AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

# Western Victorian Renewable Integration

**July 2019**

## Project Update

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

## Project background

The Australian Energy Market Operator (AEMO) is the independent, not-for-profit organisation responsible for operating Australia's electricity and gas markets as well as maintaining power system security for all Australians. In Victoria, AEMO is also responsible for planning and directing augmentations to the shared transmission network.

AEMO has identified that there is insufficient capacity within existing transmission infrastructure in Western Victoria to enable the amount of existing and proposed generation in this region to efficiently dispatch electricity to the power system. Without adequate capacity, generators connecting to this part of the network will become increasingly constrained, limiting the ability for existing and new generators to export power to the network. This would increase both the cost of generation dispatch, and the cost of future investment in generation capacity, impacting electricity prices for consumers over the long term.

## The Regulatory Investment Test for Transmission

As the planner of the shared transmission network for Victoria, AEMO is undertaking a Regulatory Investment Test for Transmission (RIT-T) to assess the technical and economic viability of increasing transmission network capacity in Western Victoria to address these network limitations. The RIT-T is a regulatory process under the National Electricity Rules that requires network planners to apply an economic cost-benefit test on new transmission infrastructure proposed for the National Electricity Market (NEM). It is designed to identify the option that maximises the present value of net market benefit to all those who produce, consume and transport electricity in the National Electricity Market (NEM), i.e. maximises net market benefits. The RIT-T process requires planners to undertake detailed market modelling and key stakeholder consultation as part of this assessment.

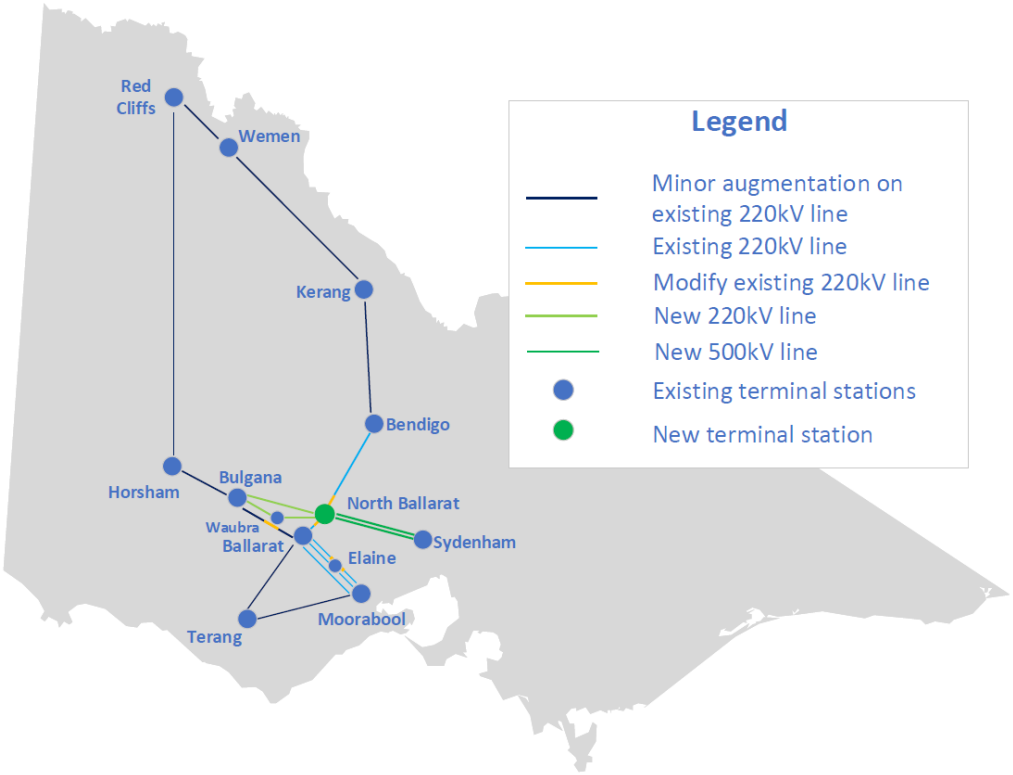
## RIT-T July 2019 Update – the preferred option confirmed

**In July 2019, AEMO published the third and final report in the RIT-T process, the Project Assessment Conclusion Report (PACR). The PACR includes updated information and considers the 27 stakeholder submissions received on AEMO's December 2018 Project Assessment Draft Report (PADR), to recommend a preferred option and next steps[1].**

**In this case, the PACR further confirms the draft preferred option to improve transmission capacity in Western Victoria as presented in the PADR.** The preferred option recommended in the PACR is consistent with the recommendations of the 2018 Integrated System Plan and delivers the highest net market benefits across all scenarios and sensitivities.

As first identified in the PADR, the PACR found the credible option that maximises net market benefits to be a combination of minor upgrades and strategically selected major transmission works (see Figure 1).

**Figure 1 Preferred option**




- **Short term – present to 2021**: Minor upgrades to existing 220 kilovolt (kV) transmission lines:
  - Red Cliffs to Wemen to Kerang to Bendigo, and,
  - Moorabool to Terang to Ballarat.
- **Medium term – 2021 to 2025**: Major transmission works including:
  - By 2024: a new 100+ kilometre (km) 220 kV double circuit transmission line[2] from Ballarat to Bulgana Terminal Station (via Waubra Terminal Station). This will require a new easement corridor, with the exact route of the line and number and size of support structures to be determined at later project stages.
  - By 2025: a new 70+ km 500 kV double circuit transmission line from Ballarat to Sydenham Terminal Station. This will require a new easement corridor and a new terminal station. The exact route of the

[1] For the PACR, PADR, and stakeholder submissions, see http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Victorian-transmission-network-service-provider-role/RITT/Reports-and-project-updates.

[2] Double circuit transmission line refers to two parallel transmission circuits, usually on the same transmission tower. An Alternating Current (AC) electrical circuit normally consists of three separate phases, so a double circuit consists of six separate phases. Both circuits can be operated independently of each other, and together, are referred to as a transmission line.

line, location of the terminal station, and number and size of support structures will be determined at later project stages.

– This investment is estimated to cost $370 million and deliver gross market benefits of $670 million and net market benefits of $300 million (all figures in present value).

Note that the locations of the proposed new terminal station and new transmission lines shown in this figure are illustrative only. Matters such as route selection will be considered after the conclusion of the RIT-T process.

For detailed information, see the full Western Victoria Renewable Integration RIT-T PACR and its predecessors, the PADR and the Project Specification Consultation Report (PSCR)[3].

## Project benefits

This project in Western Victoria is the first step in a much larger, long-term power system development plan underway to strategically coordinate future development in transmission and generation around the NEM. For information on AEMO's plan to unlock cost-efficient solutions and opportunities to strengthen Australia's energy future, see the 2018 Integrated System Plan and subsequent updates[4].

The recommendation to increase transmission capacity in Western Victoria as considered through this RIT-T is expected to reduce network congestion and facilitate more efficient connection and dispatch of generation in the region. This will deliver key market benefits including fuel and capital cost savings and improved capacity of the existing Victoria to New South Wales interconnector. This will help to protect consumers from paying more than necessary for their electricity in the long term..

The project will also facilitate the establishment of major hubs for wind and solar energy in the region, by strengthening transmission corridors to cost-effectively transport large quantities of renewable energy to consumers. This will have spin-off benefits for communities in Western Victoria through employment, economic, training and broader regional development opportunities.

## Changes from the PADR to the PACR

AEMO carried out extensive stakeholder consultation on the PADR, and this feedback has significantly assisted in testing the RIT-T assessment methodology and ensuring the robustness of the findings regarding the preferred option. As a result of stakeholder feedback, several input assumptions to the PACR were adjusted or added and new scenarios and sensitivities were assessed.

The market benefits estimated for the options considered in the PACR have increased since the publication of the PADR, due to an increase in fuel cost savings, because:

- More renewable generation has become committed.
- The options assessed in the PACR improve the Victoria to New South Wales interconnector export capacity, resulting in higher export of new renewable generation.

## Update on consultation activities

AEMO has carried out extensive stakeholder consultation throughout the RIT-T process, with the objectives of:

- Communicating the process and identified need driving the RIT-T, as well as describing the credible options and assessments considered in the PADR.
- Ensuring the robustness of the RIT-T assumptions and findings.
- Advertising the opportunities to make a submission.

[3] For all reports and updates connected with the Western Victoria RIT-T, see http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Victorian-transmission-network-service-provider-role/RITT/Reports-and-project-updates.

[4] At http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Integrated-System-Plan.

AEMO used a variety of methods to consult with stakeholders with differing levels of knowledge and interest in the project. As well as considering submissions on the PSCR and PADR, the AEMO project team conducted forums, roundtables, teleconferences, and online engagement, and received and responded to calls and emails to the dedicated toll-free phone number and email.

The project team would like to thank all those who made submissions or contacted us with queries or to discuss the project. **We encourage anyone with questions or comments to please contact us on 1800 845 044 or email WestVicRITT@aemo.com.au**.

## Next steps

While AEMO is responsible for planning the shared transmission network in Victoria, it does not build, own or operate any transmission infrastructure. Instead, AEMO will procure these services via a competitive tender process to identify a transmission system operator who will be responsible for these activities. The transmission system operator will undertake community engagement, planning, design, construction, ownership, and operation of any new transmission infrastructure.

It is important to note that the location of the new terminal station and the route of new transmission lines will only be determined once the RIT-T process has concluded, a transmission system operator has been appointed, and extensive stakeholder engagement has been undertaken.

## For more information

AEMO values feedback and advice on this opportunity and we are committed to ongoing dialogue with stakeholders. We will continue to provide updates as we move through this process, and we welcome your thoughts via stakeholder engagement activities which will be announced in the coming months. You can also contact us at any time on the contact details below. For more information on the Western Victoria Renewable Integration RIT-T, AEMO's website[5] houses relevant documents, including the April 2017 PSCR, December 2018 PADR, July 2018 PACR, non-confidential stakeholder submissions, and previous project updates.

**Please contact us with your queries and feedback:**

**Phone – Toll Free 1800 845 044** **Email – WestVicRITT@aemo.com.au**

[5] At http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Victorian-transmission-network-service-provider-role/RITT/Reports-and-project-updates.

# Background information

### About transmission lines and towers

The most efficient way to transport electricity over long distances is via high voltage overhead transmission lines. In Victoria, most transmission lines carry voltages of 220 kV or 500 kV and are supported by steel lattice towers.

### About terminal stations

Electricity is delivered to terminal stations to either change the voltage level of the power or to provide a switching point for several transmission lines. Terminal stations act as hubs to allow generators to input electricity into the grid and for the grid to deliver electricity to local distribution networks and eventually customers.

### About easements

Easements allow for the construction, operation, maintenance, modification, and inspection of transmission infrastructure. Where easements are required, landowners will be compensated.

### About AEMO

AEMO is the independent power system and market operator, with primary responsibility for managing energy system security for all Australians.

We are responsible for operating Australia's largest gas and electricity markets and power systems, including the NEM and interconnected power system in Australia's eastern and south-eastern seaboard, and the Wholesale Electricity Market and power system in Western Australia.

We also operate the Victorian Declared Wholesale Gas Market and the Victorian gas transmission system; the wholesale gas Short Term Trading Market hubs in Adelaide, Sydney and Brisbane; the Wallumbilla Gas Supply Hub in Queensland; and the Moomba Gas Supply Hub in South Australia.

AEMO is a not-for-profit entity owned by governments (60%) and industry members (40%). AEMO operates on a cost recovery basis and fully recovers its operating costs through fees paid by participants.

As Australia's independent energy markets and power systems operator, AEMO provides critical planning, forecasting, and power systems security advice and services to deliver energy security for all Australians.

For more information, head to the AEMO corporate website at www.aemo.com.au or our energy news and information hub at www.energylive.aemo.com.au, and follow us at:

@AEMO_Media

Australian Energy Market Operator (AEMO)

@AEMOenergy