
GPO Box 39
Sydney NSW 2001

Our Ref: DV05-000546

24 August 2016

Dear Felicity Greenway,

Re: RES Australia consultation response to NSW 2016 Draft Wind Farm Planning Guidelines

RES Australia has reviewed the 2016 New Wind Energy Planning Framework documents and would be grateful if the consultation responses in this letter could be considered. RES's suggestions appear in *red text* and discussion in text beneath.

Wind Energy Framework Standard Secretary Environmental Assessment Requirements Draft for Consultation.pdf

RES Response (suggestions in red text):

- Development description (p.1): *ancillary infrastructure including access tracks, hardstandings, underground and overhead electricity cabling, substations and grid connection to XX transmission line.*

- Biodiversity (p.2): assess the impact of the development on birds and bats, including blade strike, ~~low air pressure zones at the blade tips (barotrauma)~~, alteration to movement patterns, and cumulative effects of other wind farms in the vicinity;

RES welcome a detailed impact assessment of birds and bats on all wind farms but feels strongly that Barotrauma should not be included in the assessment. The results of a number of aerodynamic and carcass studies suggest that where bird/bat fatalities occur, the vast majority of mortality occurs as a result of trauma from direct blade collision. RES would like to direct the NSW Planning & Environment Team to the following studies:

- Investigating the causes of death for wind turbine-associated bat fatalities (Grodsky et al 2011, Journal of Mammalogy, 92(5):917–925, 2011)
- A Forensic Investigation Into the Etiology of Bat Mortality at a Wind Farm: Barotrauma or Traumatic Injury? Journal of Environmental Pathobiology 2016)
- 2013 studies by NREL: http://www.nrel.gov/wind/news/2013/2149.html.

Due to the wide number of different wind turbine makes and models available, combined with the number of different bat species with different anatomies, flight patterns and behaviours, RES foresee significant study variations between consultant experts and unnecessary complexity in assessing planning applications,

especially in a planning appeal. Collision modelling is however a mature study area and relying on this analysis will greatly reduce the complication of assessing impacts to bat or bird species.

- Hazards / Risks (p.3)

  ~~Health – consider and document health issues, focusing on dwellings within 1.5 km of proposed wind turbines and identify potential hazards and risks associated with electric and magnetic fields and demonstrate the application of the principles of Prudent Avoidance;~~

  EMF exposure and magnetic field levels in the vicinity of wind turbines are lower than those produced by many common household electrical devices. The requirement for developers to assess these impacts will create unnecessary planning complexity. RES would like to direct the NSW Planning & Environment Team to the following research:

  — Measuring electromagnetic fields (EMF) around wind turbines in Canada: is there a human health concern? (McCallum et al, Journal of Environmental Health. 2014; 13: 9).

- Consultation (p.4)

  ~~However, you must: • establish a Community Consultative Committee for the project in accordance with the Community Consultative Committee Guidelines for State Significant Projects, and consult with the committee during the preparation of the EIS; and~~

  The establishment of a community consultative committee is an important step and one which occurs on all RES projects – however because the local community consultative committee requires a significant amount of volunteered time from members of the community - the committee is set up immediately after planning consent is awarded and before construction commences. This avoids wasting the time of volunteers. RES strongly suggests the mandatory creation of community consultative committee's should be timed after planning consent is awarded.

  Normal in depth community consultation should occur prior to submitting an EIS, and this should be demonstrated in the EIS. However setting up a community consultative committee runs the risk of creating a small selection of residents dominating the consultation response. RES appreciates that this comes down to appointing a strong meeting chairperson – however often communities seek to appoint a chairperson themselves and good impartial chairpersons are a rarity in RES's experience!

Wind Energy Visual Impact Assess Bulletin Draft for Consultation August 2016

RES Response:

- P.1 – Application of the Bulletin. RES accepts that modification applications that seek to increase the number of turbines or significant reconfiguration may require a new assessment, however RES feels strongly that an increase of tip height equal to 20% or less will either not be discernible to members of the public, or will not materially increase the visual impact. RES would seek that the NSW planning team should allow planning consent amendments with an additional 20% of tip height without needing to apply the guidelines. This will significantly decrease administrative burden and costs for developers and planning authorities. Whitelee Wind Farm in Scotland provides a good example of this – where there are 140 Siemens turbines that stand 110 metres tall, 69 Alstom turbines that stand 140 metres tall and 6 Alstom turbines that stand 110 metres tall, but it is very difficult to visually identify which are the higher turbines.

- P.2 – *Proponents will be required to submit, with the request for SEARs, a Preliminary Environmental Assessment that includes a map with key information, ~~results of community consultation~~ and the results of the preliminary screening tools. This will form the basis for the issue of the SEARs that will identify the matters that must be addressed in the Environmental Impact Statement (EIS).*

The requirement to provide community consultation results with the request for SEARS is too early in the development process. RES suggests that this requirement should be removed from the guidelines. Developers typically commission the detailed EIA studies after the SEARS has been received and this enables detailed constraint mapping, which in turn results in precise infrastructure positioning. Generally a community consultation will generate a large number of queries from members of the public and quite often the enquiries are about the exact positioning of infrastructure. At an early stage a Developer is unlikely to have a refined design and detailed EIA results to share. As a result RES feels strongly that requirement to submit community consultation to support the preliminary visual impact assessment will lead to community confusion. RES agrees that community consultation is very important but suggests this is made a mandatory step prior to the submission of the EIS but not as part of the request for SEAR's.

- P.6 & P.6 – Preliminary Screening Tools. The tools presented in Figure 1 and Figure 2 both create unnecessary complexity and planning application cost. Project landscape and visual impact assessment is normally undertaken by consultants both in the context of neighbouring amenity and cumulative visual impact assessment amenity. Whilst it is understood that these tools were designed to quickly analyse the desk based visual impact suitability, these tools create an unnecessary development restriction area at an early development stage – despite the guidelines being 'non determinative'.

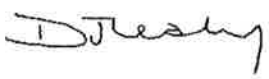
- P.8 – As per RES's response for P.2 – RES believes that undertaking community consultation prior to the request for SEAR's is too early in the development process. Members of the community will have many questions about the project detail design which the developer will not be in a position to address. This creates distrust in the community and leads to unnecessary Local Authority workload responding to enquiries about a project that has limited deign detail and which may not even progress into planning.

- P.10 – The requirement to provide wind resource categories, including wind speed in meters per second is commercially sensitive information to Developers. RES would be grateful if the wording could be changed to a 'wind resource map', which will show areas of high wind resource using different colour shading to represent different wind speeds across a site, rather than providing meters per second wind speed information.

- P.23 & P.26 – There appears to be a disparity between Table 7 and Table 8. When running through different turbine tip heights it appears the treatments are mismatched. RES would be grateful if these could be checked with working examples.

- P.28 – Turbine re-colouring. The NSW Planning Team should be aware that recommending turbine colours outside of the standard light grey is likely to generate a number of unintended consequences concerning wind turbine warranties, aviation safety, turbine performance (turbines perform less well at higher temperatures) and turbine cost. RES suggests that reference to turbine re-colouring should be removed from the guidelines.

Yours sincerely,



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Yass Landscape Guardians Public Consultation Response August 2016

Wind Energy Framework: Frequently Asked Questions

The Yass Landscape Guardians (YLG) have reviewed the Wind Energy Framework documents and consider the NSW Governments' Planning and Environment's position on wind energy development in NSW to be heavily biased towards the wind industry and provides minimal addition protection of the rights of the rural people of NSW.

The reality is that wind energy is an industrial development which NSW has given *Carte blanche* approval status in rural NSW without any industrial land use Zoning controls. The NSW government appears to have anointed wind turbines as the winner in the renewable energy race and totally ignored the energy crisis developing in South Australia due to its dependence on this highly unreliable energy source.

It is not surprising that the community is questioning the independence of the NSW Department of Planning in relation to a potential alignment with the wind energy industry, particularly in light of recent media comments on Chinese investment in the Energy Industry and multi-million dollar foreign donations made to both major political parties.

This document reviews the "Frequently Asked Questions" paper and is one of a number of paper specific submissions.

Document: Wind Energy Framework Frequently Asked Questions

Section & Page	**Departments Position**	**Issue**
"Why is a new framework needed for wind energy in NSW?" p.p. 1	All the justifications for an overview are to provide greater support the wind industry.	This section is totally silent on: • The effect of the wind industry on the Environment and Biodiversity as a consequence of collective project impacts on Land Clearing, Road Construction and Blade strike injury to native species of birds and bats; • Protection of NSW's iconic rural landscape values; • The impact on land values of adjoining landowners who receive no compensation for the impact on their lifestyle and investment in their land; • Does not recognise the rights of adjoining residences to enjoy the health and mental wellbeing they sought from a rural lifestyle;

"What is the focus of the new framework?" p.p. 1	The Department has presented an extremely biased and limited focus for the new framework and has failed to discuss with the people of NSW some of the most controversial issues related to this industry.	"**Elephants in the Room**" The department has failed to include in a public discussion: • Failure to consider issues "post assessment" of projects approved under dubious circumstances that remain unconstructed; i.e. applying a **Sunset Clause to approvals** if not fully constructed. E.g. Conroy's Gap Industrial Wind project which gained full approval following a misleading statement by the proponent claiming that turbines were ordered for construction; but to this day they are yet to appear. An effective Sunset Clause would give adversely affected adjoining landowners greater certainty in their future. • Failure to review the whole concept and implications of "State Significance"; the current approach is solely based on capital investment and fails to consider: ○ How much of that capital investment is placed off shore or interstate; ○ What percentage of any future profits will be returned to NSW; ○ How many permanent sustainable jobs will be created in NSW; ○ What net benefit the local region will receive from the investment in perpetuity.
Does the framework change how the community will be consulted for wind f!?k applications? p.p. 2 "*This consultation must include a representative sample of the population and involve people from within the visual catchment." P.p. 6*	Again the Department has failed to discuss with the people of NSW the most controversial issue with the wind industry consultation.	If a farmer needs to take part in a community fox baiting programme: The farmer **MUST advise all his neighbours**. If a farmer needs to burn a stubble paddock: The farmer **MUST advise all his neighbours**. If a farmer needs to aerially spray his crop: The farmer **MUST advise the adjoining residents**. If a farmer seeks to subdivide his farm: **All adjoining properties will be notified**. If a wind speculator seeks to gain project approval for 130 turbines and high voltage power lines: The proponent **should** consult with the community, and there are **no consequences** if the proponent fails to advise adjoining landowners or adjoining residences. If this anomaly in NSW legislation was not so serious it would be a **JOKE!** Has the Department tried to address this fundamental flaw in planning legislation: **NO**.? Some industrial wind projects span over 50 km's of rural landuse; many people subject to the Yass Industrial Wind Turbine project never knew it was planned on the adjoining property to after the public consultation process was closed! Has the Wind Energy Framework attempted to address this legislative disgrace? No It does not address this issue, the proposed consultation process is full of "should" statements; it is an insipid document and totally fails to protect the rights of rural NSW people.
How is the decommissioning of	Again the Department has failed to discuss	The department has stated that the decommissioning process will be the responsibility of the project owner or operator and not the host!

wind turbines addressed? p.p. 3	with the people of NSW on of the most controversial issues with decommissioning wind turbines.	Clearly the department has not listened to the concerns of groups like YLG or learnt the lessons from the Mining Industry. Who pays for decommissioning if wind energy becomes obsolete or uncompetitive and the project owner or operator declares bankrupt? Does the Department of Planning believe corporate giants can't go bankrupt? **What happened to Qintex, HIH Insurance, One Tel, Enron and Timbercorp just to name a few?** We know who will pay if the project owner declares bankruptcy; the community will pay, **the State of NSW will pay**. We also know that the NSW mining regulators learnt the hard way in relation to rehabilitation; but they did learnt; that's why we have: ***"I&I NSW policy (EDP11: Rehabilitation Security Deposits) states that the security deposit must cover the Government's full costs in undertaking rehabilitation in the event of default by the authorisation/title holder. This requirement is intended to minimise potential liabilities to the State in the event that the authorisation/title holder defaults on their rehabilitation obligations."***

Caleb Ball

From: system@accelo.com on behalf of Michael Crawford [redacted]
Sent: Sunday, 11 September 2016 11:49 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for company Residents Against Jupiter Wind Turbines (org_comments)
Attachments: Defects in draft VI Bulletin.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Michael Crawford
Organisation: Residents Against Jupiter Wind Turbines (Chairman)
Govt. Agency: No
Email: [redacted]

Address:
[redacted]

Bungendore, NSW
2621

Content:
The draft NSW Visual Impact guidelines are seriously and dangerously flawed in multiple ways and are grossly misleading. They do not provide the reasonable degree of protection for rural residents which the VI Bulletin suggests and which members of the community were led to expect. That is because thresholds in the guidelines are made subject to a complex, arbitrary and irrelevant set of conditions which ensure real protection applies to people living on Sydney Harbour but not in rural localities. In addition, the guidelines make multiple assumptions which are contrary to published research. Consequently the methodology in the guidelines is without legitimate foundation. It is unnecessarily complex, arbitrary and subjective. It is possible to greatly simplify the VI Bulletin in a way that removes arbitrariness, most subjectivity and complexity, makes it much more consistent with the published research and thereby better protect legitimate interests of rural residents.

Details are provided in the attached document.

IP Address: - [redacted]
Submission: Online Submission from company Residents Against Jupiter Wind Turbines (org_comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162386

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

RESIDENTS AGAINST JUPITER WIND TURBINES

Fundamental Defects in Draft Visual Impact Bulletin

11th September 2016

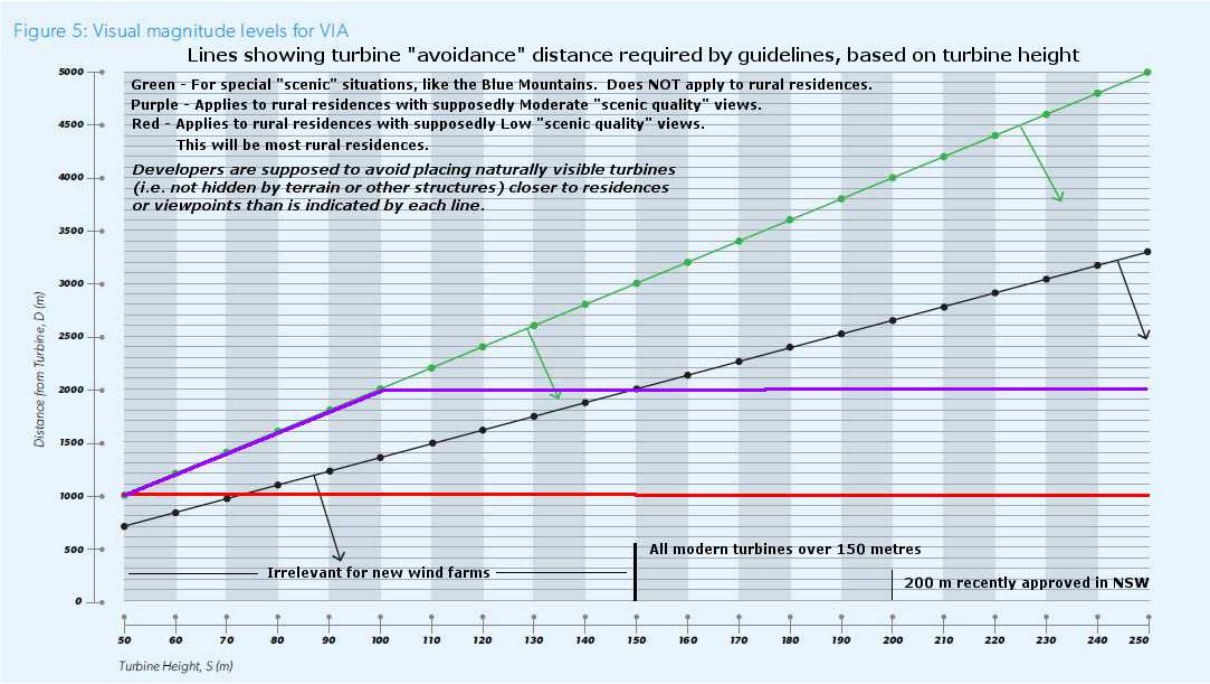
The draft NSW Visual Impact guidelines are seriously and dangerously flawed in multiple ways and are grossly misleading. They do not provide the reasonable degree of protection for rural residents which the VI Bulletin suggests and which members of the community were led to expect. That is because thresholds in the guidelines are made subject to a complex, arbitrary and irrelevant set of conditions which ensure real protection applies to people living on Sydney Harbour but not in rural localities. In addition, the guidelines make multiple assumptions which are contrary to published research. Consequently the methodology in the guidelines is without legitimate foundation. It is unnecessarily complex, arbitrary and subjective. It is possible to greatly simplify the VI Bulletin in a way that removes arbitrariness, most subjectivity and complexity, makes it much more consistent with the published research and thereby better protect legitimate interests of rural residents.

Summary

The draft NSW Visual Impact guidelines are seriously and dangerously flawed in multiple ways and are grossly misleading.

- They do **not** provide the reasonable degree of protection for rural residents which the VI Bulletin suggests and ***which members of the community were led to expect***.
- That is because thresholds in the guidelines are made subject to a complex, arbitrary and irrelevant set of conditions which ensure real protection applies to people living on Sydney Harbour but **not** in rural localities.
- The guidelines make multiple assumptions which are **contrary** to published research.
- Very importantly, the distance thresholds proposed in the guidelines are **dramatically reduced** from what is indicated by the key research (US Bureau of Lands Management [BLM] study) upon which the draft guidelines claim to be based.
- While the draft guidelines purport to consider the visual values of residents, they instead apply an arbitrary and irrelevant set of **tourists'** views of rural landscapes while excluding from consideration most of what rural residents value about the landscapes within which they live.

The following graph shows how the thresholds presented in the draft guidelines are misleading. The green threshold line is what appears in the draft guidelines. The red and purple lines show what, under the guidelines conditions, actually apply to rural residences.



Importantly, even the green line sets an enormously closer threshold than is required by the BLM research (Appendix A) upon which the guidelines claim they are based.

Consequently the methodology in the guidelines not only fails to offer any reasonable protection to rural residents but is without legitimate foundation. It is unnecessarily complex, arbitrary and subjective. It is possible to greatly simplify the VI Bulletin in a way that removes arbitrariness, most subjectivity and complexity, makes it much more consistent with the published research and thereby better protect legitimate interests of rural residents.

Protection for Rural Residents

There is nothing in the VI Bulletin that explicitly prohibits a wind farm or turbines based on an identifiable degree of visual impact. However, some sections of the VI Bulletin set "performance objectives" which, if treated seriously by the Department and PAC, in certain circumstances would lead to consent being withheld. Unfortunately, due to the complex conditions inserted into the VI Bulletin, those circumstances would very rarely apply in rural (including rural residential) situations.

For most rural residents, the main relevant "Visual Performance Objectives"[1] are specified for:

- the threshold graph referred to as "Visual Magnitude"; and
- Landscape Scenic Integrity.

Both of them offer very little protection for rural residents because of the restrictive conditions specified in Table 7 of the VI Bulletin, as explained below.

The Zone of Visual Influence (ZVI) Goes Missing

For most jurisdictions dealing with wind farms, it has been normal to specify a Zone of Visual Influence within which a proponent is required to consider and justify potential visual impact when preparing an EIS. The ZVI typically extends a substantial distance from the wind farm though is less than the distance at which turbines can be seen with unobstructed line of sight (see Appendix B for more detail).

The 2011 draft NSW Wind Farm Guidelines required consideration of visual impact within a ZVI of "no less than 10 kms"[2], and this requirement was then generally repeated in wind farm EARS.

The ZVI requirement appears to have wholly disappeared from the VI Bulletin but magically been replaced by something with the same words reordered, a "Visual Influence Zone" (VIZ), whose practical scope involves a dramatically reduced geographic area compared with the ZVI which it replaces. Given that ZVI has a decades' long history in visual assessments and academic review, it is unsupportable for the Department to just junk it in favour of a new, developer-friendly alternative without providing any published substantiation.

The Department has provided no supporting papers that compare the two approaches and their consequences for visual assessment in terms of impact on either developers or surrounding communities. For rural localities (where all wind farms are built) the effect of the new approach is to reduce the surrounding area for which demonstration of acceptable VI is required. In the absence of public substantiation, this change inevitably appears as a questionable gift to wind farm developers.

The Turbine Height – Distance Threshold Graphs

Figure 5 in Table 8 of the VI Bulletin is a graph specifying some thresholds for developer response related to turbine height and distance from a viewpoint (e.g. a residence). In reality

[1] *Wind Energy: Visual Assessment Bulletin*, Draft for Consultation, Department of Planning & Environment, August 2016, Table 8.

[2] *NSW Planning Guidelines: Wind Farms*, Draft for Consultation, Department of Planning & Infrastructure, December 2011, p. 4.

for rural residents the only line that matters in the graph is the green line, since it is the only one that relates to excluding turbines.

Developers are required to **EITHER** not place turbines closer to a viewpoint than the green line indicates for that particular turbine height **OR** provide "detailed justification" for so doing. For a 100 m turbine, the threshold at which justification is required, according to the green line, is 2 kms. Note that ***for turbines further away than the green line, no justification is required at all***.

The threshold effectively means that *naturally visible* turbines (i.e. not concealed by existing terrain or structures) are excluded closer than the threshold (at least for residences), since the only conceivable justification for allowing them under the threshold is either that they are placed where concealed from view by terrain or structures or there is an agreement with affected landowners. So the green line is supposedly a threshold for excluding naturally visible turbines.

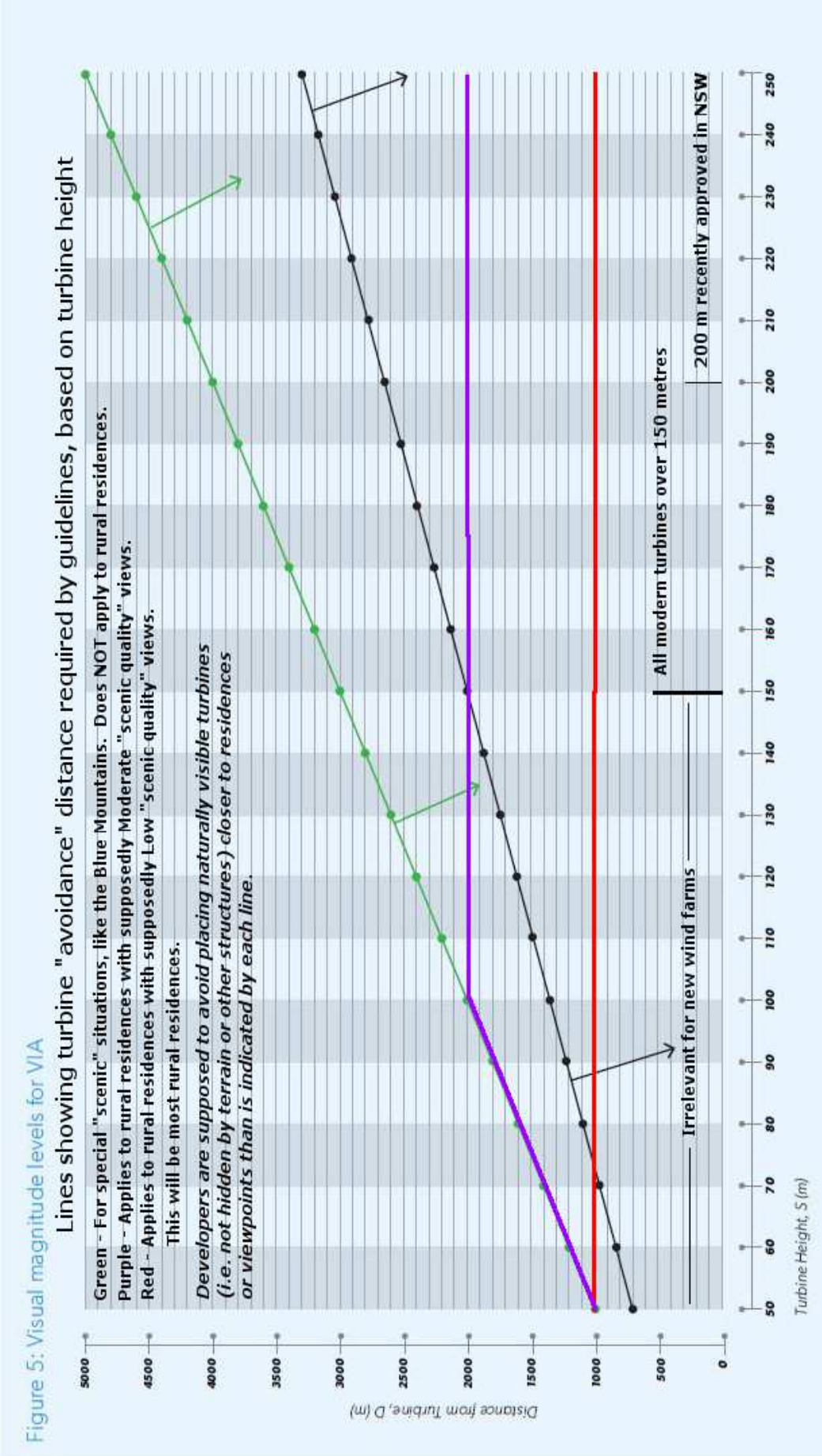
Unfortunately, the green line in the graph ***does not apply for most rural residences***. Due to the fine print of the guidelines, rural residences are subject to the much less protective red and purple lines in the graph below. This is the VI Bulletin graph to which two additional lines have been added.

These two lines do not appear in the graph published by the Department – because that would reveal the truth which the guidelines seem constructed to hide.

Under the proposed guidelines, if a rural residence is located in an area deemed to have *low* "scenic value", developers are supposed to avoid placing naturally visible turbines closer to the residence than indicated by the red line. In those cases there is no injunction to avoid placing naturally visible turbines anywhere beyond the red line. Note that the red line prescribes the same distance, 1 km, irrespective of turbine height. So the same distance constraint applies to 250 metre turbines as to 50 metres ones. Nowadays all proposed turbines are 150 metres or higher.

Because of the landscape categorisation proposed in the guidelines, most rural residences will be deemed to be in areas of *low* "scenic quality". If, however, it is deemed to be an area of *moderate* "scenic quality" (it won't ever be *high*, unless you are living in the Blue Mountains, the Snowy Mountains or on Sydney Harbour), the purple line applies.

In that case, the developer is supposed to avoid putting a naturally visible 50 metre turbine closer than 1 km, a 75 metre turbine closer than 1.5 km, or a 100 metre turbine closer than 2 km. But for turbines taller than 100 metres, the boundary remains at 2 km.



Adapted from Table 8 in draft *Wind Energy: Visual Assessment Bulletin*, August 2016

Landscape Scenic Integrity

The VI Bulletin proposes objectives for "Landscape Scenic Integrity". In particular, for situations categorised as VIZ1 under the Bulletin's conditions, the objective is[3]:

> Wind turbines should not cause more than a low level modification of the visual catchment and avoid isolated impacts.
>
> Turbines are seen as either very small and/or faint, or as of a size and colour contrast (under clear, haze-free atmospheric conditions) that they would not compete with major elements of the existing visual catchment.

Many rural residents would be comfortable if this objective applied to them ***and was met***. Unfortunately, under the conditions specified in the Bulletin, rural residents said to have "*moderate* scenic quality" are categorised as VIZ1 **ONLY** for the area within 2 kms of their dwelling. Beyond 2 kms they are no longer covered by VIZ1 performance objectives.

For properties said to have "*low* scenic quality", the situation is worse. In that case they are classified as VIZ1 only for 1 km around their dwelling. So a wind farm with 150 m turbines could start 1001 metres from their dwelling, where it would be a monstrous impact but the developer would not be required to meet the objective above.

Once past the VIZ1 boundary determined by what someone subjectively claims is the "scenic quality" of each location, the view is then classified as being VIZ2. Then the performance objective is:

> Wind turbines should not cause significant modification of the visual catchment and avoid isolated impacts.
>
> Turbines may be visually apparent and could become a major element in the landscape but should not dominate the existing visual catchment.

Now we are into subjective interpretations of what constitutes "significant modification of the visual catchment". Note that according to this objective, "turbines . . . could become a major element in the landscape" but they "should not dominate the existing visual catchment".

So under this objective it is quite allowable that turbines are "a major element in the landscape". At what point does that make them "dominate the existing visual catchment"? And note the performance objective does not require that they MUST not "dominate the existing visual catchment" but only that they should not.

For turbines placed further away from properties, the view becomes classified as VIZ3 and for VIZ3 the VI Bulletin says "***No Visual Performance objective applies***". For properties said to have "*low* scenic quality" they become VIZ3 ***at a distance of 4 kms*** and there is absolutely no restriction on the VI they experience from turbines past that threshold.

[3] *Wind Energy: Visual Assessment Bulletin*, Draft for Consultation, Department of Planning & Environment, August 2016, Table 8.

The Source of Arbitrariness and Complexity

The draft VI Bulletin claims that:

> The Department adopts the widely accepted and commonly utilised approach that visual impacts can be determined from a combination of receiver sensitivity (a person's susceptibly to a specific type of change) and the magnitude of visual effect (the size, scale and overall extent of change). This approach is documented in numerous Australian and international guidelines, and is considered to be industry best practice.[4]

and then proceeds to apply an arbitrary and perverse approach inconsistent with that claim and inconsistent with good sense.

The Department's actual approach rests mainly on two factors which appear to be structured for the simple purpose of claiming that there is no substantial visual impact on rural residents in the localities where wind farms are proposed. This structure has two parts:

- a ridiculous claim about the relative sensitivity of people in urban vs rural residences; and
- the notion that the value of the landscape to rural residents, and thus the adverse impact of a wind farm, can be validly expressed in an urban tourist's view of landscapes.

No substantiation is offered for these arbitrary and perverse proposals and the research papers cited in the VI Bulletin do not support them.

Sensitivity of people in urban vs rural residences

In relation to "receiver sensitivity (a person's susceptibly to a specific type of change)", the VI Bulletin claims (Table 5) that people who live in urban residences, including villages, have higher (Level 1) sensitivity to industrial type visual changes in their environment than do people who live in rural residences, who are classified as Level 2 (moderate) sensitivity.

There is no research evidence for this and it flies in the face of common sense. People who live in rural residences have consciously chosen to live in natural[5] surroundings and not in urban/industrial ones.

Conversely, those who have chosen to live in urban settings, including rural villages, have chosen a situation where much of what they see both from their home and moving around are other buildings, or in the case of city people industrial structures.

It is quite clear that those in rural residences are more sensitive to the introduction of industrial structures into their environment than are people in cities and villages. Consequently in reality they are at the highest level for sensitivity. ***That means in the VI Bulletin framework rural residents must be treated as Level 1 Sensitivity, not Level 2.***

[4] *Wind Energy: Visual Assessment Bulletin*, Draft for Consultation, Department of Planning & Environment, August 2016, p. 15.

[5] *Natural* including both agricultural growing areas and bush.

Irrelevant scenic quality classification

The second critical part of the VI Bulletin's framework is the way it attempts to deal with the matter of "the magnitude of visual effect (the size, scale and overall extent of change)". The VI Bulletin attempts to deal with this in two elements: the closeness of turbines (which, in principle, is appropriate) and the nature of the landscape affected (which is not).

For the second element it purports to identify differences in the sensitivity of the viewed environment based on a tourists' view of landscapes which totally misses what is actually important to most rural people about the landscape within which they have chosen to live.

A recent major US Government research review of visual impact assessment methodologies was very explicit that:

> "Existing visual quality is the value placed on the existing landscape by those people who currently have views of the environment."[6]

It is the values of residents that matter, not that of tourists or landscape architects. Contrary to what the VI Bulletin supposes, what matters most to rural residents are not some list of features which a tourist might want to see on an afternoon visit to the area but the general character of the local environment, of which ***the fact that it is natural and not urban and not industrial is central***.

Unless the Department can produce some actual solid research to the contrary (and it has not cited any), its assumption that people in rural environments will consider their viewscape less harmed by including massive industrial structures than would people in the Blue Mountains is nothing but an arbitrary claim to surreptitiously devalue the environment of people in rural areas.

The fact that some landscape consultants might claim there is less "scenic quality" and that this is relevant to the magnitude of visual impact is simply nonsense. The NCHRP report cited earlier also stated that:

> "The differences between what professionals value and what the public values is profound."[7]

Note that description of the differences between the two – ***profound***.

Thus the views of landscape consultants cannot be taken as in any way representative of the magnitude of visual effect as it will be experienced by people who live in a rural environment. In fact the landscape consultants' views will be quite different.

Removing the Arbitrary and Irrelevant Elements of the VI Bulletin's Complex Structure

Since "scenic quality class" is a wholly irrelevant factor and the viewer sensitivity of people living in rural residences is at least as strong as that of people living in urban surrounds, the top left hand segment in Table 7 (shown as Level 1 viewpoints and *High* "scenic quality class") applies to both rural, village and urban residents alike.

Then the whole "foreground/middleground/background" distinction in Table 7 categories adds nothing to the ability to analyse real world visual impact. It also appears there is no

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[6] *Evaluation of Methodologies for Visual Impact Assessments*, NCHRP Report 741, p. 142.
[7] *Evaluation of Methodologies for Visual Impact Assessments*, NCHRP Report 741, p. 139.

actual research substantiation for claiming that those categories are relevant to wind farm visual impact on potentially affected residents. It is just subjective and unproductive complication – the very sort of inefficiency Minister Stokes is reported as wanting to avoid.

In fact Table 7 is then seen to have no legitimate purpose (beyond being an attempted means to devalue visual impacts on rural properties).

Providing Simplicity, Clarity and Honesty

Table 8 of the VI Bulletin can provide a simple, clear and honest basis for assessing visual impact by dispensing with the complicated and erroneous VIZ categories and doing two things:

- applying to all residences what is currently recommended in Table 8 for "VIZ1" category[8]; and
- setting the green line in Figure 5 to be consistent with actual published research about the closeness at which a wind farm dominates the view (the BLM research indicates that is 8 kms for 150m turbines, which is also consistent with the judgement depicted in the Sinclair-Thomas matrix).

Note that would apply a common *Landscape Scenic Integrity* objective to all residences, being:

> Wind turbines should not cause more than a low level modification of the visual catchment.

This is already inherently subject to distance scaling. For a particular wind farm, the further away it is, the less likely will it be to cause more than "a low level modification of the visual catchment".

Preliminary Environmental Assessment

The preliminary environmental assessment is basically a good idea **BUT** only if it gives developers a clear indication of what is likely to be accepted or rejected in the merit assessment phase.

For that purpose the green line used for merit assessment, when suitably placed, should also be the line that appears in the preliminary environmental assessment screening tool. If the lines are the same, developers are given, from the outset, a very clear indication of all residences for which they must keep naturally visible turbines beyond the distance set by the line unless they have an agreement with affected landowners.

It does not provide clarity for developers or the community to use two different lines for preliminary assessment and for formal assessment.

[8] Note, once the "VIZ1" line in Figure 5 applies to all residences, there is no purpose in any other line in the graph unless it is for non-residence viewpoints.

Appendix A: The US Bureau of Lands Management Study

The draft guidelines claim to draw on a number of research studies but clearly indicate the most important is the US Bureau of Lands Management (BLM) study[9]. Yet ***the draft guidelines are actually contrary to the research results of that study***.

That study is mentioned explicitly in the VI Bulletin (on pages 11, 22) more than any other study and, unlike the others, explicitly mentioned in a letter from the Secretary[10] re the draft VI Bulletin.

The BLM study is a major one, involving extensive observations by multiple observers, to gauge the visual impact of several wind farms at various distances. Other than the BLM study, there are few published scientific research studies of actual wind farm visual impact. The references in the VI Bulletin do not appear to include any others.

The references in the VI Bulletin cite two other research papers[11] which did not involve actual wind farms. They were published a decade or more before the BLM research and were laboratory experiments on perception using photographs in artificial situations. Only the 2002 Bishop study involved images of wind turbines and that was a single turbine not a wind farm. The images used in that study equated to a turbine height of slightly over half that of the actual ones observed in the BLM study, and less than half the height of what are now commonly proposed.

In addition, the BLM study of real wind farms has indicated one of the inherent weaknesses in the Bishop research. The BLM study found that:

> "In the authors' judgment, based on the many observations for this study, and comparison of the corresponding photographs and narrative records from the observations, the photographs consistently under-represent the degree of visibility observed in the field. While true to some degree for all of the photographs, this is particularly true for photographs of the facilities taken from longer distances."[12]

So the Bishop study, which in any case concluded "In areas with completely transparent skies, visibility modelling out to 20 km – 30 km is justified, but effects beyond 20 km may be rare and depend on exceptional viewing conditions."[13], almost certainly under-estimates the distance of effects and certainly for turbines now more than twice the size simulated by Bishop.

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[9] Sullivan, Robert G., et. al., 2012. *Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes*. Argonne National Laboratory and the U.S. Department of the Interior, Bureau of Land Management. USA

[10] Letter (16/10673) from Secretary Carolyn McNally, NSW Department of Planning and Environment, to Dr Michael Crawford, 30/8/16.

[11] Bishop, Ian D, 2002. "Determination of Thresholds of Visual Impact: The Case of Wind Turbines", *Environment and Planning B: Planning and Design* Vol. 29: pp. 707-718 and Shang, Haidong and Bishop, Ian D, 2000. "Visual Thresholds for Detection, Recognition, and Visual Impact in Landscape Settings", *Journal of Environmental Psychology* Vol. 20: pp. 125-140.

[12] Sullivan, Robert G., et. al., 2012. *Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes*. Argonne National Laboratory and the U.S. Department of the Interior, Bureau of Land Management. USA, p.43.

[13] Bishop, Ian D, 2002. "Determination of Thresholds of Visual Impact: The Case of Wind Turbines", *Environment and Planning B: Planning and Design* Vol. 29: p. 718.

Consequently, the BLM study is particularly important as an indicator of the visual impact of wind farms at various distances. The study reported:

> "377 observations of five wind facilities in Wyoming and Colorado were made under various lighting and weather conditions. The facilities were found to be visible to the unaided eye at >58 km (36 mi) under optimal viewing conditions, with turbine blade movement often visible at 39 km (24 mi).
>
> Under favorable viewing conditions, the wind facilities were judged to be major foci of visual attention at up to 19 km (12 mi) and likely to be noticed by casual observers at >37 km (23 mi). A conservative interpretation suggests that for such facilities, an appropriate radius for visual impact analyses would be 48 km (30 mi), that the facilities would be unlikely to be missed by casual observers at up to 32 km (20 mi), and that the facilities could be major sources of visual contrast at up to 16 km (10 mi)." [14]

There are some other important points about this study and its conduct:

- most of the turbines in the study had a tip height of slightly under 120m, though a few were closer to 90m[15];
- each observation in the data was the average rating provided by 2 to 4 observers[16];
- the localities of the wind farms studied would generally be classified as "low scenic quality" according to the VI Bulletin's classifications[17];

The study used a six point visibility rating scale, with the highest two being:

> 5 Strongly attracts visual attention of views in general direction of study subject; and the visual prominence of the study subject interferes noticeably with views of nearby landscape elements.
>
> 6 Dominates view because study subject fills most of visual field for views in its general direction; and the visual prominence of the study subject detracts noticeably from views of other landscape elements.

The study classed situations rated 5 or 6 as being of high impact and, on that basis, specified a *Limit of visual pre-eminence* which was 16 kms for turbines 120 m high such that:

> "At this distance, the wind facility is a major focus of visual attention, drawing and holding visual attention. . . . The facility as a whole is likely to be perceived by some viewers as having a large visual impact." [18]

Within that range of visual pre-eminence, the point from which the wind farm "dominated the view" was 6.4 kms[19].

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[14] Sullivan, Robert G., *et. al.*, *op cit*, p. 4.
[15] Sullivan, Robert G., *et. al.*, *op cit*, pp. 14-15.
[16] Sullivan, Robert G., *et. al.*, *op cit*, p. 14.
[17] See photos at Sullivan, Robert G., *et. al.*, *op cit*, p. 39 and available through the site http://visualimpact.anl.gov/windvitd/.
[18] Sullivan, Robert G., *et. al.*, *op cit*, p. 41.
[19] Sullivan, Robert G., *et. al.*, *op cit*, p. 40.

As noted, these distances were for turbines 120 m high. The extrapolation for taller turbine is shown in the table below. The table also includes the corresponding extrapolations for the Sinclair-Thomas matrix.

Turbine Height	**120 m**	**150 m**	**180 m**	**200 m**
BLM Research Findings				
Limit of visual pre-eminence (kms)	16	20	24	27
Dominates the view (kms)	6.4	8.0	9.6	11
Sinclair-Thomas Assessment				
Clearly visible with moderate impact; potentially intrusive (kms)	16	20	24	27
Major impact (kms)	10	12.5	15	17
Dominant (kms)	5.3	6.6	8.0	8.8

The two reports are quite similar in their results, despite being done in very different terrains (US West for the BLM study; rugged Wales for the Sinclair-Thomas matrix).

The boundary for the BLM category "limit of visual pre-eminence" corresponds with that of the Sinclair-Thomas category "clearly visible with moderate impact; potentially intrusive". The Sinclair-Thomas matrix has more gradations than used in the BLM study. So it uses two categories "major impact" and "dominant" whose boundaries span the boundary of the BLM category "dominates the view".

Note, the BLM study result produced results very similar to those of a study of offshore wind turbine visibility, also by Sullivan and colleagues. For that study they examined 11 offshore wind farms whose turbine heights ranged from 107m – 153m, averaging around 128m. Unlike onshore turbines, there was no further elevation due to terrain. The study used the same visual impact rating scale as for the BLM study. The authors concluded

> "The observed wind facilities were judged to be a major focus of visual attention at distances up to 16 km (10 mi)." [20]

Thus the most important research available on the visual impact of wind farms warrants a threshold (given by "dominates the view" in table above) for "avoid placement of naturally visible turbines" at least twice the distance specified in Figure 5 of the draft VI Bulletin.

[20] Sullivan, Robert G., et. al., "Offshore Wind Turbine Visibility and Visual Impact Threshold Distances", *Environmental Practice* 15(01):33-49, March 2013, p. 33.

Appendix B: The Missing Zone of Visual Influence

The specification of a turbine height related Zone of Visual Influence (ZVI) is standard in best practice advice for visual impact assessment of wind farms and has been for decades. It is also recommended by research studies on wind farm visual impact.

The previous (2011) draft NSW Wind Farm Guidelines specified a ZVI of at least 10 kms and that has been standard in EARS issued for wind farms in NSW. But now it has just suddenly disappeared from the recently released draft guidelines, without any explanation or justification. The inventive concept that has replaced it implies a much reduced zone to be evaluated than under the established ZVI approach.

The Zone of Visual Influence is the area around a wind farm (or other development) within which it is possible that there will be a significant visual impact on some viewers/viewpoints. Given specific turbine heights, both research and observational experience have determined the distance from the turbines within which there is potential significant impact.

Relevant published research and papers include:

- The Sinclair-Thomas Matrix which recommended a ZVI of 30 kms for 100m high turbines[21].
- A study by the University of Newcastle (UK), based on an ex-post review of 14 UK wind farms, which recommended a height related ZVI of 15 kms for 50m high turbines and 30 kms for 100m high turbines[22].
- The BLM study of wind farms with 120m turbines concluded: "A conservative interpretation suggests that for such facilities, an appropriate radius for visual impact analyses would be 48 km (30 mi)" [23]
- Scottish Natural Heritage has recommended a ZVI of 45 kms for turbines of 150m to tip height[24].
- Even the laboratory research by Bishop (2002) with the equivalent of 70m turbines concluded "In areas with completely transparent skies, visibility modelling out to 20 km – 30 km is justified, but effects beyond 20 km may be rare and depend on exceptional viewing conditions."[25]

While there is some variation among them, they all recommend very substantial ZVI distances:

- Bishop, 20 kms for 70m turbines;
- Sinclair-Thomas and the University of Newcastle study, 30 kms for 100m turbines;
- The BLM study, up to 48 kms for 120m turbines;
- Scottish Natural Heritage, 45 kms for 150m turbines.

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[21] University of Newcastle (2002) *Visual Assessment of Windfarms Best Practice*. Scottish Natural Heritage Commissioned Report F01AA303A, p. 21.

[22] University of Newcastle (2002) *Visual Assessment of Windfarms Best Practice*. Scottish Natural Heritage Commissioned Report F01AA303A, p. 58.

[23] Sullivan, Robert G., *et. al*., *op cit*, p. 4.

[24] *Visual Representation of Wind Farms, Version 2*, Scottish Natural Heritage, July 2014.

[25] Bishop, Ian D, 2002. "Determination of Thresholds of Visual Impact: The Case of Wind Turbines", *Environment and Planning B: Planning and Design* Vol. 29: p. 718.

And while they differ somewhat in the turbine height specified, they all work out to a ZVI of about 40 – 50 kms for a turbine height of 150m (and all new turbines are now at least that height).

The ZVI does not mean every locality within that distance from a wind farm will be severely impacted. Many locations will be entirely screened from the wind farm by intervening terrain. That is easily plotted with readily available GIS software.

Other locations within the ZVI will see only a small part of the wind farm, or perhaps the tips of turbines. Towards the extremities of the ZVI it might be possible to reasonably argue that even though the wind farm is well within sight, atmospheric conditions, background or other factors reduce the visual impact to an acceptable level.

But what is clear from the consistent position of those studies and advice is that you cannot simply assume away the impact within the ZVI. And if, as the ZVI estimates indicate, there is a potential visual impact at 50 kms, there is certainly a much greater potential at half that distance (25 kms) and very much more at 20% of the distance (10 kms).

The draft VI Bulletin not only banishes the concept of ZVI but replaces it with alternatives of minute scope. Thus the *Preliminary Screening Tool* includes a height-distance graph which suggests wind farm developers consider the position of residences closer to turbines than the line in the graph. That is essentially what the concept of ZVI required.

However, for 150 m turbines, the requirement is to examine the situation only of viewpoints within 2 kms of the nearest turbine. A distance of 2 kms is actually only about $1/20^{th}$ of the distance recommended by the research and best practice studies. It is also $1/5^{th}$ of the ***minimum*** ZVI recommended in the 2011 draft guidelines, which were already inconsistent with published research.

For the actual assessment phase of a wind farm proposal there is a green line (Table 8, Figure 5). For what are deemed the most "sensitive" situations (not rural residences), the developer is required to provide a justification if a turbine will be closer to a viewpoint than indicated by the green line. If turbines are further away from the line, no justification is required. For a 150m turbine, the threshold distance is 3 kms. Beyond that, no explanation is required according to the VI Bulletin. That distance is only about $1/14^{th}$ of the distance recommended by the research and best practice studies.

It might be claimed that there is still some further consideration associated with the objectives for *Landscape Scenic Integrity* (Figure 8). However, aside from the vagueness of those objectives, the only relevant coverage is for the distance between the wind farm and viewpoints which is classified VIZ2 (according to the VI Bulletin). If the "scenic quality" is classed low, then (according to Table 7) VIZ2 ***cuts out at 4 kms for a rural residence***, i.e. at a distance only $1/10^{th}$ of what multiple studies recommend, and beyond that there is no landscape scenic integrity requirement. And this applies no matter what the height or number of the turbines.

The Department has Seen the Evidence and Chosen to Ignore it

All of the research studies and best practice documents mentioned above are actually mentioned as references in the draft VI Bulletin. So the NSW DPE has, to date, used ZVI as an important planning tool but now proposes to junk it.

It is a rather unusual approach to cite a broad body of existing work which supports an existing practice but then just junk that practice without at least citing alternative and compelling work which in some way refutes the previous studies, and without providing a coherent argument as to why the change is justified.

The VI Bulletin does not provide the justification for ignoring both the studies it cites and the previous NSW wind farm planning practice. That makes the change simply seem arbitrary and since the change clearly benefits wind farm developers and harms rural residents, it is inevitable people will draw what seem to be obvious inferences.

Caleb Ball

From: system@accelo.com on behalf of Liz Makin [redacted]
Sent: Monday, 12 September 2016 2:13 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for company Yass Valley Council (org_comments)
Attachments: DA-POL-20 Community Enhancement Fund.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: Liz Makin
Organisation: Yass Valley Council (Strategic Planning Manager)
Govt. Agency: No
Email: [redacted]

Address:
[redacted]

YASS, NSW
2582

Content:
Council welcomes the Visual Assessment Bulletin to provide a framework to guide assessment of the visual impacts of proposed facilities.
It is noted that the Bulletin refers to taking into account any surveys of regional landscape values. While this would be extremely important information to consider within an assessment, it is questioned how many LGAâ€™s across NSW have undertaken these studies- particularly at the broader scale.
It is considered that these surveys would be a very useful tool, particularly in providing a stronger role for communities in setting the direction for the location of renewable energy facilities, through the identification of significant sites, vistas and landscapes within their local areas.
The majority of Councils do not have the resources to undertake this work, and it is suggested that the Department support the development of these surveys through funding â€" possibly to undertake the work on a regional basis. This would also allow similarities in landscapes across the region to be considered as well as to allow the cumulative impacts on the landscape of approved wind farms to be considered to avoid the creation of a â€˜wind farm landscape character areaâ€™.

The Assessment Policy and Frameworks are silent on the establishment and operation of Community Enhancement Funds, only stating that a VPA is the preferred mechanism. This will result in an inconsistent approach between proponents and a lack of certainty for communities. Yass Valley Council has adopted a Community Enhancement Fund Policy which is attached for the Departmentâ€™s reference.

It is also considered that the â€˜Adviceâ€™ provided for Negotiated Agreements lacks detail. Leaving the format of the agreement up to the proponents may result in landowners being inadequately compensated or pressured to agree to an undesirable outcome.

Whilst the EIS requirements include the requirement to consider Traffic and Transport issues, it does not set out the expectation that roads must be upgraded for both heavy and light vehicles, prior to the commencement of construction to be â€˜fit for purposeâ€™. Upper Lachlan Council has undertaken considerable work in this regard, and as such please refer to those guidelines.

IP Address: - [redacted]
Submission: Online Submission from company Yass Valley Council (org_comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162443

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Title: COMMUNITY ENHANCEMENT FUND DA-POL-20

Service: DEVELOPMENT ASSESSMENT

Responsible Officer: DIRECTOR PLANNING

1. OBJECTIVES

The objectives of this policy are:

- To ensure the community benefits from major developments are distributed within the Local Government Area
- To establish separate Community Enhancement Funds for each major development in the Local Government Area for the distribution of contributions associated with that development
- To provide a framework for the administration of the Community Enhancement Fund
- To ensure a consistent approach to the establishment and operation of the Community Enhancement Funds

2. DEFINITIONS

All matters described in this policy shall have a meaning as described in the *Environmental Planning & Assessment Act 1979* and the *Yass Valley Local Environmental Plan 2013.*

3. BACKGROUND

While State and Regional development can have benefits for local communities they can also have a significant impact on these communities. While proponents are required to mitigate the direct negative impacts of the proposal (e.g. road works, environmental offsets) there should also be a mechanism for the benefits to be widely shared by the community as a whole.

Large scale mining projects, wind farm developments and the like have looked to establish a Community Enhancement Fund as a means of sharing the benefits and making a contribution toward the community as a whole. Such contributions are separate to any direct payments made of landowners hosting the development (e.g. lease payments) or money paid directly to adjoining or nearby landowners to 'compensate' or to 'remunerate' them for being in their neighbourhood.

In recent years Council has required a Community Enhancement Fund to be established as part of the approval process for each large scale developments. This has resulted in several approvals/proposals making a commitment to the establishment of such funds.

A planning policy will allow a consistent approach to be applied.

4. POLICY

4.1 Date of commencement

This policy shall be effective from the date when Council adopts the final policy.

Note: The policy will be considered when:

- Undertaking an assessment of any Development Applications under s79C *Environmental Planning & Assessment Act 1979*
- Making a submission on a State or Regional significant development
- Any application for approval under the *Roads Act 1993*

4.2. Land to which the plan applies

This plan applies all land within the Yass Valley Local Government Area.

This plan applies to State and Regional development as defined under the *State Environmental Planning Policy (State & Regional Development) 2011*.

4.3. Relationship to other plans

This policy must be read in conjunction with *Yass Valley Local Environmental Plan 2013* and will be considered by Council in:

- Assessing any Development Applications on the land to which this plan applies
- Making a submission on a State or Regional Development
- Considering an application for roads approval

Any request to vary the provisions of the policy must be accompanied by an assessment as to why the requirements should not be met in the circumstances and how the proposal continues to meet objectives of the policy.

In circumstances in which this policy applies Council will not apply the provisions of any s94 and s94A Contributions Plan.

4.4. Development requirements

Any Development Applications for State, Regional or Local Development and/or application for roads approval shall be required to establish a Community Enhancement Fund as follows:

4.4.1 Community Enhancement Fund

A Community Enhancement Fund is to be established prior to the commencement of construction for the provision of community facilities, infrastructure and/or environmental conservation.

The fund is to be based on 1% of the estimated capital cost of the proposal and is required to be paid prior to the commencement of construction.

The contribution will be indexed annually to the Consumer Price Index for Canberra.

Alternatively, Council will accept an annual contribution calculated as follows:

- 1% of Estimated Capital Cost/20 years = $ Annual contribution per year

Note: For windfarm projects the minimum contribution per turbine shall be $2,825 (September 2015) indexed annually with the CPI for Canberra. If the megawatt capacity of the turbines increases over the life of the project the contribution rate will also increase on a pro rata basis as indicated in the following table:

Turbine Capacity	Rate (2009)	CPI (Canberra) Adjusted (2015)
1.0 mW	$1,000	$1,130
2.0 mW	$2,000	$2,260
2.5 mW	$2,500	$2,825
3.0 mW	$3,000	$3,390
5.0 mW	$5,000	$5,850

This annual contribution will apply for the entire life of the development even if this extends beyond 20 years.

4.4.2 Fund Administration

The Community Enhancement Fund will be administered by Council through a s355 Committee. The Committee makes recommendations to Council which may be accepted, altered or rejected by Council. Reasons are to be provided for any Council decision contrary to the Committee's recommendation.

Members of the Committee and landowners receiving payments from the operator are ineligible for funding under the scheme.

The terms of reference are:

- Identify priority projects/activities annually for funding that will benefit the local community with:
  - Initial priorities being within the immediate vicinity of the site (provided facilities are not unnecessarily duplicated in Council's opinion)
  - Any subsequent priorities may be elsewhere in the Local Government Area
- Establish and review selection criteria for the evaluation of applications
- Publically call for funding applications at least annually
- Evaluate applications against the selection criteria
- Make recommendations to Council within the budget limits of contributions received annually
- Review funding priorities for the upcoming financial year

Membership of the Committee shall comprise:

- Mayor (or delegate) and one other Councillor
- One authorised representative of the operator
- One host landowner or neighbouring landowner receiving payments from the operator
- Three representatives from the Yass Valley Local Government Area with demonstrated skills and experience relating to the terms of reference and not owners of property affected by the development proposal or receiving any payment from the operator

The quorum for the Committee shall be a simple majority.

Any member of the Committee may be elected as the Chair other than the authorised representative of the operator, a host or neighbouring landowner receiving payments from the operator.

4.4.2 Expenditure of Funds

Any funds collected under this policy are to be expended on projects/activities that will benefit the local community with:

- Initial priorities being within the immediate vicinity of the site (provided facilities are not unnecessarily duplicated in Council's opinion)
- Subsequent priorities being elsewhere in the Local Government Area

In the event of any Local Government merger or amalgamation involving Yass Valley Council the funds collected under this policy can only be expended on projects or activities within the boundaries of the Yass Valley Local Government Area in place immediately prior to the merger or amalgamation.

4.4.3 Road Upgrades

Much of Council's road network is not suitable for heavy vehicle traffic associated with major State and Regional development. Heavy vehicle traffic is not restricted to over dimensional and/or over mass.

Consequently all road routes intended to be use for access to the site shall be upgraded in accordance with Council's *Road Standard Policy* (RD-POL-09) prior to the commencement of construction on site.

All heavy vehicle traffic to and from the site shall be confined to the nominated routes.

Road works or road work conditions relating to the direct impacts of the proposed development will not be part of the CEP.

5. REFERENCE DOCUMENTS/LEGISLATION

Yass Valley Local Environmental Plan 2013

HISTORY

Minute No	*Date of Issue*	*Action*	*Author*	*Checked by*
19	*24 February 2016*	*Adopted*	*Chris Berry*	*Council*

Caleb Ball

From: system@accelo.com on behalf of David Hazell [redacted]
Sent: Monday, 12 September 2016 10:33 PM
To: Caleb Ball
Cc: Felicity Greenway
Subject: Submission Details for David Hazell (comments)

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation:

Name: David Hazell
Email: [redacted]

Address:
[redacted]

Bookham, NSW
2582

Content:
The very fact that you are reading submissions from the public is the most obvious admission of guilt of being so out of touch with rural people,their lifestyle, and the much appreiciated landscape in which we are so lucky to live and work. Im not exactly sure why you are asking for feedback on better consultation! there has been none, and no laws to enforce that proponents do just that. Just a suggestion of 'should" consult..Along with the lies and misleading information provided by proponents and others, making assesments from desktops about what will and wont affect rural people is pathetic.
FAILING TO PLAN, IS A PLAN FOR FAILIER

IP Address: [redacted]
Submission: Online Submission from David Hazell (comments)
https://majorprojects.affinitylive.com/?action=view_activity&id=162488

Submission for Job: #7859
https://majorprojects.affinitylive.com/?action=view_job&id=7859

Site: #0
https://majorprojects.affinitylive.com/?action=view_site&id=0

NSW GOVERNMENT | Planning & Environment

Contact: Ben Muller
Phone: (02) 4224 9453
Fax: (02) 4224 9470
Email: ben.muller@planning.nsw.gov.au

Felicity Greenway
Director, Industry and Infrastructure Policy
Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Attention: Caleb Ball

Dear Ms Greenway

Draft Wind Energy Framework Consultation – Southern Region Comments.

Thank you for the opportunity to provide feedback on the new wind energy planning framework that is on exhibition until 16th September 2016.

The suite of documents that you have developed are very comprehensive and should help to balance investment in wind energy with the needs of the community. The individual bulletins, in particular the draft Visual Impact Assessment Bulletin, provide clear, concise information and a clear methodology, removing some of the ambiguity surrounding visual impact assessments of wind energy proposals.

Please find attached comments from the Department of Planning and Environment's Southern Region team.

If you have any questions, or would like to discuss these comments in further detail, please call Ben Muller at the Southern Regional Office on 4224 9453.

Yours sincerely,

14/9/16

Deanne Frankel
Team Leader
Southern Region

NSW GOVERNMENT | Planning & Environment

Attachment A

Wind Energy Framework (draft)

Southern Region Comments

ASSESSMENT POLICY DOCUMENT

Chapter 2.1 Permissibility

In relation to the four dot points noted as 'key reference points' is it possible to include two more:

- *National Airports Safeguarding Framework – Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacle to Air Navigation.*
- *National Airports Safeguarding Framework – Guideline F: Managing the Risk of Intrusion into the Protected Airspace of Airports.*

Chapter 2.1 Permissibility

Last paragraph – reference to exempt development under Clause 39(2), should read:

- Under clause 39 (1A) and (2).

Chapter 2.3.2

Consideration should be given to the inclusion of a statement regarding airports. Some suggested wording is provided below:

Commonwealth Airports (Kingsford Smith, Bankstown and Camden Airports) are protected from tall structures based on standards established by the International Civil Aviation Organisation (ICAO). These standards have been implemented in Australia by the *Airports Act 1996* and the *Airports (Protection of Airspace) Regulations 1996*, applying to leased Commonwealth airports, and by *the Defence (Areas Control) Regulations 1989*, applying to Defence controlled airports. This legislation can be used to ensure wind farms which are deemed hazardous to aviation activities are not erected in the vicinity of Commonwealth airports.

For non-Commonwealth or Defence airports, potential impacts must be assessed against the National Airports Safeguarding Framework;

- Guideline D – Managing the Risk to Wind Turbine Farms as Physical Obstacle to Air Navigation; and
- Guideline F – Managing the Risk of Intrusions into the Protected Airspace of Airports.

STANDARD SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS DOCUMENT

In relation to the Hazards/Risks – Aviation Safety (Page 3) section of the Environmental Assessment Requirements document, it is suggested that reference is made to the Obstacle Limitation Surface (OLS) and Procedure for Air Navigation Systems – Operations Surface (PANS-OPS) of airports and any intrusion into this airspace would require referral to the Civil Aviation Safety Authority (CASA). For example, the section relating to aviation safety could be amended to read:

Southern Region Level 2 84 Crown Street Wollongong NSW
Phone: (02) 4224 9450 Fax: (02) 4224 9470 www.planning.nsw.gov.au PO Box 5475 Wollongong NSW 2520

- Aviation Safety:
    - Assess the impact of the development under the National Airports Safeguarding Framework: Guideline D – Managing the Risk of Wind Turbine Farms as Physical Obstacle to Air Navigation;
    - Assess the impact of the development under the National Airports Safeguarding Framework: Guideline F – Managing the Risk of Intrusion into Protected Airspace of Airports;
    - Provide associated height and coordinates for each turbine assessed;
    - Identify and provide details of airports (including military) within 30km of the proposed turbine(s);
    - Assess the proposal in relation to the Obstacle Limitation Surface (OLS) and Procedures for Air Navigation – System Operations (PANS-OPS) for those airports identified above;
    - Assess potential impacts on Communication, Navigation and Surveillance (CNS) facilities associated with airports (including military). Any penetration into the building restricted areas of CNS facilities will need to be referred to the Civil Aviation Safety Authority for non-military airports, and the Department of Defence for defence controlled airports;
    - Assess the potential impacts to aviation safety, including cumulative effects of wind farms in the vicinity, potential wake/turbulence issues and the need for aviation hazard lighting; and
    - Assess the impact of the turbine(s) on the safe and efficient aerial application of agricultural fertilisers and pesticides in the vicinity of the turbines and transmission line.

RELATIONSHIP TO OTHER POLICIES – INFRASTRUCTURE SEPP

An assessment of the proposed framework was undertaken in relation to the potential impacts on operational airspace of airports and how this may be mitigated/reduced. Any protrusion into an airports operational airspace, may impact detrimentally on the safe and efficient operation of that airport (including planned future operations). The operation airspace of an airport includes:

- The Obstacle Limitation Surface (OLS);
- The Procedures for Air Navigation – Operations Surface (PANS-OPS); and
- Building restricted areas for Communication, Navigation and Surveillance facilities associated with an airports operations.

Chapter *2.1 Permissibility* makes reference to 'exempt development' under clause 39(2) of the Infrastructure SEPP. Clause 1A(c) of this SEPP notes a proposed wind monitoring tower (<1MW) is exempt development on land if the tower *does not penetrate the obstacle limitation surface shown on any Obstacle Limitation Surface Plan…..* However, Clause 39(2) of the same SEPP, addressing larger wind monitoring towers (>1MW), does not contain any reference to the Obstacle Limitation Surface. Clause 39(2) only makes reference to a height limit (110m) and if the proposal is below this height, it may be classed as exempt development. A major concern of this is that the maximum height noted, does not take into consideration the height of the natural ground level at that location. For example, in some areas of the State, natural ground level already penetrates some airport's OLS. If a wind monitoring turbine is placed in this area and is below the 110m height, this may be classed as exempt development even though the OLS has been penetrated and airport operations and safety may have been compromised. The suggested changes to the Environmental Assessment requirements of the draft Wind Energy Framework (noted above) should help to resolve this issue.

It is recognised that this is an Infrastructure SEPP issues and a review of the SEPP would need to be undertaken to resolve this, however the draft Wind Energy Framework does provide a means to resolve this issue until a review of the SEPP is undertaken.