Submission for Wallerawang Battery MOD 1 Project

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Introduction

The Wallerawang Battery MOD 1 project proposes substantial modifications to the existing Wallerawang Battery Energy Storage System (BESS), increasing its energy capacity from 500 MW and 1,000 MWh to 600 MW and 1,800 MWh. This aligns with New South Wales' renewable energy objectives to reduce carbon emissions and meet growing energy storage demands.

However, this proposal raises significant environmental, community, and safety concerns due to the increased capacity and reconfigured layout. These changes amplify the risks associated with biodiversity loss, fire hazards, water contamination, lifecycle toxins, and community well-being. This submission critically examines these issues to emphasize the need for sustainable, ethically sound, and community-supported energy development.

Environmental Impact

Noise Pollution

The expanded capacity and operational scale of the Wallerawang BESS are likely to exacerbate low-frequency noise pollution, which disrupts local wildlife and nearby communities.

- **Impact on Wildlife:** Chronic exposure to low-frequency noise has been shown to impair communication in nocturnal species, such as bats, which rely on echolocation for survival (Barber et al., 2010). This could lead to a reduction in their populations and broader ecological imbalances.
- **Impact on Humans:** Prolonged noise exposure is linked to sleep disturbances, increased stress levels, and cardiovascular risks. A study by Basner and McGuire (2018) highlights these adverse health outcomes, making noise mitigation strategies essential.

Water Contamination

Lithium-ion batteries contain hazardous materials, including lithium, cobalt, and nickel, which pose significant risks to water sources if leaks occur.

- **Evidence of Risk:** Incidents such as the 2019 South Korean battery contamination highlight the devastating effects of chemical leaks on agricultural lands and drinking water (Mrozik et al., 2021).

- **Environmental Consequences:** Even minor lithium contamination can disrupt aquatic ecosystems, affecting reproduction and growth in fish populations (Ardente et al., 2021).

Land Disturbance and Biodiversity Loss

The facility's reconfiguration will necessitate additional land clearing, further threatening local biodiversity.

- **Historical Impacts:** Case studies from the Hornsdale Power Reserve in South Australia document habitat losses for endangered species due to inadequate planning and mitigation (Department of Agriculture, Water and the Environment, 2021).
- **Cumulative Effects:** The Biodiversity Conservation Trust reports that similar developments have caused a 20% decline in native species populations within five years of construction.

Fire and Explosion Risks

Increased Hazard with Expanded Capacity

The expanded energy storage capacity increases the likelihood of thermal runaway incidents, where overheating in one battery cell triggers a chain reaction.

- **Toxic Pollutants:** Fires release hazardous gases like hydrogen fluoride, which contaminate air, soil, and water, posing long-term environmental and health risks (Safe Work Australia, 2022).
- **International Examples:** The 2021 Tesla Megapack fire in Victoria demonstrated how such incidents can disrupt local communities and ecosystems.

Challenges for Community Emergency Services

The Wallerawang community relies on volunteer-based rural fire brigades, which often lack the specialized training and equipment needed to combat lithium-ion battery fires.

- **Resource Limitations:** According to Queensland Fire and Emergency Services (2022), rural areas face significant challenges in managing prolonged and complex fires.
- **Environmental Damage:** Water used for fire suppression can carry toxic runoff into nearby ecosystems, exacerbating the damage.

Lessons from Historical Incidents

Incidents such as the 2019 Arizona Public Service battery fire reveal the unique challenges of managing large-scale BESS fires, emphasizing the need for preemptive planning and dedicated resources.

Lifecycle and Sustainability Concerns

Toxic Lifecycle Impacts

Lithium-ion battery production, use, and disposal introduce several persistent toxins into the environment:

- **Hydrogen Fluoride (HF):** Released during fires, HF is highly toxic and causes severe respiratory and environmental damage.
- **Heavy Metals:** Leaks or improper disposal of nickel, lithium, and cobalt can contaminate soil and water systems, posing long-term ecological and health risks (Ardente et al., 2021).
- **Persistent Organic Pollutants (POPs):** These bioaccumulate in wildlife and remain in the environment for decades.
- **Fire Suppression Chemicals:** Substances like PFAS, used in firefighting foams, are highly persistent and toxic.

Ethical Supply Chain Issues

The demand for raw materials such as cobalt intensifies environmental degradation and human rights violations in mining operations.

- **Human Rights Violations:** Amnesty International (2019) highlights severe child labor and unsafe conditions in cobalt mines in the Democratic Republic of Congo.
- **Need for Sustainable Practices:** Stricter monitoring and ethical sourcing are critical to mitigate these issues.

Community Impacts

Health and Safety Risks

Noise pollution, air quality concerns, and fire hazards significantly impact community well-being. Transparent communication and robust emergency response plans are essential to address these concerns (World Health Organization, 2018).

Indigenous Cultural Heritage

The project's reconfiguration risks encroaching on land of cultural significance to Indigenous communities.

- **Historical Oversights:** Similar projects often fail to engage meaningfully with Indigenous stakeholders, leading to significant cultural impacts (United Nations, 2007).
- **Recommendations:** Effective collaboration with Indigenous groups is necessary to protect cultural heritage and foster mutual trust.

Recommendations

1. **Enhanced Fire and Safety Systems:**
    - Install state-of-the-art fire suppression and thermal management systems.
    - Provide specialized training for emergency services in managing lithium-ion battery fires.
2. **Environmental Monitoring and Mitigation:**
    - Conduct regular soil and water quality testing to detect contamination.
    - Implement biodiversity offsets to preserve critical habitats.
3. **Community and Indigenous Engagement:**
    - Develop transparent communication strategies to address health and safety concerns.
    - Collaborate with Indigenous communities to safeguard cultural heritage.
4. **Lifecycle Management:**
    - Establish robust recycling protocols for end-of-life batteries.
    - Promote sustainable and ethical sourcing of raw materials.

Conclusion

While the Wallerawang Battery MOD 1 project aims to enhance New South Wales' renewable energy infrastructure, it introduces significant environmental, community, and safety risks. These include biodiversity loss, toxic lifecycle impacts, fire hazards, and insufficient emergency preparedness. Addressing these challenges through stricter regulations, sustainable practices, and community engagement is essential to ensure the project contributes positively to the state’s energy transition.

References

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