AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Western Victorian Renewable Integration

July 2018

Project Update

A status update on the Western Victorian Renewable Integration Regulatory Investment Test for Transmission (RIT-T)

Important notice

AEMO has prepared this document to provide an update on the Western Victorian Renewable Integration Regulatory Investment Test for Transmission.

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VERSION CONTROL

Version	Release date	Changes
#1	12/07/2018	

Project update

Western Victorian Renewable Energy Integration

In April 2017, AEMO commenced a Regulatory Investment Test for Transmission (RIT-T) to assess the technical and economic viability of increasing the transmission network capacity in Western Victoria.

With significant levels of committed new generation in the area, an upgrade of transmission capability in Western Victoria is expected to:

- Improve access to high quality renewable resources in Western Victoria.
- Provide net market benefits by alleviating forecast thermal constraints on the network, reducing the overall total cost of dispatch.

Alignment with the Integrated System Plan

AEMO will publish its Integrated System Plan (ISP) in July 2018. The ISP provides a long-term view of strategic infrastructure development – identifying the transmission investments that can best unlock the value of existing and new resources in the National Energy Market (NEM), at the lowest cost. The ISP also considers the transmission investment required to develop Renewable Energy Zones (REZs) to provide customers access to the lowest cost renewable resources.

The NEM-wide transmission developments outlined in the ISP may well increase the benefits of taking action to reduce congestion in the Western Victorian area, and will therefore be critical to ensuring a robust outcome consistent with national planning considerations.

Other key developments

Other key developments expected to have a material impact on the costs and benefits of the options being considered under this RIT-T include:

- In September 2017, the Australian Energy Market Commission (AEMC) published a final Rule allocating responsibility for system strength as part of managing power system fault levels. In summary, the new Rule places an obligation on Transmission Network Service Providers (TNSPs) to maintain minimum levels of system strength and a 'do-no-harm' obligation on generators connecting to the network.
- In June 2018, ElectraNet published its South Australia Energy Transformation (SAET) RIT-T Project Assessment Draft Report. The report finds that the proposed new interconnector between South Australia and New South Wales is expected to deliver net market benefits.
- There are a number of committed generation projects and minor transmission augmentations already underway in Western Victoria which has led AEMO to progress a staged development approach to energy integration in the region.

Project Assessment Draft Report timeline extension

The consultation period for the PSCR closed on 14 July 2017. Under clause 5.16.4(j) of the National Electricity Rules (NER), AEMO is required to publish a Project Assessment Draft Report (PADR) within 12 months from the end of the consultation period.

In response to a request from AEMO, the AER provided written consent on 28 June 2018 to extend the publication date of the PADR to 14 December 2018.

This extension will allow AEMO to consider all network and non-network options in sufficient detail to ensure a robust decision-making process.

AEMO recognises the need for appropriate, economic and timely solutions to network congestion and will continue to progress key tasks in parallel with the PADR preparation to minimise delays to the overall project timeline.

Background

Strategic planning of the power system is critical to making smart, informed decisions in the long-term interests of Australian energy consumers. In 2017, AEMO commenced a Regulatory Investment Test for Transmission (RIT-T) to assess the technical and economic viability of increasing transmission network capacity in Western Victoria. AEMO published the Project Specification Consultation Report (PSCR) for this RIT-T in April 2017 [1].

The PSCR explored the identified need for transmission investment in the area and potential credible network and non-network options to address this need. Public submissions on the PSCR closed on 14 July 2017, and AEMO continues to collaborate with industry, government and the community to identity and deliver an economic solution that will efficiently alleviate forecast thermal constraints on the network, and facilitate the adoption of new technologies by improving access to high quality renewable resources in the area.

Key developments

There have been a number of key developments since publishing the PSCR which AEMO recognises as having a material impact on the costs and benefits of the options being considered under this RIT-T. These are summarised below.

Integrated System Plan

AEMO will publish its inaugural Integrated System Plan (ISP) in July 2018. The ISP provides a transition pathway from the grid of today to the grid of tomorrow at lowest economic cost. It models the timing and mix of generation and storage, and requisite transmission upgrades over a range of scenarios, using key inputs including demand forecasts, supply forecasts, and retirement forecasts.

The ISP is likely to propose a number of transmission investments expected to provide benefits under a range of plausible futures. These include the following inter-regional developments relevant to the Western Victorian region:

- Augmentation of the interconnector capacity between New South Wales and Victoria to increase export capacity from Victoria to New South Wales by approximately 170 megawatts (MW).
- A new interconnector between South Australia and New South Wales, connecting into Victoria via the Buronga – Red Cliffs transmission path.
- A new interconnector between New South Wales and Victoria (Sydenham – Wagga via Bendigo, Kerang, and Darlington Point).

AEMO considers it crucial for the Western Victorian RIT-T to be aligned with the ISP inputs and outputs, such that the preferred option is consistent with the national planning considerations underpinning the ISP and the NEM-wide benefits of taking action to reduce congestion in the Western Victorian region are captured.

AEMO has also recently published its 2018 Victorian Annual Planning Report (VAPR) which assesses the adequacy of the Victorian transmission network to meet its reliability and security requirements, and identifies opportunities to address emerging network limitations[2]. The 2018 VAPR also provides additional context to the options being considered under the Western Victoria RIT-T.

[1] AEMO, *Western Victoria Renewable Integration – Project Specification Consultation Report*, available at http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Victorian-transmission-network-service-provider-role/Regulatory-investment-tests-for-transmission.

[2] AEMO, *2018 Victorian Annual Planning Report*, available at http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Victorian-transmission-network-service-provider-role/Victorian-Annual-Planning-Report .

South Australian Electricity Transformation

ElectraNet continues to progress its South Australia Energy Transformation (SAET) RIT-T to explore interconnector and network support options to facilitate the transition to low emission energy sources, while reducing the cost of providing secure and reliable electricity to South Australia[3].

The recent SAET RIT-T PADR indicated that a new 330 kilovolt (kV) interconnector between mid-north South Australia and Wagga Wagga in New South Wales, via Buronga, would deliver the highest net market benefits. The SAET RIT-T PADR indicates that this option could be delivered between 2022 and 2024.

AEMO is working with ElectraNet to assess the market benefits of strengthening the network between Red Cliffs in Western Victoria and Buronga to link up with the new interconnector.

Staged development

As at March 2018, the following generation projects meet the criteria for committed projects, having advanced to the point where proponents have secured land and planning approvals, entered into contracts for finance, and either started construction or set a firm date:

- Solar – Bannerton Solar Park (88 MW) and Yatpool Solar Farm (81 MW).
- Wind – Crowlands Wind Farm (80 MW), Mt Gellibrand (132 MW), Salt Creek (54 MW), and Yaloak South (28.7 MW).

More information on proposed and committed generation projects for development within the next 10 years can be found on AEMO's generation information page[4].

Committed transmission development projects include the following new terminal stations:

- Crowlands terminal station between Ararat and Horsham Terminal Stations, facilitating the connection of Crowlands Wind Farm (80 MW). This is expected to be completed in late 2018.
- Bulgana terminal station between Ararat and Horsham Terminal Stations, facilitating the connection of Bulgana Wind Farm (204 MW). This is expected to be completed in early 2019.
- Murra Warra Terminal station between Horsham and Redcliff Terminal Stations, facilitating the connection of Murra Warra Wind Farm Stage 1 (226 MW). This is expected to be completed in mid-2019.
- Haunted Gully Terminal station between Moorabool and Tarrone Terminal Stations, facilitating the connection of Stockyard Hill Wind Farm (532 MW). This is expected to be completed in late 2019.

Due to the scale of newly committed generation in the region, and consistent with recommendations in the forthcoming ISP, AEMO has opted to deliver transmission network development in the three key Western Victorian corridors in stages. The stages will be prioritised with a focus on first addressing expected congestion affecting committed generators, as well as network areas where augmentation is most likely to deliver a net market benefit. The three corridors under consideration are:

1. Western Victoria corridor – this corridor considers augmentation from Red Cliffs, Horsham, Ballarat, Moorabool, or Sydenham. The main driver for augmentation in this corridor is high interest in the development of large scale renewable (mainly wind) generation.
2. Moyne corridor – this corridor considers augmentation from Ballarat to Terang and Terang to Moorabool. The main driver for augmentation in this corridor is high interest in the development of large scale renewable (mainly wind) generation.
3. Murray River corridor – this corridor considers augmentation from Buronga to Red Cliffs to Kerang, Bendigo and Sydenham. Driving the need for augmentation in this corridor is high interest in the

[3] ElectraNet, *SA Energy Transformation RIT-T – Project Assessment Draft Report,* Available at https://www.electranet.com.au/projects/south-australian-energy-transformation/

[4] AEMO, *Generation Information*, available at http://www.aemo.com.au/Electricity/Planning/Related-Information/Generation-Information. Definitions for committed projects are under the 'Background information' tab on each regional spreadsheet.

development of large scale renewable (mainly solar) generation, and the possible development of a new South Australian interconnector from Robertstown to Buronga to Wagga Wagga in New South Wales.

To accommodate the committed and advanced projects discussed above, this RIT-T will focus primarily on delivering transmission development options to alleviate constraints in the Western Victoria and Moyne corridors as the first stage of development.

Minor network augmentation options

The PSCR also identified a number of minor network augmentation options to increase transmission capacity in the Western Victorian corridor, including the following in-progress projects which are expected to be completed by July 2019:

- Ballarat to Waubra to Ararat to Horsham – the removal of existing rating limiting station equipment and enabling dynamic wind monitoring on the transmission lines, resulting in an estimated summer rating improvement from 459 megavolt amperes (MVA) to 495 MVA.
- Horsham to Red Cliffs – the removal of existing rating limiting station equipment and enabling dynamic wind monitoring on the transmission lines, resulting in an estimated summer rating improvement from 312 MVA to 495 MVA.

System strength obligations

System strength in Western Victoria is low, due to the electrical distance (that is, network impedance) between local terminal stations in Western Victoria and connected synchronous plant, limiting the amount of non-synchronous generation (such as new wind and solar generation) that may be connected to the existing network.

At the time the PSCR was published, the NER were unclear about the allocation of responsibility for maintaining system strength on the power system. The AEMC has since finalised changes to the NER to, in summary, place obligations on:

- TNSPs to procure system strength services needed to provide required minimum levels determined by AEMO (where a system strength short-fall exists).
- New connecting generators to 'do no harm' to the level of system strength necessary to maintain the security of the power system.

In line with the amended NER, to the extent that new non-synchronous generators connecting to the Western Victoria network may impact system strength, the requirements to address this will not be assessed in this RIT-T.

Next steps

AEMO is continuing to assess the net market benefits of all credible options proposed under this RIT-T and will publish the results in the PADR by 14 December 2018.

AEMO is also progressing key tasks in parallel with the PADR preparation to minimise delays to the overall project timeline. This includes:

- Progressing minor augmentations.
- Further work on refinement of concept designs, cost estimates and practical feasibility considerations.
- Investigation of easement routes and corridors.
- Preparatory work associated with development approvals, procurement and tender processes.
- Ongoing engagement with the Victorian Government, TNSPs, generators and other relevant stakeholders.

AEMO values feedback and advice from the industry and the community, and is committed to ongoing dialogue with stakeholders. We will continue to keep you informed of our progress on this project and advise of any updates to process timelines accordingly.

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