Submission No 12

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

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POWER LINE SUBMISSION

In the debate as to whether power lines should be built above ground or underground the additional cost of underground power lines is always used to justify adopting the above ground option. But has the cost of above ground power lines in terms of their visual impact been truly established? The recent proliferation of wind farms provides an answer.

The developers of land based wind farms give assurances that there will be negligible impact on farming activities, no environmental pollution, little impact on native habitat, noise will not be a problem and the site will be decommissioned and rehabilitated to its original state at the end of projects life. This then raises the question as to why it is necessary to pay up to $40,000 annually per turbine to entice landholders to host these turbines? The only remaining and feasible explanation is that they reduce the visual amenity of the people who must live and work on the project site.

The relevant question now is whether people would prefer a wind turbine or a large power pylon with it's associated power lines in their backyard? Many people will opt for the wind turbine, which suggests that compensation for both should be roughly equivalent. Compare the $10,000 / km / year, which equates to approximately $5,000 / power pylon, offered by EnergyCo to the $40,000 for a wind turbine and the disparity in compensation is all to evident.

And just as with wind turbines, the loss of visual amenity caused by power lines does not stop at the boundary of the power line easement. The Queensland government has recognised this problem and is now offering compensation to impacted neighbours as well. All these factors must be considered when deciding between the above ground and underground power line options.

So to avoid the massive cost blowout that either the above ground or underground power line option will impose on the renewable energy roll out, transmission infrastructure must be scrutinised, minimised and optimised. Take the CWO-REZ for example. The present plan is to build two dual circuit 500kv power lines from Wollar to Wellington and allow renewable energy projects to connect to these lines. But all the power output from these lines must be fed into and is restricted by the existing 500kv Muswellbrook to Wallerawang line. This line is approximately double the length of the proposed Wollar to Wellington line and as such offers ample opportunity for renewable energy projects to "plug in" along it's length; particularly on reclaimed mining land and associated buffer areas. If this approach were to be adopted then the Wollar to Wellington power line would become redundant and so eliminate the visual impact as well as providing massive cost savings.

Another approach is to maximise rooftop solar at the expense of solar farms. With rooftop solar, particularly if complemented with on site battery storage, the electricity is produced and consumed largely on site. No new power lines required with huge cost savings!
NB. The problem with solar is that, apart from a large amount of battery storage required to "firm" daily output, winter production falls by a third at NSW latitudes. There is no feasible means of storing electricity on a seasonal basis and so this winter deficit must be filled with, presumably, peak gas. Thus more solar equates to more gas consumption and more carbon emissions.
Another suggestion is to increase solar production in the winter months to fill this deficit. This will require 50% more panels, which will also produce 50% more electricity than required for the remainder of the year. Wind farms will then become uneconomic and so electricity production will gravitate to become dominated by solar, with huge areas and costs required for this 50% overbuild. This "problem" with solar reinforces the argument that solar should be restricted to rooftop applications.

Finally to wind farms. The best place for wind farms is in offshore locations. Offshore wind is stronger and more consistent than land based wind. It has the advantage of being stronger at night (land based wind is stronger during the day), and as such is a much better fit with solar output. And critically, with the majority of the Australian population concentrated in coastal locations the required transmission infrastructure would be much reduced.

Offshore wind farms will also expose another weakness and cost for land based wind turbines. Public/voter pressure will dictate that offshore farms will be located at considerable distance from the coast; probably 15-20kms. If a rural resident is forced to live closer than this distance to a land based wind farm then that is a clear case of discrimination. Therefore move the wind farm or be prepared to pay a large amount of compensation!

In conclusion if wind and solar projects are to be built in rural NSW the transmission infrastructure to service these projects should be underground and paid for by the developers who choose to build in rural areas. This will provide an economic incentive to prioritise rooftop solar and offshore wind farms at the expense of solar and land based wind farms and so minimise the amount of transmission infrastructure required.

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