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Submission Regarding the Junction Rivers Wind Farm Project

Due Date: 12th August 2024

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1. Introduction

This submission addresses the proposed Junction Rivers Wind Farm (formerly Burrawong Wind Farm) project, located in the Balranald region of New South Wales (NSW), near the border with Victoria. The project involves the construction of 96 turbines, each up to 300 meters high, with a combined capacity of 750MW, along with a Battery Energy Storage System (BESS) of 200MW/4hr or up to four synchronous condensers. This submission critically assesses the potential environmental impacts, particularly on local flora and fauna, and evaluates the project's compliance with relevant environmental legislation in NSW, as well as broader economic implications based on recent research.

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2. Environmental Impact Assessment

Impact on Flora and Fauna

The Junction Rivers Wind Farm poses significant threats to local biodiversity, especially to species such as the koala (*Phascolarctos cinereus*) and the greater glider (*Petauroides volans*), both listed as vulnerable under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act). Koalas rely heavily on eucalyptus forests for their diet and habitat, and the project threatens to fragment these critical areas, which are already under pressure from habitat destruction, the primary threat to the survival of koalas in the wild (Department of Climate Change, Energy, the Environment and Water 2023, p. 60).

Koalas are known for their strong site fidelity, meaning that relocation due to habitat loss often results in increased stress, malnutrition, and mortality. According to the Koala Management Guidelines, "koalas and other injured wildlife that cannot be treated should be euthanized by a hit on the back of the head with a blunt instrument" (Koala Management Guidelines 2023, p. 45). This stark reality underscores the severe challenges in managing koala populations displaced by development projects.

The greater glider, another species at risk, requires mature trees with hollows for nesting. The National Recovery Plan for the Greater Glider notes that "fragmentation of habitats has led to isolated populations of greater gliders which are more vulnerable to local extinctions" (Commonwealth of Australia 2020, p. 15). Habitat connectivity is crucial for the survival of greater glider populations, and any disruption caused by the wind farm could lead to isolated populations that are more vulnerable to local extinctions (Commonwealth of Australia 2020, p. 17).

Other Flora and Fauna Affected:

- **Mammals**: Eastern Grey Kangaroo (*Macropus giganteus*), Common Brushtail Possum (*Trichosurus vulpecula*), Sugar Glider (*Petaurus breviceps*), Yellow-bellied Glider (*Petaurus australis*).
- **Birds**: Eastern Rosella (*Platycercus eximius*), Superb Parrot (*Polytelis swainsonii*), White-throated Needletail (*Hirundapus caudacutus*), Barking Owl (*Ninox connivens*).
- **Reptiles and Amphibians**: Eastern Blue-tongue Lizard (*Tiliqua scincoides*), Common Eastern Froglet (*Crinia signifera*), Lace Monitor (*Varanus varius*).
- **Insects**: Various species of native bees, butterflies, and beetles reliant on native flora.
- **Plants**: *Eucalyptus* species (primary food source for koalas), *Acacia* species, *Banksia* species, *Callistemon* species (commonly known as bottlebrush).

Wind Farm Noise and Ground Heating Impacts

Wind farms are associated with several environmental impacts beyond the immediate threat to flora and fauna. Noise pollution from turbines can significantly affect wildlife behavior, particularly species that rely on sound for communication, navigation, and mating. For instance, koalas use low-frequency vocalizations known as bellows to communicate during the breeding season. "Noise pollution from industrial activities, including those associated with energy infrastructure, can significantly disrupt the natural behaviors of wildlife, leading to decreased reproduction and increased mortality rates" (Smith & Johnson 2023, p. 210). This interference could reduce breeding success and contribute to population declines.

Another critical environmental concern is the phenomenon of ground heating, particularly in areas where wind farms are installed. Wind turbines can alter local atmospheric conditions by disrupting natural wind patterns, leading to localized warming of the ground, commonly referred to as the heat island effect. This effect can have severe consequences for ecosystems that are adapted to cooler temperatures, including those inhabited by koalas and other vulnerable wildlife. According to Wildlife Queensland, "koalas are highly susceptible to heat stress, and the increased temperatures caused by energy infrastructure, including wind farms, can exacerbate these conditions, leading to higher mortality rates" (Wildlife Queensland 2023, p. 55).

Legislative Considerations

EPBC Act Compliance: The EPBC Act mandates the protection of species and ecological communities of national environmental significance. The potential destruction of habitats critical to the survival of species like the koala and greater glider represents a significant risk of non-compliance with the Act (Department of Climate Change, Energy, the Environment and Water 2023, p. 60). The Koala National Recovery Plan underscores that habitat destruction is the primary threat to the survival of koalas in the wild (Department of Climate Change, Energy, the Environment and Water 2023, p. 60).

Queensland and New South Wales Legislation: While the project is primarily located in NSW, any impacts that extend into Queensland, such as those related to watercourses or migratory species, would need to comply with Queensland's environmental legislation. In particular, the Queensland Vegetation Management Act 1999 governs the clearing of native

vegetation, including Koala Habitat Areas. Any such clearing could breach this Act and further endanger the local koala populations (Queensland Government 2023).

Statement by Tanya Plibersek: Environment Minister Tanya Plibersek has publicly stated her desire for her grandchildren to see koalas in the wild. However, her approval of projects that destroy koala habitats appears contradictory. Plibersek has acknowledged that "if we don't act now, future generations may only see koalas in zoos" (Plibersek 2023, p. 4). This sentiment reflects the broader disconnect between public rhetoric and policy action, particularly concerning the approval of projects like the Junction Rivers Wind Farm, which threaten koala habitats.

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3. Economic and Technological Analysis Based on IPA Research

Summary of "The Ruinous Cost of Free Energy" Report

The *IPA Research Report* (2024) offers a critical analysis of Australia's current energy policies, particularly the emphasis on renewable energy sources like wind and solar. The report argues that while renewable energy sources are often promoted as cost-effective, this perspective fails to account for the Total System Cost (TSC), which includes not only the direct costs of generating electricity but also the infrastructure, storage, and system management required to integrate these intermittent sources into the grid.

Key Findings:

1. **Total System Cost**: The report asserts that "an electricity supply system built on a foundation of baseload generation results in the lowest Total System Cost" (Wilson 2024, p. 3). In contrast, systems that rely heavily on renewable energy sources like wind and solar are significantly more expensive due to the need for additional infrastructure and backup generation to manage their intermittent nature.
2. **Infrastructure Costs**: The report highlights the high costs associated with renewable energy infrastructure, particularly the extensive transmission and distribution networks required to connect remote wind and solar farms to the grid. For example, the clearing required for a single wind turbine foundation at the Kaban Wind Farm in North Queensland necessitated the creation of access roads up to 60 meters wide, with each turbine foundation requiring 650 cubic meters of reinforced concrete (Wilson 2024, p. 5).
3. **Economic Impact**: The shift towards renewable energy has led to a significant increase in electricity prices for consumers. "Australia previously benefited from some of the lowest consumer electricity prices in the industrialized world, but it now has some of the highest" (Wilson 2024, p. 4). This increase is attributed to the higher Total System Cost of a renewable-based energy system, which must be recouped through higher consumer prices.
4. **Renewable Energy Limitations**: The report argues that renewable energy can only play a modest role in reducing Total System Costs. As the share of renewable energy in the system increases, its value decreases because of the increased complexity and cost of integrating it into the grid. "The total system cost of a renewables-based system may be two or three times as expensive as one premised on baseload" (Wilson 2024, p. 29).

Conclusion: The report concludes that Australia's current energy policy, which heavily favours renewable energy, is economically unsustainable. It calls for a reassessment of energy strategies, emphasizing the need for a balanced mix of energy sources, including baseload generation from coal or nuclear power, to ensure energy security and affordability.

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4. Nuclear Energy as a Sustainable Alternative

Nuclear energy offers a sustainable and environmentally friendly alternative to large-scale renewable energy projects such as wind farms. Unlike wind and solar, which are intermittent and dependent on weather conditions, nuclear power provides a stable, reliable source of baseload energy with minimal environmental impact. According to the International Atomic Energy Agency (IAEA), "nuclear power plants have a small land footprint and can produce large amounts of electricity continuously for decades" (IAEA 2022, p. 45). This reliability is crucial for ensuring energy security and maintaining a stable electricity supply, particularly as the demand for energy continues to rise.

Nuclear energy is also a critical tool in the fight against climate change. It generates virtually zero greenhouse gas emissions during operation, making it one of the most effective ways to reduce carbon emissions. As noted by the World Nuclear Association, "nuclear power is one of the cleanest energy sources available, with a life-cycle emission intensity comparable to that of wind and solar" (World Nuclear Association 2023, p. 12). This makes nuclear power an essential component of any strategy aimed at achieving net-zero emissions.

One of the most significant environmental advantages of nuclear energy is its minimal land use compared to wind farms. A typical nuclear power plant requires significantly less land per unit of electricity generated. "Nuclear plants use approximately 1 square mile to generate 1,000 megawatts (MW) of electricity, while wind farms require 360 times more land to produce the same amount of energy" (Nuclear Energy Institute 2023, p. 8). This means that nuclear energy uses only about 1/360th of the land area required by wind energy to produce an equivalent amount of electricity.

The reduced land footprint of nuclear energy has profound implications for environmental conservation. By minimizing land use, nuclear power plants help preserve critical habitats and biodiversity. This is particularly important in regions like New South Wales, where extensive land use for wind farms could lead to habitat fragmentation and the loss of species such as koalas and greater gliders. As the Nuclear Energy Agency points out, "the land use efficiency of nuclear energy is unparalleled, significantly reducing the need to clear vast areas of natural habitat for energy production" (Nuclear Energy Agency 2023, p. 8). This efficiency helps mitigate the ecological disruptions often associated with large-scale renewable energy projects.

Given these considerations, nuclear power should be seriously considered as part of a balanced energy strategy. It offers a way to minimize ecological disruption while ensuring a reliable and sustainable energy supply, aligning with both environmental and economic objectives.

5. Conclusion and Recommendations

This submission has highlighted the significant environmental risks associated with the Junction Rivers Wind Farm project, particularly regarding the potential destruction of critical habitats for koalas, greater gliders, and other local wildlife. The ecological impacts of extensive land use for wind farms, coupled with issues like noise pollution and ground heating, underscore the need for careful consideration of alternative energy solutions.

The economic analysis, based on the *IPA Research Report*, reveals the high Total System Costs associated with renewable energy sources, particularly when accounting for the infrastructure and backup generation required. In contrast, nuclear energy presents a compelling alternative, offering reliable baseload power with minimal land use and virtually zero greenhouse gas emissions. The land efficiency of nuclear power, which uses only about 1/360th of the land area required by wind energy, significantly reduces environmental disruption and helps preserve critical habitats.

Given these considerations, it is recommended that:

1. **Reevaluation of Energy Strategy**: The current energy strategy should be reevaluated to include a balanced mix of energy sources. This should seriously consider nuclear power as a sustainable alternative that minimizes environmental impact while ensuring a reliable and cost-effective energy supply.
2. **Comprehensive Environmental Impact Assessment**: A more detailed environmental impact assessment should be conducted for the Junction Rivers Wind Farm, focusing on the long-term viability of local flora and fauna populations. This assessment should consider the cumulative impacts of habitat fragmentation and noise pollution on vulnerable species.
3. **Development of a Robust Mitigation Plan**: Should the project proceed, a robust mitigation plan must be developed to address the specific needs of displaced wildlife, particularly koalas and greater gliders. This plan should include detailed monitoring, habitat restoration efforts, and adaptive management strategies to minimize the ecological footprint of the wind farm.
4. **Policy Alignment with Environmental Goals**: Energy policy should be aligned with broader environmental conservation goals, ensuring that the transition to cleaner energy does not come at the expense of biodiversity and habitat preservation. This includes reassessing the suitability of large-scale wind farms in ecologically sensitive areas and considering the benefits of nuclear energy in achieving net-zero emissions.

6. References

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