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President
Professor Robin Batterham AO FREng FAA FTSE

Philip Weickhardt
Commissioner
Electricity Network Inquiry
Productivity Commission
GPO Box 1428
Canberra City ACT 2601

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Dear Mr Weickhardt

Electricity Network Inquiry

The Australian Academy of Technological Sciences and Engineering (ATSE)[1] welcomes this opportunity to provide some comments on '*the use of benchmarking as a means of achieving the efficient delivery of network services and electricity infrastructure'* and '*the effectiveness of regulatory arrangements for interconnectors'.* The Academy sees these are important issues that determine the regulatory allowances for Australia's transmission and distribution networks. The Academy seeks to comment on the technical aspects that warrant consideration in benchmarking transmission and distribution costs.

Benchmarking

There are proposals by regulators to use benchmarking to compare the costs and efficiency of different network companies. The Academy notes that there is debate as to whether benchmarking should be used solely to compare operation and maintenance cost (normal application) or whether it can also be applied to capital investment costs - a more difficult application due to the differences and scarcity of new projects. There is also debate as to whether benchmarking should factor in differences in ownership, such as private versus government ownership; currently this is not a factor and both are often perceived to be equally efficient.

The Academy feels that there are some key technical aspects that warrant consideration in benchmarking transmission and distribution costs, such as

- Reliability and service standards that are used to plan network redundancy
- Customer density in the area being serviced e.g. higher densities should provide economies of scale
- The profile of the customer load e.g. a peaky load profile will have lower asset utilisation than a flat load curve
- The mix of large industrial loads and domestic loads
- The impact on the design of assets imposed by factors such as the nature of the terrain, climate, vulnerability to cyclones, bushfires etc.

The Academy suggests that benchmarking should be broader than the National Electricity Market (NEM). Consideration could be given to including Western Australia and the Northern Territory. Further, the International Transmission Operation and Maintenance benchmarking (ITOMs) is

[1] The Australian Academy of Technological Sciences and Engineering (ATSE) is an independent body of 800 eminent Australian engineers and scientists driving technological solutions for a better Australia. ATSE was established in 1976 with the mission to promote the application of scientific and engineering knowledge to the future benefit of Australia. ATSE is one of four learned national Academies, which have complementary roles and work together both nationally and internationally. www.atse.org.au

undertaken every two years for about 30 transmission companies worldwide, comparing costs and network reliability performance. This should provide an international reference.

Interconnection

Australia has one of the most geographically dispersed electricity network in the world with a few dense load centres separated by long distances. There are relatively weak interconnections between the five eastern states that form the NEM and there is no interconnection to Western Australia or the Northern Territory due to the vast distances. The existing interconnections between the NEM states can constrain the economic dispatch of generation, however, statistically there is no recent evidence of material congestion causing substantially higher generation costs or threatening the reliability of electricity supply. New interconnections may also be required in the future to develop Australia's remote renewable energy resources.

The NEM operates under a well-developed regulatory framework that aims to ensure that investment in new interconnectors only takes place where there are demonstrable net economic benefits. The framework empowers a range of organisations, processes and publications to facilitate the identification, evaluation, consultation and development of interconnections in a transparent process. These include:

- Annual planning reviews published by each transmission company
- AEMO publication of a National Transmission Network Development Plan
- Regulatory Investment Test for evaluating and consulting on new works
- Last resort planning power vested in the Australian Energy Market Commission

Notwithstanding this framework, there have been virtually no new regulated interconnectors justified (or built) in the fourteen-year history of the NEM. Some argue that the above regulatory framework has been implemented only recently and needs more time to work. Others maintain that the large investments in new interconnectors simply cannot be justified economically because of Australia's long distances and the low level of congestion of the existing interconnectors. In addition, some consider that there is scope for the Australian Government to provide funding outside of the current regulatory framework to facilitate the development of Australia's remote renewable energy resources, provided this is transparent and the policy objective is clearly communicated.

In conclusion, ATSE considers that benchmarking of transmission and distribution operating costs could help to improve network efficiency provided such benchmarking is based on valid technical drivers. Further, that the regulatory framework for interconnectors appears sound, but should it fail to deliver the new interconnectors required for Australia's remote renewable energy generation capability, Government funding or other stimulus may be required.

If this letter needs clarification or if ATSE can be of further assistance, please contact Harriet Harden-Davies, Senior Policy Officer ATSE, .

Yours faithfully

Robin Batterham
President