Submission No 43

INQUIRY INTO FEASIBILITY OF UNDERGROUNDING THE TRANSMISSION INFRASTRUCTURE FOR RENEWABLE ENERGY PROJECTS

Organisation: NSW Farmers - Goulburn branch

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Goulburn Branch

Mr Stan Moore

Chair: Goulburn Branch

NSW Farmers Association

Subject: Submission in Support of Undergrounding High Voltage Transmission Infrastructure

I am writing on behalf of the Goulburn branch of the NSW Farmers Association. The Goulburn branch sits in the northern end of the Humelink corridor and has members that will be both directly and indirectly impacted by the proposed development. The branch has been actively involved in ensuring that renewable energy projects and their associated infrastructure are in the correct place. The Goulburn region is already playing host to 13 renewable energy projects including wind, solar and the proposed Bio-incinerator at Tarago and there is another 5 renewable projects either approved or in planning. These projects obviously need significant transmission infrastructure to support. This infrastructure is a blight on the landscape and hampers agricultural activity. The Branch believes that undergrounding offers significant benefits in terms of Social and Environmental impact. The Branch supports the following information as provided in the Upper Lachlan Branch of NSW Farmers submission.

1. Costs and Benefits of Undergrounding:
   - 1.1 Cost Analysis: While undergrounding high voltage transmission lines may initially involve higher capital costs compared to overhead lines, it is essential to consider the long-term benefits. Overhead lines require regular maintenance and are susceptible to damage from severe weather conditions, resulting in significant repair and replacement costs. In contrast, underground cables have a longer lifespan, reduced maintenance requirements, and lower associated costs over their lifetime.
   - 1.2 Enhanced Aesthetics and Property Values: Undergrounding transmission lines can greatly improve the visual aesthetics of landscapes and communities. Overhead lines often create a visual barrier and may negatively impact property values. By eliminating these structures, undergrounding enhances the quality of life for residents and attracts potential investors.
   - 1.3 Increased Reliability: Underground cables are less prone to weather-related disruptions such as lightning strikes and falling trees, resulting in a more reliable electricity supply. This increased reliability can have substantial benefits for critical facilities, industries, and residential areas, leading to improved productivity and reduced economic losses.
2. Current Projects

TransGrid will deliver the Humelink project. On its website TransGrid claims:

"Humelink will unlock the full capacity of the expanded Snowy Hydro Scheme and enable greater sharing of energy across the eastern states".

TransGrid have identified two key limiting factors in its ability to underground infrastructure for Humelink. Cost and Time.

- 2.1 Cost considerations are always important. From the start of consultation for the Humelink development Upper Lachlan Branch members have claimed that the process to assess the cost is flawed. The Regulatory Investment Test -Transmission (RIT-T) provides a single framework for all transmission investments and removes the distinction in the regulatory test between reliability driven projects and projects

motivated by the delivery of market benefits. The RIT-T process fails to assess the Social and Environmental costs of development and as such does not provide a holistic assessment of the project costs. When adding the benefit gain from exploring underground options, the opportunities to minimise social and economic impact will grow.

2.2 Time: Recent announcements around Snowy 2.0. The infrastructure that will feed the Humelink network have increased the timeframe of delivery until 2029. The blow out in the timeframe allows for a proper assessment and total consideration of the opportunities that undergrounding infrastructure provides.

2.3 International Case Studies: The SuedLink high-voltage direct current (HVDC) transmission line to be developed in Germany is expected to be the longest underground HVDC power cable in the world. Covering a total route length of 750km, the 525kV underground power line will be capable of transmitting up to 4GW of offshore wind power from north to south Germany while also facilitating the transmission of solar energy from south to north Germany. The SuedLink HVDC line will also be connected to the 525kV NordLink HVDC subsea interconnector that brings hydropower from Norway to Germany. One of the key reasons for choosing to underground this infrastructure was to improve visual amenity.

3. Impact on Delivery Timeframes:

3.1 Initial Construction Period: Undergrounding transmission lines may require more time for planning and installation compared to overhead lines due to factors such as excavation, cable laying, and testing. However, advances in technology and construction techniques have significantly reduced these installation durations, minimizing the impact on project delivery timeframes. The adoption of HVDC in the USA and Europe will further assist with expert knowledge existing in the industry already.

3.2 Long-Term Maintenance: Once the underground infrastructure is installed, maintenance requirements are generally lower compared to overhead lines. Routine inspections and repairs can often be carried out without interrupting the power supply, resulting in minimal downtime for consumers and avoiding significant delays in delivery timeframes.

4. Environmental Impacts

4.1 Visual Impact and Landscape Preservation: Undergrounding transmission lines eliminates the visual impact associated with overhead lines, preserving the natural beauty of landscapes and protected areas. This approach aligns with environmental conservation efforts, promoting the sustainable development of communities.

4.2 Bushfire Prevention and Mitigation: Overhead lines pose a risk of causing bushfires and are also a major concern regarding bushfire mitigation. Undergrounding minimizes these threats. Overhead lines are susceptible to grounding in the event of dense smoke during periods of intense bushfire. Safety of paid and volunteer persons involved in fire mitigation has not been satisfactorily dealt with regarding operating safely around this infrastructure. Having underground options would also protect major city infrastructure in the event of a fire in a regional area causing the shutdown of an overhead line.

4.3 Reduction of Electromagnetic Fields (EMF): Undergrounding high voltage transmission lines significantly reduces the exposure of nearby residents to electromagnetic fields, addressing potential health concerns with prolonged exposure to EMF.

In conclusion, the undergrounding of high voltage transmission infrastructure offers numerous benefits such as improved aesthetics, enhanced reliability, and minimized environmental impact. Existing case studies and ongoing projects in domestic and international contexts highlight the successful implementation of undergrounding, providing valuable lessons and best practices. Although there may be initial challenges and potentially longer delivery timeframes associated with undergrounding, the long-term advantages outweigh these factors. Moreover, undergrounding reduces visual impact, protects wildlife, and mitigates potential health risks associated with electromagnetic fields.

I urge you to consider the significant benefits of undergrounding high voltage transmission infrastructure when making decisions regarding the critical energy transition we are undertaking. By embracing this approach, we can create sustainable and resilient communities while ensuring a reliable and environmentally conscious electricity supply. Our branch firmly believes that generational infrastructure requires generational thinking. When assessing all impacts of overhead infrastructure and aligning these with social, environmental and economic costs it is the belief of the branch that using cutting edge technology and a forward-looking strategic view to our energy transition the Humelink project can be a major contributor to the future of a sustainable and environmentally conscious energy system.

Thank you for considering our branch submission. I welcome any questions and our branch is willing to provide any further insight the inquiry may need.

Sincerely

Stan Moore

Chair, Goulburn Branch

NSW Farmers Association