



## Draft ISP Consultation Response

21 February 2020

## Smart Wires Response

Smart Wires is pleased to provide feedback in response to the Draft ISP consultation document published in December 2019. We welcome the opportunity to contribute towards the development of a robust, effective and efficient plan to meet the future electricity supply needs of the National Electricity Market (NEM). Smart Wires would like to acknowledge that the draft ISP published by AEMO represents the culmination of a significant amount of work and has resulted in a very comprehensive document. We would also like to thank AEMO for hosting highly informative and engaging workshops to support this process.

As the world-leading supplier of Modular Power Flow Control (MPFC) solutions we have seen consumers across the world benefit from investment plans that leverage the economic efficiency associated with incremental modular investment. MPFC is designed to maximise utilisation of the existing system and to achieve the maximum benefit from network augmentations by balancing power flows across new and existing circuits.

The benefits of MPFC solutions have been recognised by many TNSPs in Australia with MPFC being deployed in New South Wales, Victoria and Adelaide South Australia in 2020. In addition, MPFC was selected as part of the preferred option for the Victoria to New South Wales Interconnector Upgrade in the recent PACR publication and PFC has been included in many of the options for VNI-West

The stated guiding objective of the ISP is to achieve power system needs while maximising net market benefits. Many of the large solutions identified in the Draft ISP are intended to satisfy needs that have grown to a specific scale later in the decade. These needs are often growing during the decade and consumers are losing out until a large scale project has been delivered or until the need is large enough to merit the large solution being progressed. **We believe the Draft ISP could make better of modular solutions to provide benefit for consumers in every time period.** Modular power flow solutions are inherently designed to mitigate the risks of over or under-investment that arise when trying to address the increasingly uncertain needs of the future power system. The primary benefit of modularity is that it allows you to make short term investment decisions to address known needs and then scale the solution over time into large investments if the system needs increase. This is better than waiting for the need to be large enough to justify delivering a single large scale solution, i.e. an all or nothing approach. You still retain the optionality to scale up to meet the larger need if and when it arrives or to redeploy your solution to another part of the network when an alternative large scale infrastructure project is delivered.

We have answered some of the specific questions identified in the E1.1 on the following pages

**4. What, if any, additional factors should AEMO consider when identifying which Renewable Energy Zones are best suited to further development? and**

**Improving benefits of other works**

MPFC can be used to improve the benefits provided by other projects that could otherwise be reduced by operational constraints. This is expected to include development of renewable energy zones (REZs) where new 330 kV line builds would occur in parallel with low capacity 132 kV sub-transmission networks. Controlling the flow of power on the lower capacity network could not only allow the capacity of the new lines to be better utilised, but if power flow control is considered in the planning of the new 330 kV lines, higher capacity lines could potentially be installed.

**5. Are there any other factors that AEMO should take into account when assessing the merits of candidate development paths?**

**Humelink**

The original options assessment considered options that provided a nominal capability increase of around 2,000 MW. As the current preferred option, a 500 kV line development between Maragle and Bannaby via Wagga, does not require phase-shifting transformers to achieve the target capability, the inclusion of power flow control as part of the solution has been dismissed. However, we would propose that the inclusion of power flow control should be based on an evaluation of the net economic benefits it would provide. This would mean that the optimal market outcome would not be limited by an assumed network capability level, and also would address the potentially limiting assumption that power flow control alternatives would all have similar costs to installing phase shifting transformers.

**Queensland – New South Wales Interconnector**

The proposed future QNI augmentations are described that include staged developments of QNI ‘minor’, QNI ‘medium’, and QNI ‘major’. The need and timing of each stage is dependent on the cost and capacity improvement provided by each stage. Considering use of power flow control to optimise the capacity provided at each stage of development could ensure maximum utilisation of investment and valuable deferral of capital expenditure. Again, it is underlined that assumptions of the cost of providing power flow control based on traditional solutions, may limit opportunities provided by alternate technologies being missed.

**6. What, if any, additional factors should AEMO consider to assess the development and timing of VNI West?**

A number of options are under consideration for the VNI West transmission corridor, potentially in operation by 2028/29. The options include the use of power flow control to optimise flows on the proposed developments, with deployments suggested for the Upper Tumut-Murray, Lower Tumut-Murray, and Wodonga-Dederang lines. It is likely that there are benefits to be gained from installing power flow control on one or more of these lines prior to the completion of the VNI West line work, so that an installation in the short term, that is compatible with the longer term objectives, could begin to accrue benefits within a year of progressing the project.

**7. Are there any aspects of the Draft 2020 ISP that require further or clearer explanation so that results are transparent and can be easily understood?**

**8. What, if any, modifications should AEMO consider for the proposed 2020 ISP stakeholder engagement plan and timeline?**

**Network Study Data and Market Benefit Data**

In order to be able to contribute more robustly to this process, we ask AEMO to consider publishing the transmission system power flow models and dispatches used in the Draft ISP. Furthermore, if AEMO were to quantify the market benefit in dollars of increasing capacity across key boundaries in increments, say of 100 MW, then all technology providers would be better placed to propose solutions that may not have been considered by AEMO, resulting in a greater likelihood of producing the most economic development path.

To finish we would like to once again thank AEMO for running a very transparent and highly consultative process. AEMO has demonstrated an openness to investigating traditional and non-traditional solutions to maximize the benefit for the NEM and ultimately for all consumers. We proudly hold up the AEMO ISP process as a benchmark of excellence when discussing network investment approaches with industry players in market segments all around the world.

Best Regards,

*Marie Hayden*

Marie Hayden | Vice President, Business Development, Europe & Australia  
[marie.hayden@smartwires.com](mailto:marie.hayden@smartwires.com)