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Ms Niluksha Herath  
Manager,  
Western Victorian Renewable Energy Integration Program  
AEMO

Dear Niluksha

## **Re: City of Greater Bendigo Submission to Western Victorian RIT-T**

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### **Introduction:**

The City of Greater Bendigo welcomes the opportunity to provide input to the assessment of the western Victorian transmission network.

This is an important issue for Bendigo and north western Victoria and the ability to support our manufacturing and industry sector through provision of a more reliable and secure energy network.

In April 2017 the Australian Energy Market Operator (AEMO) commenced the Regulatory Investment Test for Transmission (RIT-T) investigation into the transmission network for western Victoria.

As western Victoria is seen as an attractive region for wind generation developments and north west Victoria has optimal solar generation features, the existing transmission network is forecast to have thermal constraints which will limit the capacity of these new generation opportunities in western Victoria.

### **Background:**

In April 2017, AEMO published a Project Specification Consultation Report (PSCR) that described the need for investment in the Western Victorian area, and the potential investment options to address this need.

In July 2018 AEMO released the Victorian Annual Planning Report (VAPR) which assesses the adequacy of the Victorian transmission network to meet its reliability and security requirements.

Also in July 2018 AEMO released its inaugural Integrated System Plan (ISP) providing a forecast of the overall transmission system requirements for the National Electricity Market (NEM) over the next 20 years.

In December 2018 AEMO prepared and released its Project Assessment Draft Report (PADR) for consultation in accordance with the requirements of the RIT-T process set out in the National Electricity Rules (NER).

The PADR assesses and identifies the preferred transmission investment option which delivers the greatest net market benefits, and seeks feedback on its assessment and the preferred infrastructure investment option from any impacted stakeholders.

## Bendigo's Energy Use

Despite the ample sunlight that falls on our municipality, Greater Bendigo is a net importer of electricity with approximately \$150-\$200M leaving our local economy in electricity bills. In recent years, large numbers of solar panels have been installed on homes and businesses across Greater Bendigo, demonstrating the appetite for renewable energy within our community. Over 40 megawatts of solar PV systems have been installed on over 9,700 homes meaning that almost 20% of homes in the municipality of Bendigo have a solar PV system.

Powercor has recently undertaken an investigation of Bendigo's energy consumption for the period from 1<sup>st</sup> September 2016 to 31<sup>st</sup> August 2017. Over 534 GWh of electricity was consumed by Bendigo households and businesses over that 12 month period meaning that over \$150-\$200M in electricity costs leaves our region each year.

The CGB recognises the importance of the transition from fossil fuels to cleaner renewable forms of energy and has established targets under the One Planet framework to achieve zero net carbon and become powered from 100% renewable energy by 2036 across the municipality. These targets have been established following a thorough community consultation process and were driven by voices from our community.

We anticipate that much of this renewable energy generation could be established locally within the distribution grid, but also enabling the import of renewable energy along the transmission network from wind generation (Ballarat) and solar generation (via Kerang and Shepparton).

Allied with a Smarter City focus and incorporation of energy data systems it is expected the transition to a renewable energy grid will stimulate available opportunities within Bendigo providing a secure and reliable supply of electricity to both Bendigo and the region.

## RIT-T Preferred Option

There is currently 940MW new generation committed in the Western Victorian Renewable Energy Zone (REZ) and 650MW committed in the Murray REZ (refer Table 1).

Renewable Energy Zone (REZ)	Existing generation (MW)	Committed generation (MW)*	Estimated additional generation which can be accommodated post augmentation (MW)**
Western Vic	616	939	450
Murray	50	650	300 at Red Cliffs plus 500 elsewhere in the REZ e.g. Bendigo, Glenrowan, Shepparton (with Red cliffs to Buronga upgrade)
Moyne	795	664	2,000 (no major augmentation, both 500 kV and 220 kV networks)

Table 1: Proposed new energy generation projects in western Victoria

*\* at Nov 2018*

*\*\*In addition to generation that is existing and committed.*

However new generation connecting to the 220 kilovolt (kV) transmission system in Western Victoria is expected to be heavily constrained by emerging thermal limitations. These limitations, if not addressed, may result in:

- inefficient development of new generation where:
  - new generation may be developed in areas with lower quality resources but higher transmission network capacity;
  - new generation may all be developed in the same area, leading to low generation diversity;
- inefficient generation dispatch, where:
  - generation in Western Victoria may be constrained due to limited transmission network capacity, requiring more expensive generation to be dispatched at a higher price;
- higher costs passed through to consumers.

The preferred option outlined in the PADR is illustrated in Figure 1 and expects to increase the thermal capacity of the Western Victorian transmission network by 1,200 megavolt amperes (MVA) [1,200,000 kVa] and support additional generation connections in the western Victorian region. The preferred option provides for staged development as follows:

- i. short term (present to 2021) – minor transmission line augmentation involving the installation of wind monitoring schemes (schemes that allow operation of transmission lines at higher ratings) and replacement of existing station rating limiting equipment. These upgrades are intended to improve the ratings of the existing transmission lines via smaller works that can be deployed quickly.
- ii. Medium term (2021 to 2025) providing major transmission augmentation as follows:
  - By 2024 new 220kV double circuit transmission lines from Ballarat to Bulgana
  - By 2025 new 500kV double circuit transmission lines from Sydenham to Ballarat connecting two new 1,000 MVA 500/220kV transformers at Ballarat.
- iii. Longer term (beyond 2025)

in regard to minor upgrades, they are already being undertaken for the following existing 220 kV lines:

- Ballarat to Waubra to Horsham, and
- Horsham to Red Cliffs

Further minor upgrades are proposed in the PADR for the following existing 220 kV transmission lines:

- Red Cliffs to Wemen to Kerang to Bendigo, and
- Moorabool to Terang to Ballarat.

The minor upgrades between Red Cliffs to Wemen to Kerang to Bendigo are expected to provide for the following rating improvements:

- Bendigo to Kerang from 328 MVA to 432 MVA;
- Red Cliffs to Kerang from 285 MVA to 381 MVA.

This will enable some additional generation capacity into the transmission network from Bendigo to Red Cliffs.

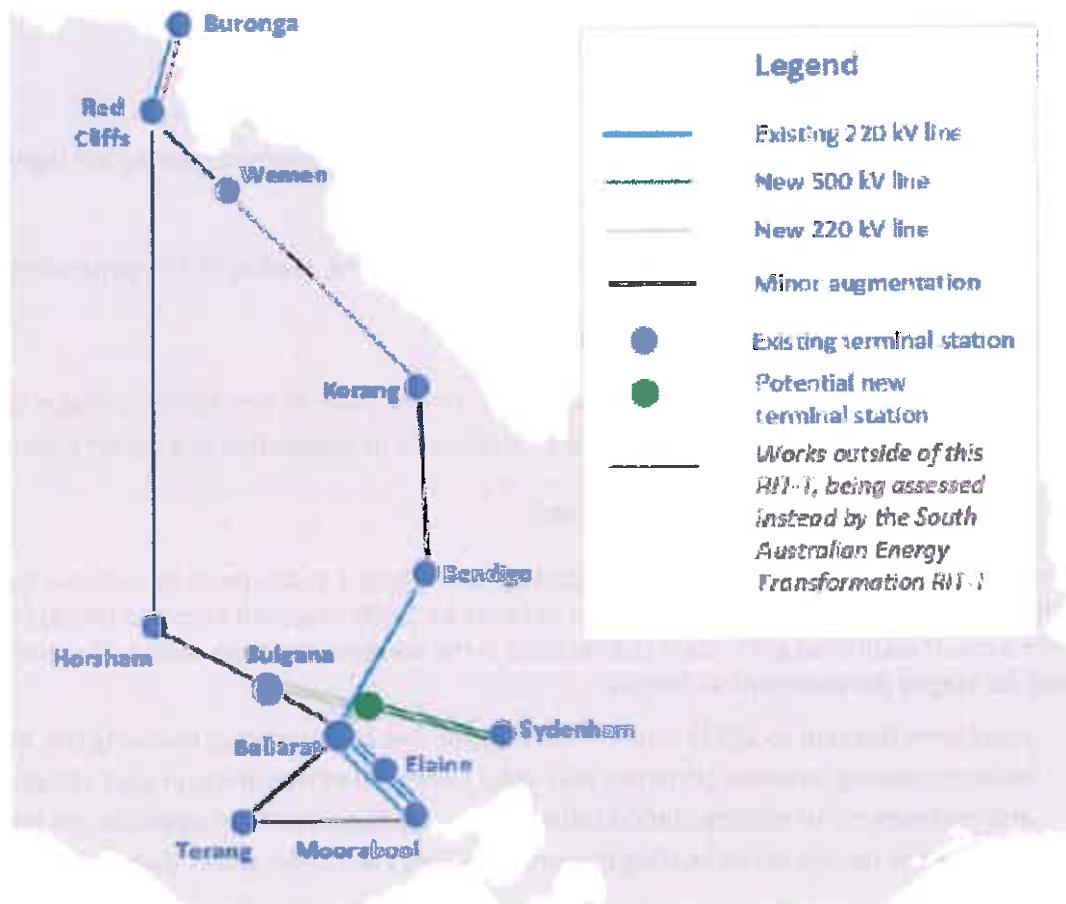


Figure 1: Preferred Option outlined in PADR

Currently, the Ballarat to Bendigo 220 kV transmission line is thermally constrained from Ballarat when there is high demand at Bendigo and Kerang. Increased solar generation development around the Kerang/Red Cliffs/Bendigo area will reduce congestion on the Ballarat to Bendigo 220 kV transmission line by reducing the demand for electricity coming from Ballarat, in the medium term.

In the longer term, beyond 2030, AEMO is exploring the feasibility of building a new Snowylink South interconnector, which will extend the 500 kV transmission lines from Ballarat to Bendigo to Kerang to Darlington Point in New South Wales to further assist in reducing congestion and strengthening the grid. This is an option outlined in the ISP but is contingent upon coal generation retirements in Victoria and other parts of the NEM.

Although this longer term 500kV network outcome offers a far greater level of energy security for Bendigo, in the short and medium term the development of solar farms at varying scales, whether they be

in the Distribution Grid or the Transmission network is the most immediate way to alleviate the thermal constraints between Ballarat and Bendigo.

### Report Submission

Bendigo has a strong interest and focus upon the energy transition to renewable energy opportunities within our region from both an environmental and an economic and job creation perspective. The CGB is also a strong advocate for our business and manufacturing sector who have experienced significant impacts of current electricity pricing structure where small rises in energy pricing has a major impact on their business operations and ongoing viability.

With population increase at 1.5-2.0% and high gas prices leading to conversion to all electric households and business operations, as well as the expected rise of Electric Vehicles, the total electricity consumption for Bendigo is expected to rise significantly and the increased capacity of the transmission network to 500kVA would ensure the greatest level of security into the future.


We are therefore concerned that the major works to upgrade the transmission line from 220kVA to 500kVA from Ballarat to Bendigo to Kerang is unlikely to occur prior to 2030. We are aware that in the broader central Victoria and Murray region, there is 650MW of committed generation, but also another 2-3,000MW prospective generation from developers showing an interest but being stalled by the transmission network limitations.

While we are aware of commercial solar developer interests in this area for establishment of solar parks which will reduce the demand from further afield, the increased capacity of the Ballarat – Bendigo – Kerang transmission line to 500kVA is seen as a priority focus for Bendigo.

We also believe that investment to upgrade the transmission network to support greater renewable energy developments, will expedite the closure of fossil fuel electricity generation. This would help to deliver a whole range of policy outcomes around our national, state and local climate change targets.

Further enquiries regarding this submission can be directed to Keith Reynard, Energy Innovation Officer by email at [k.reynard@bendigo.vic.gov.au](mailto:k.reynard@bendigo.vic.gov.au) or by phoning 03 5434 6393.

Yours sincerely,



Trevor Budge  
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