



Submission to the Central-West Orana REZ Access Scheme Issues Paper

30 April 2021

Introduction

Smart Wires is pleased to make this submission to the New South Wales Department of Planning, Industry and Environment's consultation on the Central-West Orana Renewable Energy Zone (CWO REZ) Access Scheme Issues Paper.

Smart Wires is a global power technology company advancing the delivery of affordable, clean electricity worldwide using modern modular power flow control (MPFC) technology. We are headquartered in the San Francisco Bay Area, with European headquarters in Dublin, Ireland, and a global workforce of 200 professionals spread across four continents, including Australia.

With network optimisation projects currently underway in New South Wales, Victoria and South Australia, including the TransGrid VNI project releasing around 170 MW additional network capacity, we believe we have a unique and valuable perspective on the optimisation and development of new and existing transmission network infrastructure.

Support for the Central-West Orana REZ Development Plan

The coordinated development of REZs across New South Wales under the 2020 Electricity Infrastructure Roadmap is an important and essential step to encourage investment in renewable energy resources, ensuring the timely and efficient development of the new energy infrastructure required to provide a more secure, affordable and sustainable energy supply to consumers.

The CWO REZ access scheme aims to provide increased certainty to new renewable generation and energy storage proponents seeking to connect to the proposed 3,000 MW of additional network connection capacity, through an arrangement of firm access rights proposed under the access scheme.

Smart Wires does not have a position on which of the access schemes described within the issues paper is preferable, however, we do hold the view that the maximum capacity possible should be extracted from transmission infrastructure associated with any newly developed REZ.

Through the use of modern modular power flow control technology, the load-carrying capability of the CWO REZ (and wider) network can be optimised to provide maximum REZ capacity under a variety of operational network scenarios, reducing constraints and limiting the associated generator curtailment.

The flexibility of the modular solution means that it can be adapted as network needs develop over time. The additional capacity provided by the inclusion of MPFC equipment typically has a substantially lower marginal \$/MW cost than that of the original network augmentation, often by as much as 5 to 10 times.

Practical applications of modular power flow control in Australia

Currently, there are three MPFC installations underway in Australia one each with TransGrid, ElectraNet and AusNet, providing practical examples of the advantages that can be achieved by the application of this technology. Each of these projects provides a market benefit to the NEM by balancing line flows to increase utilisation of existing network assets. The projects achieve the following outcomes:

- In New South Wales, the TransGrid VNI project allows increased power flows from the Snowy Hydro system to flow to Sydney by balancing 330 kV line flows in the area.
- In South Australia, the ElectraNet Templers-Waterloo project relieves a 132 kV line constraint, allowing additional wind generation to be dispatched.
- In Victoria, the AusNet Jindera-Wodonga project improves import capability from New South Wales by routing power flow onto the underutilised western 330 kV transmission corridor.

Additionally, in the UK, National Grid Electricity Transmission (NGET) has recently commenced a five-year framework agreement to use modular power flow control to increase power transfers from Scotland to England, reducing congestion that presently limits the transport of wind generation from the north to the London load area.

Conclusion

Based on our experience, we expect the application of modular power flow control to the CWO REZ, and others, to have the potential to provide significant benefits in maximising connection capacity and reducing curtailment of renewable generation for a modest incremental cost. By considering the benefits that MPFC could provide in the planning stages of the REZ, the design can incorporate and exploit the advantages provided by the technology.

We look forward to working with the New South Wales Department of Planning, Infrastructure and environment, TransGrid, AEMO, and the various network service providers within the NEM to assist in identifying applications that can leverage the technology to provide the lowest cost, reliable and renewable supply to Australian electricity consumers.

We would welcome the opportunity to meet with you to discuss these ideas in further detail.

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