New South Wales Government
Independent Planning Commission

**DENNIS ARMSTRONG** **OBJECT** Submission No: 196777

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| Organisation: | *Save Our Surroundings (SOS)* | Key issues: | *Social and economic,Land use,Energy transition,Biodiversity,Visual,Traffic and Transport* |
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| Attachment: | *SOS Subm to IPCN Spicers Creek WW 240905.pdf* | | |

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*Please refer to the attachment*

Dear Independent Planning Commission
**Objection to Spicers Creek Wind and BESS works proposal**

## Background

Save Our Surroundings (SOS) wish to express our disappointment with the IPCN evaluation of the wind, solar and BESS projects approved by the IPCN so far. Despite the evidence you have been provided from multiple sources that the Proponents and the Department ignore the relevant omissions, make unsubstantiated claims, and make misleading and incorrect statements. The Department never-the-less makes assertions that the project is "in the public interest and approvable." The Conditions of Consent rarely or adequately address all the issues.

For example, the Amendment report (1.4 Proposed Amendments) for the stand alone Colembally BESS stated, *"In addition and as a result of the submission from Save our Surroundings, output calculations were checked and refined. The annual output of the proposal was wrongly calculated at 380,000 MWh if calculated in one charge/discharge per day. This has now been updated to 146,000 MWh."* The Department approved the project despite the implications the "error" has for the project's viability, AEMO planning, etc.

SOS has frequently highlighted "errors", omissions, and non-factual claims in project proposals that are not rectified yet the projects get approved anyway. Approvals which defy engineering, economics and physics.

It was reported this week that electricity prices have risen substantially and Australia's (also global) emissions have also risen over the last two years. SOS has been saying for years that this would happen because wind turbines, solar panels, batteries, EVs, supporting infrastructure are mainly made in China, the world' highest emissions country. Coal, gas and nuclear electricity generation are engineered to operate at full capacity 24/7 and for 60 years or more whereas wind, solar and hydro generators are not and on average are idle more than 70% of their short lifetimes. A poor and unsustainable use of resources.

Yet embedded greenhouse emissions in Ruinables (solar, wind, BESS) is ignored. Also ignored is that Ruinables: drive up electricity prices; destroy environments, habitat and wildlife; contravene Article 2b of the Paris agreement; create increased fire risks; cause social upheaval and disharmony; create enormous amounts of waste, much of it toxic that goes to landfill; pollute environments; are weather vulnerable; are unreliable generators; rapidly lose efficiency; complicate grid management; require huge tax payer subsidies and favourable terms of operation; damage the economy; require frequent replacement; etc.

The Spicers Creek wind and BESS proposal will exacerbate the foregoing issues and other negative issues which SOS has raised many times previously. Refer to Appendix B for suggested changes required to properly assess renewables projects and conditions that should be applied.

Save Our Surroundings (SOS) and Save Our Surroundings Central West NSW wrote in its first research paper **"Wind and Solar Electricity Generation are the Answer. Seriously? November 2020" facts and conclusions that all proved true four years later as both from Australian and overseas experiences and further supporting evidence has materialised.**

Following is an extract from the SOS November 2020 paper, which involved thousands of hours of research and inputs from around the world.

*The significant conclusions drawn from our research into weather-dependent wind and solar electricity generation, including the required backup using batteries and biomass, are that:*

- *Australian governments cannot achieve their stated objectives of reducing global temperatures, significantly reducing electricity prices and creating substantial numbers of jobs: no state or country with a large proportion of wind and solar in their electricity generation mix has achieved these objectives.*

- *The risks to the safety of people and the damage to the environment are substantial and are being ignored: risks include life-cycle toxicity, fires, loss of productive farmland, pollution of the environment and abuses of people in developing countries, including children; globally, 82% of mining areas are now targeted to extract raw materials for "renewables".*

- *Resources are being misallocated: up to ten times more resources are needed for intermittent weather-dependent renewables than for alternatives such as reliable base-load modern gas or nuclear generators; subsidies and favourable policies for renewables distort the market place for energy generation.*

- *The public are not being told about the many negative aspects of weather-dependent electricity generation or are being mislead about the benefits; even so the public and community groups have rejected the case for excessive renewables several times already but our politicians continue to ignore the majority decisions by the voters.*

*This paper presents many of our research findings in the hope that it will highlight folly of the Federal and State governments' policies in promoting and subsidising solar and wind electricity generating works at the expense of much better modern alternatives, such as HELE coal-fired power plants, combined closed cycle natural gas turbines and nuclear reactor electricity generation, which are all much less harmful to the global environment.*

*The two policy drivers promoted by governments to extensively change the methods of electricity production in Australia are:*
*(1) to lower carbon dioxide emissions to reduce Earth's projected temperature increases, and*
*(2) to provide a very low cost electricity supply so as to:*
*a) increase economic activity;*
*b) create sufficient jobs for an increasing population;*
*c) mitigate the impacts of the COVID-19 on Australia's economy, which resulted in an unacceptable unemployment rate.*

***First, some definitions:***
*It is important that the reader understand the terms and acronyms used when discussing electrical energy. For instance, a photovoltaic (PV) solar Industrial Electricity Generating Works (IEGW) with a rated capacity of 400 megawatts (MW) produces less than the third of the electricity over a year than does a modern closed cycle gas turbine (CCGT) power plant or nuclear reactor. The electricity output of a power plant is described as megawatt hours (MWh). More detailed definitions are shown at Appendix A.*

***Second, some basic facts:***

- *It is estimated from IPCC data that human-induced carbon dioxide (CO2) from all sources, not just electricity generation, is **3%** of the small amount of the CO2 in the atmosphere. Australia is responsible for about **0.039%** (i.e. 1.3% of the 3%**)** of human-induced amount of total global emissions of carbon dioxide (generally stated as the main driver of global warming) and by signing the Paris Climate Agreement has undertaken to reduce its human related carbon dioxide emissions over time*

  *However, Australia's Chief Scientist of Australia, Dr Finkel, told the Senate in June 2017 that if Australia reduced its **total** carbon emissions to **zero**, that it would do **virtually nothing to reduce global temperatures.***

  *Thus, Australia's policies on emissions reductions should be based on logic and practicality. For Australia, electricity consumption is about **39%** of our total energy consumption, i.e. much less than half of our total CO2 emissions. Restructuring our electricity system can have no affect on our climate.*

  ***There is no justification for spending multi-billions of dollars every year in direct and indirect subsidies for no climate benefit, yet causing higher electricity bills, increasing hardship to Australians, damage to our economy and wide-scale damage to our environment, both in Australia and overseas.***
  *[ref: https://www.facebook.com/SenatorIanMacdonald/videos/1343186319100574/; IPCC AR4 2007]*

- *Every country, such as Australia, Germany and Denmark or state, such as California and South Australia, that have significantly introduced solar and wind technologies into their electricity generation mix have not only significantly increased their electricity prices but also destabilised their electricity grids, which leads to more expenditure on 100% backup, extension of transmission lines and more difficult grid management.*
  ***Doing more of the same thing (i.e. increasing the percentage of weather-dependent renewables) and expecting a different result is totally illogical.***
  *[ref: afr.com 5/8/17 "MarkIntell, US Energy Information Administration"]*

- *The NSW Government in November 2019 declared the Central-West a Renewable Energy Zone (C-W REZ), which will be a **3,000MW** installed capacity pilot for two other NSW Renewable Energy Zones. The NSW Electricity Strategy states it aims are to provide low cost electricity to consumers and provide a stable and reliable energy system, while achieving a net-zero emissions target by 2050. "For households, the Strategy will lead to estimated bill savings of **$40 per year** " by **2040**. Really?*

  *The current average residential bills are: **18-29yo $1906**; **60syo $1458**. We need to reduce electricity bills by **half or more not a miniscule $40 or even $130 in 20 years' time**. No country or state so far has been able to have a high percentage of renewables in their electricity system mix and still provide cheaper electricity or even a stable or reliable supply. Australians already support renewables through direct and indirect subsidies and other means to the tune of **$1300pa** per household, amounting to over **$13 billion** nationally each year.*

  ***Use of the renewables subsidies to build two or three modern long-life HELE coal-fired (China, India, Japan and others are building more right now) or combined-cycle gas fired and/or nuclear plant (50 nuclear reactors are globally under construction right now) and the average electricity bills will drop by meaningful amounts within in a few years.***
  *[ref: https://energy.nsw.gov.au/media/1921/ " NSW Electricity Strategy"; afr.com 5/8/17 "MarkIntell, US Energy*

*Information Administration"; afr.com 5/8/17 "MarkIntell, US Energy Information Administration"; 23/08/20 Report by Dr Moran "The Hidden Cost of Renewables on Electricity Prices"; ddears.com/2020/07/14/dont-ignore-coal/ ; world-nuclear.org/information-library/current-and-future-generation/plans-for-new-reactors-worldwide.aspx' Daily Telegraph p2 9/11/20 "Road to cheaper and cleaner power in NSW" ]*

- *Two of the biggest emitters of CO2 in 2018 were China (**27.8%**) and India (**7.3%**) who, under the Paris Climate Agreement, can continue to increase their emissions for several more decades. The USA, while the second biggest CO2 emitter in 2018 (**15.2%**) has reduced its emissions by **12.1%** since Kyoto Protocol commenced in 2005, largely by significantly increasing gas for electricity generation instead of using coal. In 2019 China's emissions rose despite a slower economy, increased renewables and the full-year operation of seven large-scale nuclear reactors.*
  ***Australia can have no practical effect in reducing global CO2 emissions.***
  *[ref: "2019 BP Statistical Review of World Energy"; Paris Agreement targets; iea.org/articles/global-co2-emissions-in-2019 ; https://www.facebook.com/SenatorIanMacdonald/videos/1343186319100574/;]*

- *Germany and Denmark are regarded as world leaders in transitioning to renewable energy electricity generation, yet in 2019 Germany had the highest electricity prices (**US$0.381/KWh**) in the world with Denmark second (**US$0.361/KWh**), despite their massive shift to renewables at **46.5%** and **63%** respectively; the world average electricity price in 2019 was **US$0.14/KWh** , Australia was **US$0.242** and, China and India, who generate most of their electricity from using coal, were each **US$0.08/KWh**.*
  ***The evidence is clear: the more weather-dependent renewables there are the greater the increase the overall cost of electricity supply. How can Australia be competitive when our electricity cost three times more than our competition?***
  *[ref: globalpetrolprices.com "Electricity prices for households, December 2019".]*

- *For energy generation, wind is an ancient technology and solar cells (invented in 1883 by C Fritz) and the first viable solar panel developed by Bell Laboratories in 1953, are both dilute inefficient and inconsistent forms of energy conversion. The energy density (amount of energy in mega-joules [Mj] released per kg) of different fuels in increasing order is wood (16Mj/kg), coal (24), oil (45), natural gas(55) and nuclear (3,900,000). The higher the energy density the lower the total demand on all resources and the higher the efficiency in producing electricity. A mega-joule is equivalent to 0.278KWh of energy.*
  ***Logically, natural gas and zero emissions nuclear are the preferred fuels at this time.***
  *[ref: understandsolar.com "Who invented solar panels?"; energyeducation.ca/encyclopedia/energy_density]*

- *A study of Germany's electricity generation found that over their operating life solar and wind have very low energy output compared to the energy used to make and install them. The energy generated by nuclear, hydro, wind and solar was, respectively, **75, 35, 3.9** and **1.6** times greater than the energy required to make them. Wind and solar provide a poor return on an energy in/energy out basis compared with other methods.*
  ***Logically, nuclear energy should be preferred as it gives the best energy result.***
  *[ref: 30/6/20 M Shellenberger "Apocalypse Never" p192]*

- *Australia is the only country of the top 20 developed countries and the top 'developing' countries (China, India) that do not depend on zero-emissions nuclear power for part of their electricity generation. There are currently about **50** nuclear power reactors under construction, mainly in China, India, Russia and UAE.*
  ***Australia is being left behind due to its illogical and damaging ban on nuclear energy.***
  *[ref: World Nuclear Association "Plans for New Reactors Worldwide" September 2020]*

- *California at the end of 2019 had 13 in-state sources of electricity (excludes over 30% imported from interstate); installed capacity (MW) was PV solar **14.1%**, wind **7.5%**, natural gas **50.6%,** nuclear **3%**, hydro **17.6%,** others **7.2%.** California, America's most populous state, is among the most expensive states for electricity and its electricity prices have increased at five times the average rate of the rest of the USA as they move each year to higher percentages of "renewables" and elimination of fossil fuels and nuclear power sources.* ***Again, gas and nuclear should be the preferred power sources for Australia, especially as they do not involve major changes to the electricity grid or place huge demands on scarce resources as do weather-dependent renewables.***
  *[ref : 2001-2019 www.energy.ca.gov "Electric Generation Capacity and Energy"]*

Various updates to our research paper have taken place. The last one in November 2022. Just as the first was paper is still valid the last paper just expands the supporting evidence.

## Spicers Creek Wind and BESS Proposal

The Proponent for the Spicers Creek Wind and BESS project in its EIS states that "The Spicers Creek Wind Farm will help provide cleaner, cheaper and reliable electricity while also reducing greenhouse gas emissions and the impacts of climate change." as its justification as to why the project is needed. The Department repeats these claims in its Assessment.

If all, or even several, of these claims are in fact false or unsubstantiated then by the Proponent's own admission the project is not needed and therefore is not approvable.

**The claim that it will provide cleaner electricity**
Not true because:

- China, who generates 30 plus percent of human induced Greenhouse emissions, manufactures nearly all of the world's wind works components, including the batteries, and so have the greatest embedded emissions for this project

- The wide range of minerals used in wind electricity generating works relies on environmentally damaging highly toxic processes

- The project relies on fossil fuels for manufacturing, transport, construction and operation well into the next decade and beyond

**The claim it will provide cheaper electricity**
Not true because:

- electricity prices have risen multiple times faster than inflation despite the NEM grid having the highest wind and solar capacity ever. Just look at your electricity bills of 5 years ago and now

- South Australia has about 60% of wind and solar capacity but have not only the highest retail electricity prices in Australia but are amongst the highest in the world

- Every country in the world that has over 30% wind and solar capacity also have the amongst highest electricity costs.

**The claim that it will provide reliable electricity**
Not true because:

- wind droughts, of which we have had several this year alone, mean little or no wind generated electricity; wind droughts can last across the MEM network for days or even longer

- wind power cannot be guaranteed to perform any time when needed due to the vagaries of the wind and therefore unreliability is the result

- batteries are large net consumers of electricity and at best some can supply only a few hours of electricity once a day if enough electricity was available to fully change them in the first place and not using cannibalising fossil fuel, hydro or other storage works, which BESS Proponents have already admitted they will do.

**The claim that it will reduce greenhouse emissions**
Not true because:

- the project will actually create significant upfront greenhouse emissions from initial mining to final construction as well cause other emissions creating construction in support of the project, such as transmission lines, stand alone battery energy storage systems and pumped hydro storage. These emissions must be taken into account in any assessment

- SOS has shown previously that that just the wind turbines alone of the size proposed requires up to 17.7 times more weight of materials per MWh than any other form of fully operating electricity generation. By extension, all the other emissions created to bring the project to operating stage and its integration into the NEM network cannot be offset during the likely less than 20 year economic life of the project. This is an unsustainable use of the earth's resources and contrary to the principle of sustainability.

**The claim it will reduce the impacts of climate change**
An meaningless green washing claim because:

- In June 2017 the Australian Chief Scientist, Dr Alan Finkel admitted in a Senate hearing that if Australia reduced its **total** carbon emissions to **zero**, that it would do **virtually nothing to reduce global temperatures.**

- neither the Proponent or the Department has provided any evidence or provided any quantification for their claim for this project despite this being a major reason for claimed to justify all Ruinables projects.

## An example of the unreliability, high cost and exaggerated claims of battery backup

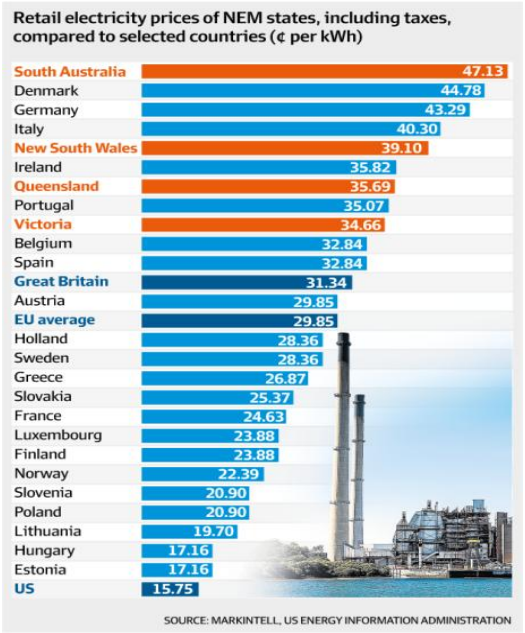
South Australia currently has ruinables generating capacity of over 60% and Australia's biggest battery storage. On the 4th June this year during the peak demand period between 6 and 9 pm the batteries started at 6% but were quickly flattened. By 9pm of the high demand period and until the next morning power came from 97% gas fired plants and 3% diesel generators. Zero wind, Zero batteries and Zero solar generation.

In this example the whole NEM had zero solar generation, zero electricity from batteries and only 1% from wind generation. Power came from coal (60%), gas (21%), diesel (1%) and hydro electric (15%) generation.

Several wind and sun droughts have occurred this year already, so running down gas reserves, requiring frequent shutdown of high energy users and further increasing wholesale electricity costs. Our hydro electric water reserves have also been affected.

Clearly, claims of reliable, cheap and emissions free electricity generation by wind and solar plants with BESS backup are a fallacy. Electricity costs have increased by 20 to 25% in the last year alone, despite increased ruinables in the network. however, this is not recent news as shown from this extract from our 2020 research paper.

- *A comparison of retail electricity prices emphasises the disadvantage Australia has already created for itself with its high penetration of weather-dependent renewables. The more weather-dependent renewables the higher the electricity costs. A study of 2017 retail electricity prices in cents/KWh shows Australia's four NEM states ranked in the top nine highest electricity prices in the world, namely:* ***South Australia 47.13****, Denmark 44.78, Germany 43.29, Italy 40.30,* ***NSW 39.10****, Ireland 35.82,* ***Queensland 35.69****, Portugal 35.07,* ***Victoria 34.66.*** *In 1990s Australia had the lowest electricity prices in the world. Closing coal-fired power stations and substituting renewables has contributed to the increased rise.*
  *[ref: afr.com 5/8/17 "MarkIntell, US Energy Information Administration"; Oct 2020 Dr Lars Schernikau "The truth behind renewable energy"; www.statista.com/ statistics/263492/electricity-prices-in-selectedcountries/ 2018]*



*In 2019 Germany's electricity production mix was **24.6% wind, 9.0% solar**, 8.6% biomass, 3.8% hydro, 29.1% coal, 10.5% gas, 13.8% nuclear, resulting in the highest household electricity price of any country in the world at **US$0.381/KWh**, despite 46.0% (**33.6%** wind and solar) generated from renewable sources. This pattern of substantial increases in electricity prices appears to occur in all countries and states that have significantly increased their reliance on weather-dependent renewables.*
*[ref: www.ise.fraunhofer.de/news January 15 2020, p2; globalpetrolprices.com "Electricity prices for households, December 2019"; Oct 2020 Dr Lars Schernikau "The truth behind renewable energy"]*

## Not in the Public interest

The final statement in the Executive Summary of the assessment report for Spicers Creek states " The project would result in benefits to the State of NSW is therefore in the public interest and approvable". In what way is the public interest served when:

- no measurable impact on global temperatures can be attributed to this project
- the net benefits of the project and the full impact on the electricity network are not considered, which in our opinion are a negative cost to the network and the NSW and Australian economies and results in ever-increasing electricity costs
- higher electricity costs are shown to be a significant contributor to our current inflation and hence interest rate increases
- hundreds of thousands of households are already struggling to pay the ever-increasing energy bills
- tens of thousands of businesses are closing at an increasing rate, such as cafes and small businesses that cannot recover the increases in their electricity costs
- the AEMO and others have raised concerns of wide-spread blackouts as soon as this next summer
- the NSW government is now paying hundreds of millions of dollars to keep the Eraring coal-fired power station operating as the ruinables fail to live up to the hype
- inter-generational equity is ignored so that future generations of Australians will be paying off the forecast trillions of dollars that the energy transition is forecast to cost them

- the misallocation of resources directly impact the quality of life as fewer funds are available

- the 83% of submissions from the impacted communities over-whelming do not want the project and so there is no social licence for this project

- the Commission has previously rejected a project because of future emissions it may create overseas but this project actually results in significant emissions before commissioning.

## Conclusion

This project has many serious flaws, some of which SOS has covered in this submission. Much more detail is included in our November 2022 paper. Some flaws are supposedly mitigated against but are not eliminated, resulting in cumulatively very poor and unnecessary project. Others, such as those raised in this submission are just ignored.

As the Proponent claims the project "... will help provide cleaner, cheaper and reliable electricity while also reducing greenhouse gas emissions and the impacts of climate change." as its justification as to why the project is needed are in fact false or unsubstantiated then by the Proponent's own admission the project is not needed and therefore is not approvable.

We ask the Commission to reject this project due to the multitude of reasons raised here and by others.

## Appendix A: Definitions

In any discussion about electricity generation it is essential that the various terms used are fully understood as some people mislead others, either accidentally or deliberately, by their incorrect use. The main terms and their acronyms used in this paper are:

- **Megawatt (MW):** A megawatt (MW) is equivalent to 1,000 kilowatts or 1 million watts of electrical energy e.g. a 1MW ("nameplate capacity") wind turbine can, under ideal conditions, produce a maximum of 1MW of electricity at an instant in time. MW and MWac (ac = alternating current) are usually synonymous but MWdc (dc = direct current) is sometimes used as it gives a higher nameplate capacity value, i.e. output before conversion to ac, which involves energy losses.

- **Gigawatt (GW):** A gigawatt (GW) is equivalent to 1,000 megawatts or 1 billion watts.

- **Megawatt hour (MWh):** A megawatt hour is equal to 1,000 Kilowatt hours (KWh). It is equal to 1,000 kilowatts of alternating current electricity used continuously for one hour e.g. a **1MW** wind turbine may only produce over a year **3,240 MWh** of electricity depending on the average strength of the wind. The theoretical maximum annual electricity output for a **1MW** system is **1MW x 24hours x 365 days = 8,760MWh**.

- **Gigawatt hour (GWh):** A gigawatt hour (GWh) is equivalent to 1,000 megawatt hours.

- **Capacity factor:** The net capacity factor is the **ratio of an actual electrical energy output over a given period of time to the maximum possible electrical energy output over that period e.g. a 1MW wind turbine may produce 3,240MWh in a year out of a possible 8,760 MWh, therefore its capacity factor is 3240/8760 = 37%, which is a typical value for modern wind turbines. For solar panels the typical capacity factor is less than 28%. For new coal, gas and nuclear power stations the typical capacity factor is 90% or more, which is why they are the backbone of most of the electricity systems throughout the world.**

- **Artisanal:** Made in a traditional way by someone who is skilled with their hands; in this paper it refers to Cobalt mining done by hand.

## Appendix B: Changes required to properly assess renewables projects

**SOS suggests that our governments**

1. Create a level playing field for all forms of electricity supply.
2. Stop all subsidies to the renewables industry in Australia within 12 months.
3. Require all 'renewables' projects to contribute to access electricity network infrastructure or build/pay for infrastructure specifically needed for the project, or NSW Renewable Energy Zones, to connect to the grid.
4. Ban the use of Sulphur Hexafluoride (SF6).
5. Require truth and completeness in project documentation when promoting their projects for assessment.
6. Require that all risk events that occur be publicly reported.
7. Require projects to lodge upfront bonds upon project approval for decommissioning, disposal and land rehabilitation.
8. Require at least a five years warning by a project that it is to be decommissioned so as to give time for its replacement to be planned, approved and built.
9. Place a limit on the size and location of an industrial solar and wind plants so as to preserve land for agriculture, and the attractiveness and ambiance of the surroundings of regional towns.

**What SOS want Renewables Applications to contain**

To enable transparency and proper community and DPIE evaluation of a solar, wind and storage projects, the Proponent/Developer Application (EIS or DA) must provide:

1. That each "Independent Report" included in an application to include a declaration of any financial interests the consulting firm or their owners have in the Proponent/Applicant company or their owners.
2. The comparison with generation alternatives must be against all alternatives of similar capacity (e.g. rooftop solar, CCGT-CC, modern coal-fired plants, modern nuclear plants) on a total life-cycle basis of the longest life alternative. Comparisons to include land space required, total types and tonnes of materials required, and nature of output over each 24 hour period.
3. Details of how and where, if not a standalone electricity generating works, the electricity supply will come from when the solar, wind or storage plants are not supplying sufficient electricity to supply electricity consumers.
4. The life-cycle CO2 equivalents embedded in their specific project once installed.
5. The payback period for life-cycle CO2 equivalents deficit embedded in their project
6. The payback period for life-cycle energy in/out deficit once operational.
7. Evidence for claims that their output is enough supply 'x' households with electricity on a 24/7 basis to ensure the public are not mislead.
8. Soil analysis pre, on and post installation to establish a benchmarks for future comparison
9. Annual testing of soil for contamination, reported to the Council and government departments
10. Confirmation that the project site is not within 10km of the closest boundary of a town, national park, dam or reservoir.

11. Minimum setback from all roads with embankments and vegetation as screening, as for coal mines e.g. 200 metres.
12. The Australian content ($ and %) of their project, separated into labour, transport, materials, taxes and services.
13. The gross value of the project
14. The value any initial and ongoing subsidies, favourable loans or other benefits provided by all levels of government to the project.
15. Details of any Power Purchase Agreements (PPAs) and any Voluntary Payment Agreement (VPA), including duration, price received, and contingency if term is not renewed, penalties for non-delivery of supply amounts.
16. Full details of a decommissioning and disposal plan, including safe-removal and disposal of toxic elements and the full rehabilitation of the land within and around the project site, including resources and estimated times and costs to complete the works.
17. Amount of decommissioning/disposal bond to be lodged with an appropriate government body and the conditions for release.
18. Value of any direct contribution to transmission and distribution networks and associated infrastructure necessary for the project to operate.
19. Value of any contribution or fees to access to the electricity network/infrastructure.
20. Total amount of materials required for the project by type (steel, PV panels, copper wire, etc.) and by weight (tonnes)
21. Type of fire suppression methods to be installed, including type (e.g. water sprinklers, gas,) and the alert methods to fire-fighters (water bombers).
22. Water use plan (source and quantities) for construction and operation, including methods of use.
23. Confirmation that no part the project is within 200m of any waterway (surface and underground)
24. Risk event reporting plan e.g. when any panels or equipment is damaged by fire, storm, hail, etc, including notification to the local community.
25. Extent of compensation to be paid to nearby property owners who incur a reduction in land value as a result of the project or due to fire or contamination.
26. The value of any contributions made to independent research bodies who scientifically study life-cycle "renewables" pollution, resource requirements, impacts on the environment, wildlife and food chain and on humans.
27. Evidence that their product does not include materials obtained from the use of child labour, human rights abuses, and unacceptable impacts on the environments in overseas countries.
28. A risk analysis of the project be included (safety, obsolescence, vulnerability to damage, economic vs. physical life, etc).
29. A chart showing the decline in energy output efficiency each year and projected physical and economic life-time of the project, supported by evidence.
30. Maintenance plan to identify component deterioration on a regular basis (e.g. soil testing if cracking, de-lamination, weather-related damage, turbine blade insect build-up, etc. occurs).
31. Written confirmation from all landholders who lease their land to renewables developers that they fully understand any liabilities they have to remove infrastructure at the project's end-of-life should the then current plant owner not be able to do so (e.g. due to bankruptcy).