Moorabool Council Community Session #4: AEMO explains Western Victoria Transmission Network Project RIT-T and findings

February 2021

AEMO and AusNet Services responses to community questions

Important notice

PURPOSE

In December 2020, the Australian Energy Market Operator (AEMO) and AusNet Services participated in an online session hosted by the Moorabool Shire Council to address community questions on the Western Victoria Renewable Integration Regulatory Investment Test for Transmission (Western Victoria RIT-T). The Western Victoria RIT-T was completed in July 2019 and documents the regulatory technical and economic cost-benefit analysis that informed the scope and parameters of the proposed Western Victorian Transmission Network Project (called "WVTNP", or "the project", in this document).

AEMO and AusNet Services appreciate the opportunity to respond to community queries about the Western Victoria RIT-T and the project. Due to time constraints, many community questions could not be answered during the session. AEMO and AusNet Services undertook to answer in writing all outstanding questions and have prepared this document accordingly.

DISCLAIMER

This document or the information in it may be subsequently updated or amended. This document does not constitute legal or business advice, and should not be relied on as a substitute for obtaining detailed advice about the National Electricity Law, the National Electricity Rules, or any other applicable laws, procedures, or policies. AEMO and AusNet Services have made reasonable efforts to ensure the quality of the information in this document but cannot guarantee its accuracy or completeness.

Accordingly, to the maximum extent permitted by law, AEMO and AusNet Services and their officers, employees and consultants involved in the preparation of this document:

- make no representation or warranty, express or implied, as to the currency, accuracy, reliability or completeness of the information in this document; and
- are not liable (whether by reason of negligence or otherwise) for any statements or representations in this document, or any omissions from it, or for any use or reliance on the information in it.

COPYRIGHT

© 2021 Australian Energy Market Operator Limited. The material in this publication may be used in accordance with the copyright permissions on AEMO's website.

Introduction

Western Victoria RIT-T overview

Victoria's power system is changing significantly with the introduction of large-scale renewable energy generators and the retiring of coal generators in the Latrobe Valley. The changing electricity supply mix has led to new generation hubs emerging in remote areas with high quality resources, far away from the ageing coal-fired power plants around which Victoria's transmission system was originally built.

This is the case in western Victoria. It has become an attractive location for new generation projects, due to lots of wind and sun in the region. However, the existing transmission network does not have enough spare capacity to convey all this additional electricity across the state where and when it is needed. Renewable generators are increasingly facing transmission bottlenecks due to the thermal and physical limits of the region's network. These bottlenecks cause network congestion, which in turn hampers generators' ability to supply competitively priced electricity to the market. Instead, more expensive electricity sources must be dispatched to the system to keep the lights on, impacting electricity costs for consumers over the long term.

To identify the most economically efficient way of increasing transmission capacity, relieve network congestion, and unlock renewable energy in western Victoria, AEMO commenced a Regulatory Investment Test for Transmission (RIT-T) in 2017. The RIT-T is a regulatory process under the National Electricity Rules. It requires AEMO, as the transmission network planner for Victoria, to apply an economic and technical cost-benefit test on any significant transmission network investment proposed for the National Electricity Market, to determine the preferred option.

A RIT-T can be likened to a business case for any project or venture. The first stage is to rank credible options according to their technical and economic merits, to determine the preferred option. Credible options are those that:

- Address the identified need,
- Are economically and technically feasible, and
- Can be built in time to meet the need.

From the credible options, the preferred option is the one that best meets the need and delivers the highest net economic benefits to the National Electricity Market. More information on the National Electricity Market is available in this online fact sheet.

AEMO completed the Western Victoria RIT-T assessment in July 2019 and published the findings. In summary, the Western Victoria RIT-T determined that the preferred option was 'Option C2', comprising a new, long-distance high voltage overhead transmission line between Bulgana and Sydenham terminal stations, connected by a new terminal station to be constructed north of Ballarat.

While AEMO is responsible for planning the Victorian transmission network, it does not build or own any transmission infrastructure. Following a multi-stage, competitive tender process, in December 2019, AEMO selected Mondo, the commercial division of the AusNet Services Group (AusNet Services), to plan, design, construct, own, operate and maintain the Western Victoria Transmission Network Project (WVTNP).

As the project's proponent, AusNet Services is responsible for leading stakeholder engagement and securing the necessary planning and environmental approvals. AusNet Services has commenced extensive stakeholder consultations and a project impact assessment process to respond to stakeholder concerns. These will help inform the project's planning and development.

AusNet Services plans to deliver an overhead transmission line that is sensitively designed, located and constructed to minimise environmental and social impacts as far as practicable. Fundamentally, the cost of the project is not to outweigh the economic benefits to Victorian electricity consumers.

Reading this document

For transparency, this document exactly reproduces all the questions that were asked as part of the session held on 9 December 2020, as they were provided to AEMO by the Moorabool Shire Council. We have not corrected, condensed, or modified any of the questions.

Many of these questions were taken on notice, with written answers provided here.

Also, as requested by community members, in many cases we have supplemented verbal remarks at the session with extra written information. As this is supplementary information, the preliminary remarks provided at the session are not included, but we have noted which questions were answered at the session so anyone interested can check the session recording on the Moorabool Council website if they wish. The questions answered at the session are also listed at the end of this document.

Most of the answers in this document are provided by AEMO. Answers provided by AusNet Services are tagged and highlighted in blue.

We have grouped the questions by theme. You can find specific questions using the list at the start of the document, or by searching for terms.

Because no questions have been edited and all questions have been answered, there is some repetition in the document. Some questions we received may be read as comments or statements, rather than questions, and these are included and noted accordingly.

For more information

AEMO and AusNet Services have relied on information, estimates, assumptions, data and schedules that are current at the time of writing (February 2021) but may be subject to change.

For the latest information on the project, including its area of interest, route investigations, fact sheets, planning and environmental approvals processes, and community engagement activities, head to www.westvictnp.com.au. This website also provides:

- All Western Victorian RIT-T reports required under the National Electricity Rules.
- A factsheet titled *The role of the RIT-T process in the development of the WVTNP*.

We appreciate that not all stakeholders will be familiar with the regulatory terminology used in a RIT-T process, and we have sought to provide the context for the Western Victoria RIT-T, as well as definitions or explanations for key terminology used in the RIT-T process, in this introduction.

If you have questions for AEMO, please contact us at WestVicRITT@aemo.com.au.

Contents

1. Identified need for project

Q1. If the need was established in 2017, has there been a more recent review to establish if this need is still required since the growth of solar and wind farm electricity generation over the past three years has been so extensive?

A. The 2016 Victorian Annual Planning Report identified the need for increased transmission capacity in the western Victorian region, with the Project Specification Consultation Report formally commencing the Western Victoria RIT-T in 2017. Analysis over the period 2017 to 2019 confirmed that need and quantified the market benefits of this project. The 2020 ISP continued to highlight the importance of this project in unlocking renewable energy resources, reducing congestion, and improving the productivity of existing assets.

2. How options were assessed

2.1 General

Q2. AEMO's 2020 Integrated Systems Plan Appendix 8 is titled 'Resilience and Climate Change' and confirms the expected increase in extreme climate events and sets out AEMO's two principles of good engineering design for resilience in transmission planning: (1) to do no harm and (2) to be opportunistic with technology. a) How did AEMO apply resilience principles to each credible option in the WestVic-RIT-T process? b) Why is there no mention of climate change in any of WestVic-RIT-T's documentation?[1]

A. Answered in two parts:

a) As summarised in the Western Victoria RIT-T Project Assessment Draft Report, AEMO gave due consideration to a range of potential options but found that some did not address the identified need, while others were not technically or economically feasible under the RIT-T application guidelines. These options therefore could not be pursued as 'credible options'. However, all credible options considered through the Western VIC RIT-T were subject to technical assessment to ensure they did not degrade system resilience (i.e. the 'do no harm' criteria).

The preferred option, identified through the Western Victoria RIT-T Project Assessment Conclusions Report (and being progressed via the WVTNP), increases system resilience through the proposed addition of a geographically distinct 500 kilovolt (kV) backbone to the Victorian transmission system. This bolsters system resilience by providing increased geographic diversity, increased redundancy in transmission systems, increased transmission network flexibility and increased diversity of electricity supply.

For noting, the 2020 Integrated System Plan (ISP) was published in July 2020 after the conclusion of the Western Victoria RIT-T in July 2019.

b) Climate is considered in the Western Victoria RIT-T through developing inputs to planning studies which are used to assess the credible options against scenarios, e.g. temperature changes in developing energy consumption forecasts, wind and solar output forecasts, hydro inflow forecasts, generator failure rate forecasts. The credible options are then assessed against scenarios based on these planning studies.

Climate considerations are also addressed through ensuring the proposed design of the project meets all applicable technical standards across the anticipated asset life of the transmission

[1] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q2/27, #26 in MCHPA list].

network, including those relating to weather and climate, and locational requirements. These standards are frequently reviewed by the relevant authorities, and energy businesses are required to build and maintain their energy infrastructure to meet these standards.

Energy systems are located throughout most populated regions of Australia and are exposed to many varied weather and climate effects. Asset specifications and planning processes used in the sector have extensive consideration for Australia's extreme climate.

Planning and operational solutions for extreme heat events include ensuring temperature assumptions for projecting load and transmission capability, and for determining cyclic ratings for transformers, are up to date, as well as including extreme temperature scenarios in future grid planning. In the case of bushfire events, solutions related to planning and operations include secondary protection systems, increased geographic diversity, increased redundancy in transmission systems, and extending the planning horizon to ensure the change in climate risk over time is being adequately captured.

Q3. AEMO's RIT-T process for West Victoria defaulted to old methods using overhead HVAC systems without much consideration of contemporary technologies and alternatives. How has the AEMO Integrated System planning and RIT-T process allowed for and encouraged innovation and the entry of new technology and ideas to minimise risk to the community, and improve efficiency, resilience, and stability of electrical supply?[2]

A. **The Integrated System Plan**

AEMO's refreshed Integrated System Plan (ISP) was published in July 2020 to identify the optimal development path for the National Electricity Market. AEMO is fuel- and technology-neutral in our approach to planning and managing the power system in a manner that supplies consumers with reliable, secure and cost-effective energy.

The 2020 ISP responds to the latest technology, economic, policy and system developments. It draws on extensive stakeholder engagement as well as industry and power system expertise. AEMO developed the ISP using cost-benefit analysis, least-regret scenario modelling and detailed engineering analysis, covering five scenarios. As a whole-of-system plan, the 2020 ISP considers emerging innovations in consumer-owned distributed energy resources (e.g. rooftop solar panels), virtual power plants, large-scale generation, energy storage, and power-system services. The 2020 ISP also included insights on the role of hydrogen. The scenarios assessed include rapid technology-led transition assisted by advancements in grid-scale technology and targeted policy support.

The Western Victoria RIT-T

AEMO has ensured that the Western Victoria RIT-T assessment complies with the National Electricity Rules and the Australian Energy Regulator's RIT-T application guidelines. As mentioned above, the Western Victoria RIT-T assessment process purpose was to find the most economically efficient way of increasing transmission capacity, relieve network congestion, and unlock renewable energy in western Victoria.

The Western Victoria RIT-T was completed in July 2019 and built on the work undertaken in the 2018 ISP. AEMO carried out market modelling and consultation at each stage of the RIT-T as required under the RIT-T application guidelines.

At the start of the Western Victoria RIT-T, AEMO invited stakeholders to comment on and/or submit possible options for consideration to alleviate network congestion in the western Victoria region. As summarised in the Western Victoria RIT-T Project Assessment Draft Report, AEMO gave due consideration to a range of potential options and found that some did not address the identified need, while others were not technically or economically feasible under the RIT-T application guidelines. These

[2] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q3/27, #15 in MCHPA list]. Preliminary verbal response also available on the session recording.

options therefore could not be considered credible options and were not included in market modelling.

The Western Victoria RIT-T found that of all the credible options assessed, 'Option C2', which informed the scope and parameters of the WVTNP, is expected to meet the identified need while delivering the highest net economic benefits to the National Electricity Market.

Q4. Again old fashioned industry spiel being used rather than looking at what the actual projects using HVDC have achieved and how quickly with little impact.

A. High Voltage Direct Current (HVDC) was considered in the early stages of the Western Victoria RIT-T. It was excluded as a credible option on the basis that it was not considered an economically feasible or technically efficient solution to reduce network congestion and unlock renewable energy resources in western Victoria. This is due to the need for multiple (minimum of four), expensive, large 'converter stations' to be built to integrate a HVDC solution into the existing network, which is High Voltage Alternating Current (HVAC). If HVDC were to be used, all future generators would require an above-ground converter station, too. Additional infrastructure may also be required to maintain adequate system strength.

Given the reduced flexibility for future generation connections, the cost of converter station infrastructure, and the additional system strength requirements, in this instance HVDC could not be considered technically or economically feasible under the RIT-T application guidelines. Accordingly, it was not included in market modelling as a credible option.

Q5. All models have a high sensitivity to poor data and can create unreliable outputs if based on data that has not been rigorously evaluated. This is also known as sensitive dependence on initial conditions. How has AEMO ensured that the data it has used in the modelling is reliable and not missed critical asset values as inputs?[3]

A. AEMO strives to ensure its planning and forecasting publications are of the highest quality, with data that is fit for purpose and industry-reviewed, and processes that are transparent. AEMO extensively consults on its scenarios, inputs, assumptions, and methodologies used in the ISP. The Western Victoria RIT-T built on the work undertaken in the 2018 ISP, using the same input assumptions and modelling approaches. The ISP and Western Victoria RIT-T used scenario modelling to explore a broad range of plausible operating environments for the energy sector, and the potential changes in those environments, in an internally consistent way. In addition to scenarios modelled, the Western Victoria RIT-T undertook sensitivity studies to examine key risks to market benefits by varying modelling input assumptions. The Western Victoria RIT-T and the ISP assumptions and scenarios are available online.

Q6. Does AEMO consider that 92 words in the total of the three RIT-T reports actually meets anyone's definition of "demonstrating" the consideration of other technical options?

A. AEMO has ensured that the Western Victoria RIT-T assessment complies with the National Electricity Rules and the Australian Energy Regulator's (AER's) RIT-T application guidelines.

At the start of the Western Victoria RIT-T, AEMO invited stakeholders to comment on and/or submit possible options to alleviate network congestion in the western Victoria region to be considered through the RIT-T process. These included various design, locations (such as different start and end connection points), voltages and technologies.

As summarised in the Western Victoria RIT-T Project Assessment Draft Report, AEMO gave due consideration to a range of potential options and found that some did not address the identified need, while others were not technically or economically feasible under the RIT-T application guidelines. These options therefore could not be considered credible options and were not included in market modelling.

[3] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q4/27, #10 in MCHPA list].

However, we appreciate that some community members would prefer longer explanations in some sections of the Western Victoria RIT-T reports, and we will consider this in future RIT-T reporting.

All options considered in the RIT-T are listed in the Western Victoria RIT-T Project Assessment Conclusions Report.

Q7. Has the financial evaluation model for the RIT-T been independently reviewed? It would be good industry practice for a decision with this impact/investment but is this a requirement?

A. It is not a requirement of the RIT-T for a financial evaluation model to be independently reviewed. The Western Victoria RIT-T financial evaluation model has not been independently reviewed, however it was published along with the reports for stakeholder review and comment.

For information, the financial evaluation model used is a standard discounted cash flow model used within AEMO for various projects.

Q8. How does AEMO account for different risk scenarios in evaluating options, does this translate into different costs between high risk and low risk options?[4]

A. Relative risks have been accounted for by AEMO in developing cost estimates and delivery schedules for the RIT-T credible options. The option cost estimates were developed with an accuracy of +/-30% (which is common across the industry), and sensitivity testing was undertaken on this basis.

Q9. How does the AEMO expect innovation when the entire evaluation process is a consumer financial benefit test? In effect, this process HAS to choose the cheapest option with no regard to other triple bottom line type analyses (until it's is a fait a complete). Change of technology/invitation needs investment, this process stifles any chance of making better, more rounded, decisions.

A. It is true that the RIT-T framework is designed to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of electricity consumers. In effect, this means selecting the investment option that is both technically feasible and delivers the highest net economic benefits to the National Electricity Market (which includes all those who produce, transport and consume electricity in the market). The matters that can and cannot be considered are set out in RIT-T application guidelines developed by the Australian Energy Regulator (AER). These guidelines reflect the objective of protecting consumers from paying more than necessary for their electricity. Specifically, the RIT-T considers technical, cost, and time parameters.

AEMO appreciates and acknowledges the important social, environmental, amenity, and cultural matters raised by community members in relation to the project. As the project proponent, AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts. AusNet is also responsible for securing the necessary planning and environment approvals. Fundamentally, the cost of the project is not to outweigh the economic benefits to Victorian electricity consumers.

AusNet Services has commenced an extensive stakeholder consultation and project impact assessment process to understand and consider stakeholder concerns in relation to the project and to inform its planning and development.

Q10. How does the RIT-T represent the benefit to customers? All I see is benefit to electricity generators – please describe the end consumer benefit.

A. Western Victoria has become an attractive location for new generation projects, particularly due to lots of wind and sun in the region.

However, the region's existing transmission network does not have enough spare capacity to convey all this additional electricity across the state where and when it is needed. Renewable generators are

[4] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q12/27, #9 in MCHPA list].

increasingly facing transmission bottlenecks due to the thermal and physical limits of the region's network. These bottlenecks cause network congestion, which in turn hampers a generator's ability to supply competitively priced electricity to the market. Instead, a more expensive electricity source is required to be dispatched to the system to keep the lights on, impacting electricity costs for consumers over the long term.

The RIT-T provides a transparent decision-making process under the National Electricity Rules for transmission system planners considering network investment. It requires them to deliver the highest net economic benefits to the National Electricity Market, benefitting all who produce, transport and consume electricity. This is done because electricity consumers ultimately fund such projects.

RIT-Ts promote investment efficiency by reducing the risk that consumers will pay for network investments that don't have or meet an identified need, or provide only limited economic benefits compared to the cost. In short, the objective of a RIT-T is to determine the most economically efficient investment to protect consumers from paying more than necessary for their electricity.

In the case of the Western Victoria RIT-T, following an assessment of credible options, the WVTNP was found to be the preferred option to reduce urgent network congestion on the transmission system and unlock renewable energy resources in the region. The project will reduce costly inefficiencies on the network, improve productivity of existing assets, secure future power system capabilities in the state, and expand the diversity and availability of energy supply. These factors combine to help protect consumers from paying more than necessary for their electricity by maintaining downward pressure on electricity costs for consumers over the long term.

Q11. How must a RIT-T evaluation consider other projects that themselves are not "approved" (less mature in the approval process)? If a preferred option is reliant upon benefits of a project that may not happen, how must AEMO handle that situation. Surely the benefits of a project that may not happen can't be "banked" in the evaluation against other options in the RIT-T.[5]

A. The Western Victoria RIT-T followed the RIT-T application guidelines in considering other projects under the ISP's network development path, that is, to include at least one reasonable scenario where projects under the ISP's network development path become committed, consistent with the ISP's recommended timing, and at least one reasonable scenario where projects under ISP's network development path do not become committed. The Western Victoria RIT-T analysis demonstrates that the preferred option does not rely on other projects to deliver positive net market benefits.

Q12. If a RIT-T is one of the checks and balances, what oversight and governance is there of the RIT-T? Who audits the RIT-T findings to ensure errors have not been made or bias has not been included?[6]

A. The Australian Energy Regulator (AER) is responsible for the economic regulation of electricity transmission and distribution services in the National Electricity Market. It is also responsible for ensuring compliance with and enforcement of the National Electricity Rules. As part of these responsibilities, that AER develops the RIT and has a compliance and monitoring role over the operation and application of the RITs. This includes:

- Developing, publishing and amending the RITs and the RIT application guidelines;
- Determining whether other classes of market benefits or costs proposed by RIT proponents are relevant under the RITs;
- Determining if a person is an interested party for the purposes of following a RIT consultation process;
- Reviewing the cost thresholds for applying the RITs;

[5] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q14/27, #8 in MCHPA list].

[6] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q15/27, #2 in MCHPA list]. Preliminary verbal response also available on the session recording.

- Allowing network businesses extensions for publishing decisions under the RITs, as well as exemptions from reapplying the RITs following material changes in circumstances;
- Making determinations to settle RIT disputes; and
- Monitoring the application of the RITs, during and after different stages of the RIT process. These responsibilities assist in the more transparent and consistent application of the RITs.

(Source: AER Issues Paper – Review of the RIT application guidelines)

Q13. If the AEMO, as demonstrated by your responses to the previous question, have a 'blinkered' view (which is totally inappropriate) how can we get impartiality and proper analysis of options when you have a predetermined outcome as a goal?

A. AEMO has ensured that the final assessment complies with the National Electricity Rules and the Australian Energy Regulator's RIT-T application guidelines.

The RIT-T provides a transparent decision-making process under the National Electricity Rules to identify the preferred option that addresses the network need and delivers the highest net economic benefits to the market. This is done to ensure the proposed investment is in the long-term interests of electricity consumers who ultimately fund the project.

At the start of the Western Victoria RIT-T, AEMO invited stakeholders to comment on and/or submit possible options to alleviate network congestion in the western Victoria region to be considered through the RIT-T process. These included various designs, locations (such as different start and end connection points), voltages and technologies.

As summarised in the Western Victoria RIT-T Project Assessment Draft Report, AEMO gave consideration to a range of potential options and found that some did not address the identified need, while others were not technically or economically feasible under the RIT-T application guidelines. These options therefore could not be considered credible and were not included in market modelling.

All options considered in the Western Victoria RIT-T are listed in the Project Assessment Conclusions Report.

Q14. Putting greenfield overhead lines through a large area of bushfire prone land, through highest value ag land in the state and through western Melbourne's population growth corridor, all in the context of more extreme weather events with climate change. Why is there no assessment of climate change in the RIT-T (which is to support renewables to mitigate climate change)?

A. Climate is considered in the Western Victoria RIT-T through developing inputs to planning studies which are used to assess the credible options against scenarios, e.g. temperature changes in developing energy consumption forecasts, wind and solar output forecasts, hydro inflow forecasts, and generator failure rate forecasts. The credible options are then assessed against scenarios based on these planning studies.

Climate considerations are also addressed through ensuring the proposed design of the project meets all applicable technical standards across the anticipated asset life of the transmission network, including those relating to weather and climate, and locational requirements. These standards are frequently reviewed by the relevant authorities, and energy businesses are required to build and maintain their energy infrastructure to meet these standards.

Energy systems are located throughout most populated regions of Australia and are exposed to many varied weather and climate effects. Asset specifications and planning processes used in the sector have extensive consideration for Australia's extreme climate.

Planning and operational solutions for extreme heat events include ensuring temperature assumptions for projecting load and transmission capability, and for determining cyclic ratings for transformers, are up to date, as well as including extreme temperature scenarios in future grid planning. In the case of bushfire events, solutions related to planning and operations include secondary protection systems,

increased geographic diversity, increased redundancy in transmission systems, and extending the planning horizon to ensure the change in climate risk over time is being adequately captured.

Q15. RIT-T is a model developed in the abstract and used to justify investment assuming that the lowest cost achieves the goal of greater public good. Such abstract models may be manipulated to achieve palatable outcomes and do not often work in the inflexible real world. The public own common property resources such as indigenous species, healthy environment, functioning landscape and other natural assets (e.g. conservation reserves). An incomplete economic evaluation of Natural Assets under the RIT-T provides only partial analysis and an incomplete assessment. Without a full and balanced economic assessment of Natural Assets there is no way of arguing the RIT-T is for the public good. What process was used by AEMO to ensure a rational approach was correctly applied to natural assets and they were not economically devalued in order to achieve lowest costs and help justify proceeding with the Western Transmission Network project?[7]

A. It is true that the RIT-T framework is designed to promote efficient investment, operation and use of electricity services for the long-term interests of electricity consumers. In effect, this means selecting the investment option that is both technically feasible and delivers the highest net economic benefits. The matters that can and cannot be considered are set out in RIT-T application guidelines developed by the Australian Energy Regulator (AER). Specifically, the RIT-T considers technical, cost, and time parameters.

AEMO acknowledges the WVTNP will have impacts on local communities, as well as environmental features within the area including natural assets. Under the RIT-T application guidelines, the value of natural assets, where unable to be economically costed, are not able to be included within the cost estimation process of the RIT-T. The social and environmental impacts will be assessed at subsequent stages of the planning and approvals processes, including as part of the Environment Effects Statement (EES).

AEMO appreciates and acknowledges the important social, environmental, amenity, and cultural matters raised by community members in relation to the project. As the project proponent, AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts, secures the necessary planning and environment approvals, and that the cost of the project does not outweigh the economic benefits to Victorian electricity consumers. AusNet Services has commenced an extensive stakeholder consultation and project impact assessment process to understand and consider stakeholder concerns in relation to the project and to inform its project planning and development.

Q16. Why was in grounding of HVDC not considered as a credible option, as this project is solely about transmission of power from Western Vic to Melbourne?

A. AEMO considered an underground option in the early stages of the Western Victoria RIT-T. Market and industry information indicated that per kilometre, building transmission cables underground would be in the order of up to 10 times more expensive compared to the equivalent overhead option. In comparison, an overhead option would deliver similar network benefits at a significantly lower cost to Victorian electricity consumers, who will ultimately fund this project.

High Voltage Direct Current (HVDC) can be used overhead or underground. It was excluded as a credible option due to the need for multiple (minimum of four), expensive, large 'converter stations' to be built to integrate a HVDC solution into the existing network, which is High Voltage Alternating Current (HVAC). If HVDC were to be used, all future generators would require an above-ground converter station, too. Additional infrastructure may also be required to maintain adequate system strength.

[7] Preliminary verbal response also available on the session recording.

Given the reduced flexibility for future generation connections, the cost of converter station infrastructure, and the additional system strength requirements, in this instance HVDC could not be considered technically or economically feasible under the RIT-T application guidelines. Accordingly, it was not included in market modelling as a credible option.

AEMO is not currently aware of any new information that contradicts the conclusion that an underground installation of the WVTNP would be significantly more costly. However, we acknowledge the public interest in seeing further details comparing underground designs relative to the proposed overhead project. Following the Environment Effects Statement (EES) scoping requirements provided by Victoria's Department of Environment, Land, Water and Planning (DELWP), AusNet Services will consider undergrounding as well as a range of other project alternatives through the EES process.

Q17. With all due respect it seems that the project's outcome will be decided primarily on cost.

A. It is true that the RIT-T framework is designed to promote efficient investment, operation and use of electricity services for the long-term interests of electricity consumers. In effect, this means selecting the investment option that is both technically feasible and delivers the highest net economic benefits to the National Electricity Market. The matters that can and cannot be considered are set out in RIT-T application guidelines developed by the Australian Energy Regulator (AER). These guidelines reflect the objective of protecting consumers from paying more than necessary for their electricity. Specifically, the RIT-T considers technical, cost, and time parameters.

However, a RIT-T can be likened to a business case for any project or venture. It is the first stage of the development and represents an early hurdle before a project can progress to the next stages of investment, planning and approvals.

AEMO appreciates and acknowledges the important social, environmental, amenity, and cultural matters raised by community members in relation to the project.

As the project proponent, AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts, secures the necessary planning and environment approvals, and that the cost of the project does not outweigh the economic benefits to Victorian electricity consumers.

AusNet Services has commenced an extensive stakeholder consultation and project impact assessment process to understand and consider stakeholder concerns in relation to the project and to inform its planning and development.

Q18. You mention that Social License is so important but it doesn't compete against cost, does it?

A. It is true that the RIT-T framework is designed to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of electricity consumers. In effect, this means selecting the investment option that is both technically feasible and delivers the highest net economic benefit.

AEMO appreciates and acknowledges the important social, environmental, amenity, and cultural matters raised by community members in relation to the project. As the project proponent, AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts. AusNet is also responsible for securing the necessary planning and environment approvals.

AusNet Services has commenced an extensive stakeholder consultation and project impact assessment process to understand and consider stakeholder concerns in relation to the project and to inform its planning and development. The social and environmental impacts will be assessed at subsequent stages of the planning and approvals processes including as part of the Environment Effects Statement EES).

2.2 Costings[8]

Q19. Could we please be provided with the costings that AEMO undertook to assess the potential for HVDC undergrounding? There has to be more than the sentence in the PADR that 'Building a new transmission cable entirely underground – this option is expected to cost up to 10 times more per kilometre than overhead lines, and is not expected to deliver net market benefits.' (page 30)[9]

A. AEMO considered an underground option in the early stages of the Western Victoria RIT-T. Market and industry information indicated that per kilometre, building transmission cables underground would be in the order of up to 10 times more expensive when compared to the equivalent overhead option. In comparison, an overhead option would deliver similar network benefits at a significantly lower cost to Victorian electricity consumers who will ultimately fund this project.

High Voltage Direct Current (HVDC) can be used overhead or underground. It was excluded as a credible option due to the need for multiple (minimum of four), expensive, large 'converter stations' to be built to integrate a HVDC solution into the existing network, which is High Voltage Alternating Current (HVAC). If HVDC were to be used, all future generators would require an above-ground converter station, too. Additional infrastructure may also be required to maintain adequate system strength.

Given the reduced flexibility for future generation connections, the cost of converter station infrastructure, and the additional system strength requirements, in this instance, HVDC could not be considered technically or economically feasible under the RIT-T application guidelines. Accordingly, it was not included in market modelling as a credible option.

AEMO is not currently aware of any new information that contradicts the conclusion that an underground installation of the WVTNP would be significantly more costly. However, we acknowledge the public interest in seeing further details comparing underground designs relative to the proposed overhead project. Following the Environment Effects Statement (EES) scoping requirements provided by Victoria's Department of Environment, Land, Water and Planning (DELWP), AusNet Services will consider undergrounding as well as a range of other project alternatives through the EES process.

Q20. Asking again, we would like to see YOUR cost estimates, not your 'estimation' of likely 10 times!!! as stated in the PADR. So you will back cost the underground for the EES, not for the RIT-T!!![10]

A. The purpose of the RIT-T is to determine the most credible option that is both technically and economically feasible and delivers the highest net economic benefits to the National Electricity Market. The RIT-T application guidelines refer to this as the 'preferred option'. The RIT-T seeks to ensure the proposed investment is in the long-term interests of electricity consumers who ultimately fund transmission network projects. This is in contrast to privately-funded electricity network projects which do not require a RIT-T, for example, a developer seeking to build a powerline to connect its wind farm to the transmission network.

AEMO considered an underground option in the early stages of the Western Victoria RIT-T. Market and industry information indicated that per kilometre, building transmission cables underground would be in the order of up to 10 times more expensive when compared to the equivalent overhead option. In comparison, an overhead option would deliver similar network benefits at a significantly lower cost to Victorian electricity consumers who will ultimately fund this project.

While undergrounding the cable is technically possible, given the substantial extra cost and the lack of additional technical benefits it would deliver, this was not considered a credible option on economic grounds. Consequently, no market modelling on a full or partial undergrounding option was done.

---

[8] See also questions and answers related to underground lines in Section 4.2.

[9] Preliminary verbal response also available on the session recording.

[10] Preliminary verbal response also available on the session recording.

AEMO is not currently aware of any new information that contradicts the conclusion that an underground installation of the WVTNP would be significantly more costly. However, we acknowledge the public interest in seeing further details comparing underground designs relative to the proposed overhead project. Following the Environment Effects Statement (EES) scoping requirements provided by Victoria's Department of Environment, Land, Water and Planning (DELWP), AusNet Services will consider undergrounding as well as a range of other project alternatives through the EES process.

Q21. Did AEMO ask the AER for a decision on whether the extra cost for underground HVDC was warranted and acceptable for the WVTNP given the superior risk mitigation potential that underground HVDC offers over overhead HVAC? If not, why not?[11]

A. No. AEMO briefed the Australian Energy Regulator (AER) at each stage of the Western Victoria RIT-T and we are confident that the final assessment complies with the National Electricity Rules and the AER's RIT-T application guidelines.

Q22. How can the alternate options be costed against the originally proposed options when they themselves are questionably inaccurate?

A. AEMO has ensured that the Western Victoria RIT-T assessment complies with the National Electricity Rules and the Australian Energy Regulator's (AER's) RIT-T application guidelines.

Q23. It appears that when comparing costs of different options, only the cost of the build is considered, not ongoing maintenance, efficiencies and mitigation costs associated with land buyouts and environmental impacts

A. Cost estimations completed as part of the RIT-T process considered construction, operation and maintenance costs for the various credible options. As part of the construction costs, reasonable estimates were also included for project management, administration, overheads, the assembly of necessary land and easements, together with costs of obtaining and complying with regulatory approvals.

Q24. Lifecycle costs of the project options were not presented for overall comparison.

A. The Western Victoria RIT-T Project Assessment Draft Report estimates the present value of the total lifecycle costs for all of the credible options – see Table 1, *Weighted net market benefits (NPV terms) and costs (PV terms) for credible options across scenarios*, p 7.

The Western Victoria RIT-T Project Assessment Conclusions Report estimates the present value of the total lifecycle costs of the top two credible options – see Table 1, *Options further assessed in the PACR stage*, p 5.

Q25. Moorabool cost estimates were for HVAC, which is an impractical and unfeasible technology for the 170 km WVTNP requirement. What we want to see is an analysis of HVDC underground – why won't AEMO consider this?

A. AEMO considered an underground option in the early stages of the Western Victoria RIT-T. Market and industry information indicated that per kilometre, building transmission cables underground would be in the order of up to 10 times more expensive than the equivalent overhead option. In comparison, an overhead option would deliver similar network benefits at a significantly lower cost to Victorian electricity consumers who will ultimately fund this project.

While undergrounding the WVTNP is technically possible, given the substantial cost differential and the lack of additional technical benefits underground cables would provide, it was not considered a credible option on the basis of commercial feasibility and no market modelling on a full or partial undergrounding option was done.

[11] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q5/27, #21 in MCHPA list]. Preliminary verbal response also available on the session recording.

AEMO is not currently aware of any new information that contradicts the conclusion that an underground installation of the WVTNP would be significantly more costly. However, we acknowledge the public interest in seeing further details comparing underground designs relative to the proposed overhead project. Following the Environment Effects Statement (EES) scoping requirements provided by Victoria's Department of Environment, Land, Water and Planning (DELWP), AusNet Services will consider undergrounding as well as a range of other project alternatives through the EES process.

High Voltage Direct Current (HVDC) – which can be used overhead or underground – was also considered in the early stages of the Western Victoria RIT-T. It was excluded as a credible option on the basis that it was not considered an economically feasible or technically efficient solution to reduce network congestion and unlock renewable energy resources in western Victoria. This is due to the need for associated infrastructure to integrate a HVDC solution into the existing network which is High Voltage Alternating Current (HVAC).

Q26. No cost comparisons were given in the RIT-T process. HVDC appears to have been discarded off-hand as way too expensive. Current other projects (e.g. Marinus Link and Murry Link show this is not the case.

A. There has been a lot of interest in drawing comparisons with Marinus Link and Murraylink, which have incorporated, or are proposing to incorporate, underground cables or High Voltage Direct Current (HVDC) technology. It is important to note that there are key differences between these projects and the WVTNP that impact the viability of HVDC and undergrounding. For example, both Murraylink and the Victoria/Bass Strait section of the proposed Marinus Link seek to transfer electricity from one location to another. HVDC is often used in such cases as it is the most cost efficient way to transport electricity long distance. In contrast, WVTNP seeks to integrate multiple points of the network, and to provide for future additional generation to connect into the grid. The additional costs of the convertor stations required at each connection point make HVDC infeasible. Indeed, TasNetworks proposes High Voltage Alternating Current (HVAC) technology for the Tasmanian mainland component of Marinus Link, as it aims to facilitate multiple connections. In addition, unlike the WVTNP which will be funded by electricity consumers (i.e. not government or privately funded), Murraylink was a privately proposed and funded transmission line interconnector project and therefore not subject to a RIT-T.

The purpose of the RIT-T is to determine the credible option is both technically and economically feasible and delivers the highest net economic benefits to the National Electricity Market – the RIT-T application guidelines refer to this as the 'preferred option'.

In case of Marinus Link, it may be that HVDC is the most cost-effective solution to meet this network need given the fact there are likely only two connection points that require above ground HVAC converter stations – one in Victoria and one in Tasmania.

HVDC – which can be used overhead or underground – was considered in the early stages of the Western Victoria RIT-T. It was excluded as a credible option due, in part, to the need for associated infrastructure to integrate a HVDC solution into the existing HVAC network.

The purpose of the WVTNP is to increase capacity in western Victoria by connecting multiple points (i.e. four terminal stations) of the existing HVAC network, and to improve the efficiency of generators connecting into the line. If HVDC were to be used for the WVTNP, each of the four terminal stations, and all future generators, would require an aboveground converter station. Additional infrastructure may also be required to maintain adequate system strength. Given the reduced flexibility for future generation connections, the cost of converter station infrastructure, and the additional system strength requirements, in this instance, HVDC could not be considered technically or economically feasible under the RIT-T application guidelines, and was not included in market modelling as a credible option.

On the matter of cost comparisons, the Western Victoria RIT-T Project Assessment Draft Report estimates the present value of the total lifecycle costs for all of the credible options – see Table 1, *Weighted net market benefits (NPV terms) and costs (PV terms) for credible options across scenarios,* p 7.

The Western Victoria RIT-T Project Assessment Conclusions Report estimates the present value of the total lifecycle costs of the top two credible options – see Table 1, *Options further assessed in the PACR stage*, p 5.

Q27. On what basis was the costing of HVDC deemed to be too costly?

A. High Voltage Direct Current (HVDC) – which can be used overhead or underground – was considered in the early stages of the Western Victoria RIT-T. It was excluded as a credible option on the basis that it was not considered an economically feasible or technically efficient solution to reduce network congestion and unlock renewable energy resources in western Victoria. This is due, in part, to the need for associated infrastructure to integrate a HVDC solution into the existing network which is High Voltage Alternating Current (HVAC).

The purpose of the WVTNP is to reduce network congestion in western Victoria by connecting multiple points (i.e. four terminal stations) of the existing HVAC network, and to improve the efficiency of generators connecting into the network. If HVDC were to be used for the WVTNP, each of the four terminal stations, and all future generators, would require an above-ground converter station. Additional infrastructure may also be required to maintain adequate system strength. Given the reduced flexibility for future generation connections, the cost of converter station infrastructure, and the additional system strength requirements, in this instance, HVDC could not be considered technically or economically feasible under the RIT-T application guidelines, and was not included in market modelling as a credible option.

Q28. Since there are many overseas examples of overhead transmission lines causing major fires (such as the US 2018 PG&E Camp fire) where the impact is catastrophic, and as transmission networks in Australia are uninsurable, why didn't the WestVic-RIT-T overhead transmission line cost assessments include the amortised potential cost of damages and potential lawsuits to the capital cost of the project as part of the analysis?[12]

A. The Western Victoria RIT-T costed reasonable construction, operation and maintenance matters as set out in the RIT-T application guidelines. Costs incurred in complying with laws, regulations and applicable administrative requirements in relation to the construction and operation of the credible options are included in a RIT-T assessment.

Relative risks have been accounted for by AEMO in developing cost estimates and delivery schedules for the RIT-T credible options. The option cost estimates were developed with an accuracy of +/-30% (which is common across the industry), and sensitivity testing was undertaken on this basis. A general factor was added to account for the above components.

As the project proponent, AusNet Services is undertaking a rigorous and transparent assessment of bushfire risk and ensuring that any risk is minimised and managed is a key priority for the project.

Further, as the owner and operator of the majority of the Victorian transmission network, AusNet Services is responsible for ensuring that the network is designed, constructed, maintained to applicable technical and safety standards as set by Energy Safe Victoria. AusNet Services will ensure the project complies with these regulations.

The WVTNP is also subject to an Environment Effects Statement (EES) process which will provide for a transparent, integrated assessment of potential environmental impacts, including fire risk. This independent process which is managed by Victoria's Department of Environment, Land, Water and Planning (DELWP).

Q29. The Moorabool Costing for in-grounding included only HVAC lines, not HVDC.

A. AEMO has understood that this question relates to the *Comparison of 500 kv Overhead Lines with 500kv Underground Cables* study commissioned by the Moorabool Shire Council. AEMO was not

[12] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q18/27, #18 in MCHPA list].

directly involved in this study and suggests this question is re-directed to Moorabool Shire Council for consideration and/or clarification.

Q30. The Myrniong Biolink is a natural asset that should be valued in the process that AEMO use such as RIT-T and not just by EES. If this were to be assessed maybe the process would not have got to this stage. See https://www.youtube.com/watch?v=-DRZkY1j7wU

A. AEMO acknowledges the WVTNP will have impacts on local communities, as well as environmental features within the area including natural assets. Under the RIT-T application guidelines, the value of natural assets, where unable to be economically costed, are not able to be included within the cost estimation process of the RIT-T. However, it is important to note that the RIT-T can be likened to a business case for any project or venture. It is the first stage of the development and represents an early hurdle before a project can move on to the next stages of investment, planning and approvals. The social and environmental impacts will be assessed at subsequent stages of the planning and approvals processes including as part of the Environment Effects Statement (EES).

As the project proponent, AusNet Services will engage with stakeholders including the Pentland Hills Landcare Group to better understand the biodiversity values of the biolink. AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts, secures the necessary planning and environment approvals, and that the cost of the project does not outweigh the economic benefits to Victorian electricity consumers. AusNet Services has commenced an extensive stakeholder consultation and project impact assessment process to understand and consider stakeholder concerns in relation to the project and to inform its planning and development.

Q31. What about adding up how much everyone's property is going to be depreciated due to this project going above ground, shouldn't this be part of the cost analysis?

A. As part of the cost estimation undertaken for the Western Victoria RIT-T credible options assessment, AEMO included a reasonable cost estimate for the assembly of land and easements that these options would likely require.

AEMO appreciates and acknowledges the important social, environmental, amenity, and cultural matters raised by community members in relation to the project.

As the project proponent, AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts.

3. Contracts/tenders

Q32. Can I have a list of the tenderers for the WVTNP?

A. In keeping with the terms and conditions of the project's *Invitation to Tender*, and to maintain the integrity of this and future competitive tender processes, specific information about tender participants and their submissions is confidential.

Q33. Why is the AEMO refusing to release the WVTNP Tender documents for public examination, citing 'Commercial-In-Confidence', when the AEMO has the option of redacting any sensitive technical detail, if required? What is the logic behind the refusal?

A. AEMO conducted a robust, competitive tender process to achieve the best outcome possible to deliver the project in accordance with the technical and economic scope set out in the Western Victoria RIT-T. In keeping with the terms and conditions of the *Invitation to Tender*, and to maintain the integrity of this and future competitive tender processes, specific information about tender participants and their

submissions, and the contract details and arrangements between AEMO and AusNet Services, are confidential.

Q34. Groundline Engineering staff are very experienced to be able to ask these questions. Groundline Engineering have a global staff of nearly 50 and work on overhead line designs for many utilities (ElectraNet, TransGrid, TransPower), design and construct companies (Quanta Lines, Downer, UGL/ CIMIC, SMEC) as well as Mining Houses (Rio Tinto, BHP, Fortescue). In addition, we have many representatives on international technical committees and standards development bodies. Groundline Engineering are proudly global in our outlook but also very attached to our home offices in Adelaide, Bendigo, Christchurch and Nottingham - the Bendigo staff are particularly keen to contribute to the development of the network in Victoria. Groundline Engineering work with AusNet, Powercor, United Energy, Zinfra and Downer in Victoria. Groundline Engineering have regular discussions with policy makers across Wind Farm activities, Energy Safe Victoria, DELWP, citizen groups and occasionally AER, AEMO and federal politicians. I am happy to discuss with you further broader topics to question AEMO however, questions posed by Groundline in a public forum I do not want to be taken out of context or interpreted incorrectly - examples would be...I have had dealings with Nino Ficca and think highly of him; however, how does AEMO demonstrate independence with Nino as acting CEO of AEMO? Groundline are not in a position to ask about the competitive nature of the awarding of design contracts such as AusNet: Mondo - neither are Becca, Jacobs, APD and others who we compete with in a position to ask commercially sensitive questions in an open forum.

A. To achieve the best outcome possible to deliver the contestable components of the WVTNP, AEMO worked with an external probity advisor and other relevant specialists to ensure a lawful, robust and competitive tender process. As is common practice in these processes, individuals or organisations with a perceived or potential conflict of interest are not permitted to participate in any part of the procurement process. This was the case with Mr Ficca who was Managing Director at AusNet Services for 18 years before joining the AEMO Board in 2019 and was announced as interim CEO in December 2020. Mr Ficca had no involvement in the Western Victoria RIT-T or subsequent tender.

Q35. The WestVic RIT-T's PACR has a nominal cost for WVTNP of $473m. Is this the cost AEMO signed into contracts with AusNet in Dec 2019? If not, what cost does the contract say? What is the latest expected nominal cost of WVTNP, given the public (who pays for this augmentation) has a right to know?[13]

A. The Western Victoria RIT-T provides the business case for the project in accordance with the National Electricity Rules to ensure that Victorian electricity consumers (who are funding the project) will also receive the highest net economic benefits possible from the investment.

AEMO conducted a robust competitive tender process to achieve the best outcome possible to deliver the project in accordance with the technical and economic scope set out in the Western Victoria RIT-T. In keeping with the terms and conditions of the *Invitation to Tender* and to maintain the integrity of this and future competitive tender processes, the contract details and arrangements between AEMO and AusNet Services are confidential.

Further, as the project is in the early planning phases, the total investment value is still to be finalised. The final value is dependent on initial stage activities and approvals. Ensuring the project meets the technical and economic scope is a priority for AEMO and we continue to assess its progress in accordance with the National Electricity Rules.

Q36. The WVTNP is Victoria's first major transmission network augmentation in over 30 years. AEMO in its role as Victoria's transmission network planner undertook a tender for the project and awarded the tender and signed contracts with AusNet in Dec 2019. As a matter of public

[13] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q20/27, #7 in MCHPA list].

interest, would AEMO please make public the tender documents for the project issued in July 2019 (redacted as necessary)? If not, why not?[14]

A. AEMO conducted a robust competitive tender process to achieve the best outcome possible to deliver the project in accordance with the technical and economic scope set out in the Western Victoria RIT-T. In keeping with the terms and conditions of the *Invitation to Tender*, and to maintain the integrity of this and future competitive tender processes, specific information about tender participants and their submissions is confidential, as are the contract details and arrangements between AEMO and AusNet Services.

As the project proponent, AusNet Services is focused on delivering the new infrastructure within the technical and economic scope outlined in the Western Victoria RIT-T assessment, and with due consideration to planning and approvals, so that the cost of delivering the WVTNP does not outweigh the economic benefits it will bring to energy consumers.

Q37. Under what circumstances would AEMO suspend, or modify the current contract with AusNet to investigate the feasibility and costs of credible alternatives, including undergrounding a HVDC solution for the WVTNP? Is it a question of government direction, and/or government investment?[15]

A. Ensuring the project meets the technical and economic scope set out in the Western Victoria RIT-T is a priority for AEMO. We continue to assess its progress. This includes monitoring project costs, changes in assumptions, and implications of government direction and/or investment, to assess what modifications or actions, if any, are required. AEMO retains the right not to proceed with the project.

AusNet Services is now focused on delivering the new infrastructure within the technical and economic envelope outlined in the Western Victoria RIT-T assessment, with due consideration to planning and approvals, so the cost of delivering the WVTNP does not outweigh the economic benefits it will bring to energy consumers.

Q38. Why wasn't industry given the option to make unconstrained submissions to the WVNTP tender to meet the functional requirements, given that undergrounding and use of HVDC has been successfully implemented elsewhere in Australia, and has also been deemed to be the best solution for the Marinus Link Project?

A. While the tender process did allow for submissions that included a range of technologies, tenderers also needed to satisfy the cost, time and technical specifications outlined in the Project Assessment Conclusion Report for the Western Victoria RIT-T. As discussed below, there are very high costs associated with using High Voltage Direct Current (HVDC) for this type of project.

The Marinus Link proposal is currently the subject of a RIT-T being progressed by TasNetworks. The proposal is to build approximately 250 kilometres (km) of undersea HVDC cable and approximately 100 kilometres of underground HVDC cable to connect generators in Tasmania to the national grid via a link into the Victorian transmission system. This would include new converter stations in Tasmania and Victoria, and approximately 220 km of supporting High Voltage Alternating Current (HVAC) transmission network developments in North West Tasmania.

The purpose of a RIT-T is to identify the most economically efficient solution to a network need to protect consumers from paying more than necessary for their electricity. In case of Marinus Link, it may be that HVDC is the most cost-effective solution to meet this network need given the fact there are likely only two connection points that require above ground HVAC converter stations – one in Victoria and one in Tasmania – as well as the length of cable required and undersea application. This is for

[14] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q21/27, #5 in MCHPA list]. Preliminary verbal response also available on the session recording.

[15] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q22/27, #12 in MCHPA list]. Preliminary verbal response also available on the session recording.

TasNetworks to determine through its RIT-T options assessment as required under the National Electricity Rules.

By comparison, the purpose of the WVTNP is to increase capacity in western Victoria by connecting multiple points (i.e. four terminal stations) of the existing HVAC network, and to improve the efficiency of generators connecting into the line. If HVDC were to be used for the WVTNP, each of the four terminal stations, and all future generators, would require an above-ground converter station. Additional infrastructure may also be required to maintain adequate system strength. Given the reduced flexibility for facilitating future generation connections, the cost of converter station infrastructure, and the additional system strength requirements, in this instance, HVDC could not be considered technically or economically feasible under the RIT-T application guidelines, and was not included in market modelling as a credible option.

4. Project design

4.1 General

Q39. Have high strength or high temperature conductors been considered? In Europe, China, SE Asia and the USA high temperature conductors are not uncommon. The high temperature capability offers network security for congested/ highly connected networks. High strength conductors (carbon core reinforced or metal matrix reinforced) offer designers the ability to have longer spans between towers.

A. AusNet Services: Ausnet Services are considering a broad range of design options to meet the requirements of the Project and comply with relevant standards. The design of the transmission line has not been finalised and will be confirmed when a final alignment is identified though the Environment Effects Statement (EES) process.

Q40. Have smooth bodied conductors been considered? Modern conductor constructions have smoother surfaces compared to round wire conductors. The two benefits are a greater current carrying capacity for the same diameter (or a smaller diameter conductor for the same current carrying capacity), and a lower wind load effect. The wind load effect describes the force applied to the conductor and then transferred to the towers by the wind. A smooth conductor simply has a lower loading effect at high wind speeds and hence the supporting towers can be designed with less strength/ steel with dramatic reduction in tower construction. This cost saving is amplified on long transmission lines. Smooth bodied conductors are not uncommon overseas.

A. AusNet Services: Ausnet Services are considering a broad range of design options to meet the requirements of the Project and comply with relevant standards. The design of the transmission line has not been finalised and will be confirmed when a final alignment is identified though the Environment Effects Statement (EES) process.

Q41. I am concerned that the whole emphasis seems to be about mitigating impacts rather than designing these risks out all together. This means that any visual environmental impacts can NOT be satisfactorily mitigated unless the towers are not there.

A. AusNet Services: Throughout the Environment Effects Statement (EES) process the design will be revised to respond to environmental assessments and feedback from the community and other stakeholders. The avoid, minimise and mitigate hierarchy will be followed, however it should be noted that major projects, particularly a major project of the scale of the Western Victoria Transmission Network Project, cannot entirely avoid adverse impacts. At the conclusion of the EES process the Minister for Planning will consider the overall significance of potential effects relative to the likely benefits of the project.

A. AEMO: We understand the community is concerned about the visual impacts of the project. As the project proponent, AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts. AusNet Services is also responsible for securing the necessary planning and environment approvals. Fundamentally, the cost of the project is not to outweigh the economic benefits to Victorian electricity consumers.

AusNet Services has commenced an extensive stakeholder consultation and project impact assessment process to understand and consider stakeholder concerns in relation to the WVTNP and to inform the project planning and development.

Q42. The route has to suit the technology – what suits overhead may not suit underground and vice versa – have you considered that?

A. This is correct. As the project proponent, AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts, secures the necessary planning and environment approvals, and that the cost of the project does not outweigh the economic benefits to Victorian electricity consumers.

AusNet Services has commenced an extensive stakeholder consultation and project impact assessment process to understand and consider stakeholder concerns in relation to the WVTNP and to inform the project planning and development.

Q43. This project is only transmission from Ballarat to Melbourne.

A. Western Victoria has become an attractive location for new generation projects due to lots of wind and sun in the region.

However, the region's existing transmission network does not have enough spare capacity to convey all this additional electricity across the state where and when it is needed. Renewable generators are increasingly facing transmission bottlenecks due to the thermal and physical limits of the region's network. These bottlenecks cause network congestion, which in turn hampers a generator's ability to supply competitively priced electricity to the market. Instead, a more expensive electricity source is required to be dispatched to the system to keep the lights on, impacting electricity costs for consumers over the long term.

AEMO completed the Western Victoria RIT-T assessment in July 2019 and published the findings here. In summary, the Western Victoria RIT-T determined 'Option C2' was the preferred option. This comprises a new, long-distance high voltage overhead transmission line between Bulgana and Sydenham terminal stations, connected by a new terminal station to be constructed north of Ballarat.

The project will deliver critical market benefits by reducing costly inefficiencies on the network, improving productivity of existing assets, securing future power system capabilities in the state, and expanding the diversity and availability of energy supply. These factors combine to help protect consumers from paying more than necessary for their electricity by maintaining downward pressure on electricity costs over the long term.

Q44. When will the preferred routes within the Area of Interest be defined?

A. AusNet Services: The route has not been decided as the project is in the planning and approvals phase. The design, route and location of this new infrastructure, including transmission line towers and a terminal station will be determined through technical and environmental investigations over the next 18 months. AusNet Services has recently released the Corridors for further Study and information on the next steps for the project. For more information, visit the project website.

Q45. Why has an ACSR (Aluminium Conductor Steel Reinforced) conductor been chosen over the lower line loss All Aluminium Alloy (AAAC: 1120) conductor? AAAC 1120 alloy has been deployed widely in Australia since the early 1980's. The conductor has a lower resistance than similar diameter steel reinforced conductors and is ideally suited to long transmission lines

particularly when there is no heavy snow loading to consider - such as in Brazil and Africa (notably where the World Bank is considering/ recommending AAAC 1120 for a number of long line transmission projects). There are also nuanced cost benefits in the construction of the towers with reduced per tower costs associated with the use of AAAC1120

A. AusNet Services: As the project proponent, AusNet Services has responsibility to determine the type of conductors used for the project. Ausnet Services are considering a broad range of design options to meet the requirements of the Project and will comply with relevant standards. The design of the transmission line has not been finalised and will be confirmed when a final alignment is identified though the Environment Effects Statement (EES) process.

Q46. Why has the use of guyed towers been dismissed? During an early information session AusNet stated that guyed towers are not being used - that traditional steel lattice tower designs are envisaged. Guyed towers offer large (40 to 50%) cost savings as documented in South Africa and Brazil. These large cost savings would be difficult to achieve in Australia as the towers will most probably be imported from India/ China/ Turkey and much of the cost saving is related to quicker installation, however savings of 20% compared to steel lattice would be achievable.

A. AusNet Services: As the project proponent, AusNet Services has responsibility to determine the design of transmission towers used for the project. Ausnet Services are considering a broad range of design options to meet the requirements of the Project and will comply with relevant standards. The design of the transmission line has not been finalised and will be confirmed when a final alignment is identified though the Environment Effects Statement (EES) process.

4.2 Undergrounding lines[16]

Q47. Can the EES process result in a review of the overall project and redesign using in-ground HVDC... for example?

A. AusNet Services: The Environment Effects Statement (EES) process must assess feasible alternatives. Alternatives must meet the project objectives; that is satisfy the need for the project; and ultimately to be constructed the alternatives must be economically viable. The RIT-T did assess undergrounding and High Voltage Direct Current (HVDC) and found that both would be considerably more expensive design solutions compared to an overhead High Voltage Alternating Current (HVAC) solution. Further work is required to understand the project-specific economic costs of alternatives including undergrounding. The EES will consider the environmental impacts and benefits of alternative solutions. This assessment will inform the Minister of the level of impact and advantages and disadvantages of alternative designs.

Q48. Does the Murraylink underground HVDC example which used existing rights of way to achieve record construction times, suggest that undergrounding a HVDC cable could actually accelerate the WVTNP delivery by avoiding lengthy environmental studies and community concerns, by using existing public rights of way (e.g. along the Western Highway), and thus bring the community on side and deliver the new connections sooner?[17]

A. There has been a lot of interest in drawing comparisons to WVTNP with other projects that have incorporated underground cables or used High Voltage Direct Current (HVDC). it is important to note that the function and purpose of Murraylink is distinct to the need identified in the Western Victoria RIT-T. Murraylink is a bi-directional point-to-point transmission link connecting Victoria and South Australia. The WVTNP also has a far greater capacity than Murraylink, and multiple points of connection. In addition, unlike the WVTNP, Murraylink was a privately proposed and funded transmission project. The WVTNP is funded by Victorian electricity consumers (i.e. not government or

[16] See also questions and answers related to costings of underground lines in Section 2.2.

[17] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q8/27, #22 in MCHPA list].

privately funded) and is therefore subject to the RIT-T process: determining credible options and then choosing a preferred option, within the rules governing the process.

Q49. Early in the RIT-T process AEMO discounted the option of an underground solution for the WVTNP on a narrow assumption of construction cost. In total, the three AEMO RIT-T reports devote only 92 words to HVDC options and dismisses HVDC with no consideration of the difference in risk mitigation and network resilience that undergrounding HVDC offers. Apart from those 92 words, what other analysis of HVDC and undergrounding was undertaken by the AEMO for the WestVic-RIT-T, and where can the community access this?[18]

A. High Voltage Direct Current (HVDC) was considered in the early stages of the Western Victoria RIT-T. It was excluded as a credible option on the basis that it was not considered an economically feasible or technically efficient solution to reduce network congestion and unlock renewable energy resources in western Victoria. This is due to the need for multiple (minimum of four), expensive, large 'converter stations' to be built to integrate a HVDC solution into the existing network, which is High Voltage Alternating Current (HVAC). If HVDC were to be used, all future generators would require an above ground converter station, too. Additional infrastructure may also be required to maintain adequate system strength.

Given the reduced flexibility for future generation connections, the cost of converter station infrastructure, and the additional system strength requirements, in this instance, HVDC could not be considered technically or economically feasible under the RIT-T application guidelines. Accordingly, it was not included in market modelling as a credible option.

However, we appreciate that some community members would prefer longer explanations in some sections of the Western Victoria RIT-T reports, and we will consider this in future RIT-T reporting.

Q50. Given the intense and organised community backlash that has arisen to the WVTNP since the announcement of the RIT-T outcomes, does AEMO consider that ongoing, persistent and sustained community opposition to the overhead HVAC option is a risk to the project?[19]

A. AEMO appreciates and acknowledges the important social, environmental, amenity, and cultural matters raised by community members in relation to the project. As the project proponent, AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts.

AusNet Services is responsible for securing the necessary planning and environment approvals. Fundamentally, the cost of the project is not to outweigh the economic benefits to Victorian electricity consumers. AusNet Services has commenced an extensive stakeholder consultation and project impact assessment process to understand and consider stakeholder concerns in relation to the project and to inform its planning and development.

Q51. How can ingrounding be considered even after the EES if the RIT-T has excluded this technology from the Rules?

A. AusNet Services: The RIT-T is a strategic planning tool that energy network planners are required to use to evaluate options based on technical and economic factors to identify the option that meets the highest net economic benefit to customers. The preferred option identified through the RIT-T process will be evaluated through the Environment Effects Statement (EES) process together with an assessment of feasible alternatives. The EES process considers environmental, social and economic factors. The magnitude of cost differential between an overhead solution and underground solution has previously been estimated. Through the EES process the project-specific costs for an underground solution will be calculated and environmental impacts assessed.

[18] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q9/27, #16 in MCHPA list].

[19] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q11/27, #11 in MCHPA list]. Preliminary verbal response also available on the session recording.

Q52. How can you say that the benefits of underground and overhead are similar, Alex[20]? You can't be serious? THIS CLEARLY SHOWS that you have not considered all of the risks and benefits properly.

A. Under the National Electricity Rules, a RIT-T can only consider the technical and economic benefits of a design or technology as they relate to the National Electricity Market. In the case of the WVTNP, underground cables would deliver similar technical benefits to the network compared to an overhead solution with reference to the identified need in the RIT-T, but would cost Victorian electricity consumers significantly more to build.

All credible options considered through the Western Victoria RIT-T were subject to technical assessment to ensure they did not degrade system resilience (i.e. the 'do no harm' criteria). The preferred option increases system resilience through the proposed addition of a geographically distinct 500 kV backbone to the Victorian transmission system. This bolsters system resilience by providing increased geographic diversity, increased redundancy in transmission systems, increased transmission network flexibility and increased diversity of electricity supply.

Q53. How does AEMO rationalise the decision to go with underground HVDC in Victoria for 90 km for the Marinus Link Project, but have summarily dismissed this for the WVTNP?[21]

A. The Marinus Link proposal is currently the subject of a RIT-T being progressed by TasNetworks. The proposal is to build approximately 250 kilometres (km) of undersea High Voltage Direct Current (HVDC) cable and approximately 100 km of underground HVDC cable to connect generators in Tasmania to the national grid via a link into the Victorian transmission system. This would include new converter stations in Tasmania and Victoria, and approximately 220 km of supporting High Voltage Alternating Current (HVAC) overhead transmission network developments in North West Tasmania.

In case of Marinus Link, it may be that HVDC is the most cost-effective solution to meet this network need given the fact there are likely only two connection points that require above ground HVDC/AC converter stations – one terminal station in Victoria and one terminal station in Tasmania – as well as the length of cable required and undersea application. This is for TasNetworks to determine through its RIT-T options assessment as required under the National Electricity Rules.

AEMO considered an underground option in the early stages of the Western Victoria RIT-T Market and industry information indicated that per kilometre, building transmission cables underground would be in the order of up to 10 times more expensive when compared to the equivalent overhead option. In comparison, an overhead option would deliver similar network benefits at a significantly lower cost to Victorian electricity consumers who will ultimately fund this project.

HVDC also needs multiple (minimum of four), expensive, large 'converter stations' to be built to integrate a HVDC solution into the existing network, which is High Voltage Alternating Current (HVAC). If HVDC were to be used, all future generators would require an above-ground converter station, too. Additional infrastructure may also be required to maintain adequate system strength.

Given the reduced flexibility for future generation connections, the cost of converter station infrastructure, and the additional system strength requirements, in this instance, HVDC could not be considered technically or economically feasible under the RIT-T application guidelines. Accordingly, it was not included in market modelling as a credible option.

AEMO is not currently aware of any new information that contradicts the conclusion that an underground installation of the WVTNP would be significantly more costly. However, we acknowledge the public interest in seeing further details comparing underground designs relative to the proposed overhead project. Following the Environment Effects Statement (EES) scoping requirements provided

[20] AEMO Chief System Design & Engineering Officer Alex Wonhas addressed the meeting.

[21] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q13/27, #23 in MCHPA list].

by Victoria's Department of Environment, Land, Water and Planning (DELWP), AusNet Services will consider undergrounding as well as a range of other project alternatives through the EES process.

Q54. If undergrounding not an economic solution, why is Marinus Link going underground? They consider this a good solution?

A. The Marinus Link proposal is currently the subject of a RIT-T being progressed by TasNetworks. The proposal is to build approximately 250 kilometres (km) of undersea cable and approximately 100 km of underground HVDC cable to connect generators in Tasmania to the national grid via a link into the Victorian transmission system. This would include new converter stations in Tasmania and Victoria, and approximately 220 km of supporting transmission network developments in North West Tasmania.

The purpose of a RIT-T is to identify the most economically efficient solution to a network need to protect consumers from paying more than necessary for their electricity. In case of Marinus Link, it may be that HVDC is the most cost-effective solution to meet this network need given the fact there are likely only two connection points that require above ground HVAC converter stations – one in Victoria and one in Tasmania as well as the length of cable required and undersea application. This is for TasNetworks to determine through its RIT-T options assessment as required under the National Electricity Rules.

By comparison, the purpose of the WVTNP is to increase capacity in western Victoria by connecting multiple points (i.e. four terminal stations) of the existing HVAC network, and to improve the efficiency of generators connecting into the line. If HVDC were to be used for the project, each of the four terminal stations, and all future generators, would require an above-ground converter station. Additional infrastructure may also be required to maintain adequate system strength. Given the reduced flexibility for facilitating future generation connections, the cost of converter station infrastructure, and the additional system strength requirements, in this instance, HVDC could not be considered technically or economically feasible under the RIT-T application guidelines, and was not included in market modelling as a credible option. (See also previous answer.)

Q55. High Voltage Alternating Current (HVAC)High Voltage Direct Current (HVDC) If AusNet are the proponent who are promoting an Overhead HVAC solution, how can they be trusted to properly consider alternatives under the EES process? It is not in their interest to do so and if say for example, undergrounding was excluded, then surely it is not in AEMO's interest to do so either.[22]

A. AusNet Services: The Minister for Planning has decided that a rigorous planning and environmental approval process called an Environment Effects Statement (EES) is required to assess the project's potential effects. The scoping requirements of the EES require AusNet to document the design development process of the preferred option and consideration of feasible alternatives. The Commonwealth Minister or delegate will decide whether the project is approved, approved with conditions or refused under the EPBC Act, after having considered the Minister for Planning's assessment under the EE Act.

The EES process will assess the environmental impacts of the project as proposed by AusNet Services and in accordance with the project-specific EES scoping requirements. The adequacy of AusNet Services' investigations will be assessed by the Department of Environment, Land, Water and Planning prior to the release of the EES for public comment. The EES process will enable the Minister for Planning to consider the potential environmental impacts before a final decision is taken on the project. For more information on the EES process, a factsheet is available on the WVTNP website.

Q56. So how come other in grounding projects have been chosen as the preferred objections?

A. There has been a lot of interest in drawing comparisons with other projects that have incorporated underground transmission lines.

[22] Preliminary verbal response also available on the session recording.

AEMO considered an underground option in the early stages of the Western Victoria RIT-T. Market and industry information indicated that per kilometre, building transmission cables underground would be in the order of up to 10 times more expensive when compared to the equivalent overhead option. In comparison, an overhead option would deliver similar network benefits at a significantly lower cost to Victorian electricity consumers who will ultimately fund this project.

While undergrounding the WVTNP is technically possible, given the substantial cost differential and the lack of additional technical benefits underground cables would provide in meeting the identified need, it was not considered a credible option on the basis of commercial feasibility and no market modelling on a full or partial undergrounding option was done.

AEMO is not currently aware of any new information that contradicts the conclusion that an underground installation of the WVTNP would be significantly more costly. However, we acknowledge the public interest in seeing further details comparing underground designs relative to the proposed overhead project. Following the Environment Effects Statement (EES) scoping requirements provided by Victoria's Department of Environment, Land, Water and Planning (DELWP), AusNet Services will consider undergrounding as well as a range of other project alternatives through the EES process.

Q57. Why does AEMO and AusNet constantly regurgitate that the undergrounding is much more invasive. Why not let the community decide whether they wish to accept those issues over Overhead? Why do AusNet and AEMO keep negating undergrounding on that basis when the community may well be much more readily accepting of that?

A. AusNet Services: We understand underground is the preferred option for some members of the community and this is something that will be explored through the Environment Effects Statement (EES) process. There are also a number of technical reasons why overhead transmission lines are standard practice throughout the world for projects of this scale. There is information on our website outlining the various levels of impact when constructing both underground and overhead transmission lines to factors such as ground disturbance, biodiversity, land use, ongoing maintenance and economic considerations. We encourage people to visit the site and review the information.

A. AEMO: Ensuring the economic benefits of the project outweigh the costs to Victorian electricity consumers is a major driver in deciding the project scope for overhead transmission lines. There are a number of factors that explain why overhead transmission lines are standard practice through Australia, and the world, for a project of this scale. These include project costs, together with a comparative assessment of critical land use, and environmental and cultural heritage impacts. For more information on the impacts and benefits of overhead transmission lines and underground cables, see the WVTNP Project Design Overhead Transmission Lines fact sheet available online.

As the project proponent, AusNet Services is continuing to work closely with communities and landowners to consider and address their concerns in order to deliver an overhead transmission line that is sensitively designed, located and constructed to minimises environmental and social impacts.

Social and environmental impacts will be assessed at subsequent stages of the planning and approvals processes, including as part of the Environment Effects Statement (EES). The EES process will enable the Victorian Minister for Planning to consider the potential environmental impacts before a final decision is taken on the project. For more information on the EES process, a factsheet is available on the WVTNP website here.

Q58. When talking about the disadvantages of undergrounding the transmission lines, Alex Wonhas (AEMO) referred to the fact that after the under grounding process has been carried out, the land would need to be sterilised. Could he please explain exactly what this process would entail and why it is necessary? How long would the effects of this sterilisation last and what would these effects be? What sterilisation would be required for the land below overhead transmission towers?

A. AusNet Services: Overhead transmission lines have less impact on ongoing land use, giving property owners greater flexibility and the ability to do more with the land. For example, agriculture is permitted around overhead transmission lines, but not underground lines, which prohibits land uses that involve agriculture, gardens, trees and shrubs. For more information on the impacts and benefits of overhead transmission lines and underground cables, see the WVTNP Project Design Overhead Transmission Lines fact sheet available online.

5. Safety and risk mitigation

Q59. ESV has recently explained in their community forums that they are the Electrical Safety Regulator, and the AER (Australian Energy Regulator) is the economic regulator. Does this mean that the AER is the authority charged with determining whether the cost to mitigate risks to safety and to network stability are justified, or is AEMO making these decisions instead?[23]

A. Relative risks have been accounted for by AEMO in developing cost estimates and delivery schedules for the RIT-T credible options.

All credible options considered through the Western VIC RIT-T were subject to technical assessment to ensure they did not degrade network stability (i.e. the 'do no harm' criteria). The preferred option identified through the Western Victoria RIT-T Project Assessment Conclusions Report (and being progressed via the WVTNP) increases system stability through additional transmission lines.

Costs incurred in complying with laws, regulations and applicable administrative requirements for the construction and operation of the credible options are included in a RIT-T assessment.

Further, as the owner and operator of the majority of the Victorian transmission network, AusNet Services is responsible for ensuring that the network is designed, constructed, maintained to applicable technical and safety standards as set by Energy Safe Victoria. AusNet Services will ensure the WVTNP complies with these regulations.

AEMO notes below question 13 from the Energy Safe Victoria responses to submitted questions following earlier Moorabool Shire Council community sessions on the Western Victorian Transmission Network Project, available online here.

Question 13: Thanks for the explanation of the regulatory landscape - if the AER is the "economic Regulator" does this mean they are the ones who should decide if the cost to eliminate risk (which will be passed on to customers) is warranted, or that risk should be accepted?

ESV response: The AER is the national economic regulator and its role is to assess the electricity network company's submissions for funding. The major electricity companies (MECs) must demonstrate to ESV as Victoria's technical and safety regulator what they will do to minimise risk 'as far as practicable' (AFAP). The AER will consider funding MECs for specific risk minimisation and will fund any safety regulation commitments. The AER and ESV regularly meet and discuss such matters.

Q60. The 2019 AEMO Planning and Forecasting Consultation Paper, which preceded the 2020 ISP, refers to AEMO's risk management principle of "Do no harm" as ensuring "that any new infrastructure does not lead to deterioration in grid resilience" and specifically includes the clarifying example of "Building additional transmission lines along a bush-fire prone transmission corridor would be an example of resilience deterioration." How does the insistence of an overhead HVAC transmission line though the fire prone and high fire risk Melton, Moorabool,

[23] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q10/27, #19 in MCHPA list].

Hepburn, Ballarat, Pyrenees and Northern Grampians Shires comply with AEMO's stated risk management framework?[24]

A. AusNet Services: AusNet Services acknowledges its responsibility to understand and mitigate any increased fire risk posed by this project and designs, operates and maintains safe and reliable transmission networks that meet Australian standards. Our Transmission Vegetation & Easements Program focuses on maintaining public safety, mitigating bushfires, ensuring network reliability and maintaining the security and accessibility of the easements and transmission network. Furthermore, we work hand-in-hand with Emergency Management Victoria and Country Fire Authority Victoria to safely manage thousands of kilometres of transmission lines in the event of fire or other emergency.

A. AEMO: Energy systems are located throughout most populated regions of Australia and are exposed to many varied weather and climate effects. Asset specifications and planning processes used in the sector have extensive consideration for Australia's extreme climate.

Planning and operational solutions for extreme heat events include ensuring temperature assumptions for projecting load and transmission capability, and for determining cyclic ratings for transformers, are up to date, as well as including extreme temperature scenarios in future grid planning. In the case of bushfire events, solutions related to planning and operations include secondary protection systems, increased geographic diversity, increased redundancy in transmission systems, and extending the planning horizon to ensure the change in climate risk over time is being adequately captured.

Climate is considered in the Western Victoria RIT-T through developing inputs to cost benefit studies, which are used to assess the credible options against scenarios, e.g. temperature changes in developing energy consumption forecasts, wind and solar output forecasts, hydro inflow forecasts, generator failure rate forecasts. The credible options are then assessed against scenarios based on these planning studies.

Climate considerations are also addressed through ensuring the proposed design of the project meets all applicable technical standards across the anticipated asset life of the transmission network, including those relating to weather and climate, and locational requirements. These standards are frequently reviewed by the relevant authorities, and energy businesses are required to build and maintain their energy infrastructure to meet these standards.

As the project proponent, AusNet Services is undertaking a rigorous and transparent assessment of bushfire risk and ensuring that any risk is minimised and managed is a key priority for the project. The project is also subject to an Environment Effects Statement (EES) process which will provide for a transparent, integrated assessment of potential environmental impacts, including fire risk. This independent process which is managed by Victoria's Department of Environment, Land, Water and Planning (DELWP).

Q61. What lessons in overseas transmission system design, management and safety has AEMO gained from the US 2018 failure of the Californian Pacific Gas & Electric corporation's transmission network, which was responsible for the Camp Fire, which killed 85 people and resulted in claims for $US30 billion, and what impact have these lessons had on the scope and statement of work that AEMO developed and tendered for the WVTNP?[25]

A. Powerline safety is a key project requirement. This includes compliance with the requirements of all applicable regulatory instruments and best industry practice. These considerations are addressed through ensuring the proposed design of the project meets all applicable technical standards across the anticipated asset life of the transmission network, including those relating to weather and climate, and locational requirements. These standards are frequently reviewed by the relevant authorities, and energy businesses are required to build and maintain their energy infrastructure to meet these standards.

[24] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q19/27, #27 in MCHPA list].

[25] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q24/27, #1ESV4 in MCHPA list].

As the project proponent, AusNet Services is undertaking a rigorous and transparent assessment of bushfire risk and ensuring that any risk is minimised and managed is a key priority for the project.

Further, as the owner and operator of the majority of the Victorian transmission network, AusNet Services is responsible for ensuring that the network is designed, constructed, maintained to applicable technical and safety standards, as set by Energy Safe Victoria. AusNet Services will ensure the project complies with these regulations.

The project is also subject to an Environment Effects Statement (EES) process which will provide for a transparent, integrated assessment of potential environmental impacts, including fire risk. This independent process is managed by the Department of Environment, Land, Water and Planning (DELWP).

Q62. When the cost to the community and the economy from the Cressy Transmission Tower failures on 31 Jan 2020 were tallied up, did AEMO ask the AER to decide whether the cost to remediate other transmission infrastructure in Victoria, also built to the same old 1980's safety standards, to bring it up to the current AS7000 standard was warranted? If the AER was not the one who decided this cost was not justified, who did?[26]

A. AEMO does not own or operate transmission network infrastructure nor have jurisdiction over regulating transmission network technical and safety standards. This is the responsibility of Energy Safe Victoria. As the owner and operator of the majority of the Victorian transmission network, AusNet Services is responsible for ensuring that the network is designed, constructed, maintained to applicable technical and safety standards as set by Energy Safe Victoria.

AEMO notes questions 13, 15 and 16 from the Energy Safe Victoria responses to submitted questions following earlier Moorabool Shire Council community sessions on the Western Victorian Transmission Network Project available online here.

13. Question: Thanks for the explanation of the regulatory landscape - if the AER is the "economic Regulator" does this mean they are the ones who should decide if the cost to eliminate risk (which will be passed on to customers) is warranted, or that risk should be accepted?

ESV response: The AER is the national economic regulator and its role is to assess the electricity network company's submissions for funding. The major electricity companies (MECs) must demonstrate to ESV as Victoria's technical and safety regulator what they will do to minimise risk 'as far as practicable' (AFAP). The AER will consider funding MECs for specific risk minimisation and will fund any safety regulation commitments. The AER and ESV regularly meet and discuss such matters.

15. Question: The ESV response to the previous session emphasizes that ESV does not administer the economic regulatory regime for major electricity companies, and that this is the AER's role. Previously ESV members have stated that the cost to upgrade old-Cressy era towers to the new AS7000 standards following the Cressy failure was too expensive and impracticable - did the AER make that judgement in that case or was it ESV's conclusion?

ESV response: There are approximately 13,000 towers across Victoria that were installed before the current standard was in place. To upgrade all towers to suit the latest standard, by ESV's assessment, does not meet the Electricity Safety Act requirement of being practicable, e.g. the cost (labour and material) is disproportionately higher than the risk reduction that would be realised. Furthermore, AS/NZS 7000 also states that the standard is not applicable to older structures, i.e. it is not retrospective, and is only used for the design and installation of new towers.

Question: Thank you for making the Cressy failure report available, I note that it was posted on the ESV Website on 18 Nov 20, a long time after the event, and after the AER had made its decision on AusNet's pass through application which awarded them $25.4m in costs to repair the failures - which then gets passed on to consumers. When was the ESV investigation report actually completed and what advice was ESV asked to provide to the AER to support their decision in Sep 20?

ESV response: The ESV investigation commenced the moment the incident occurred and still continues until the replacement tower construction is fully completed. The public report has been finalised and published to assist with the questions presented during this community consultation. The AER cost pass through decision was made under provisions of the National Electricity Rules (NER) to fund some of the costs incurred towards replacement and repair of the tower line independent of ESV's investigation.

[26] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q25/27, #20 in MCHPA list].

Q63. Why does the AEMO allow Climate Change events to continue to be considered 'Force Majeure' events in contracts, when extreme weather events are now no longer rare, but instead, highly anticipated? Why does AEMO deem that these risks should not be mitigated due to the extra cost impost (such as by undergrounding), but then expect the Victorian Consumer to pay for these events, when they do occur, as pass-through costs? Isn't this a case of an 'all care, but no responsibility' approach?

A. Energy systems are located throughout most populated regions of Australia and are exposed to many varied weather and climate effects. Asset specifications and planning processes used in the sector have extensive consideration for Australia's extreme climate.

Planning and operational solutions for extreme heat events include ensuring temperature assumptions for projecting load and transmission capability, and for determining cyclic ratings for transformers, are up to date, as well as including extreme temperature scenarios in future grid planning. In the case of bushfire events, solutions related to planning and operations include secondary protection systems, increased geographic diversity, increased redundancy in transmission systems, and extending the planning horizon to ensure the change in climate risk over time is being adequately captured.

Climate impacts are considered in developing inputs to planning studies, e.g. temperature changes in developing energy consumption forecasts, wind and solar output forecasts, hydro inflow forecasts, generator failure rate forecasts. The credible options are then assessed against scenarios based on these planning studies. These considerations are addressed through ensuring the proposed design of the project meets all applicable technical standards across the anticipated asset life of the transmission network, including those relating to weather and climate, and locational requirements. These standards are frequently reviewed by the relevant authorities, and energy businesses are required to build and maintain their energy infrastructure to meet these standards.

Transmission investments to mitigate climate risks are also paid for by electricity customers. The RIT-T framework seeks to balance the level of electricity supply reliability and consequent investments costs to consumers.

AEMO conducted a robust competitive tender process to achieve the best outcome possible to deliver the project in accordance with the technical and economic scope set out in the Western Victoria RIT-T. In keeping with the terms and conditions of the *Invitation to Tender* and to maintain the integrity of this and future competitive tender processes, the contract details and arrangements between AEMO and AusNet Services are confidential.

6. Communication and consultation

Q64. Can the AEMO presenters undertake that any questions that are not answered tonight will be followed up with a written response from AEMO before Christmas?[27]

A. AEMO understands there is a lot of interest in the Western Victoria RIT-T process and outcome and will endeavour to answer the questions from the community information session as soon as practicable.

Q65. AEMO as the project proponent for the WVTNP has contracted AusNet Services to deliver this project. AusNet Services and its WVTNP representatives have provided misleading information to the public and bullied members of the community. As the project proponent, what processes does AEMO have to deal with this such behaviour by AusNet and how can the public access these processes?[28]

[27] Preliminary verbal response also available on the session recording.

[28] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q1/27, #4 in MCHPA list]. Preliminary verbal response also available on the session recording.

A. AEMO: AEMO treats complaints of misconduct seriously. AusNet Services, as the proponent, is required to report all project-related complaints and outcomes to AEMO as part of ongoing progress reporting. All concerns raised with AEMO will be treated confidentially in the first instance. AEMO will seek consent before sharing information with AusNet Services and/or other third parties. To lodge a query with AEMO, please call the AEMO Support Hub on 1300 236 600 or use the Contact Us form available online.

A. AusNet Services: AusNet Services treats complaints of misconduct seriously. AusNet Services will manage all complaints in accordance with the AusNet Services' Customer Complaint and Dispute Resolution Policy.

Email: customersupport@ausnetservices.com.au

Phone:1300 360 795 (9am-5pm, Monday to Friday)

Postal address: Locked Bag 14051, Melbourne VIC 8001.

Q66. Does AEMO consider that its consultation for all stages of the West Vic-RIT-T has complied with the National Electricity Regulations, particularly given the paucity of information in the PACR and the PADR on a proposed route for the WVTNP, and future intentions for the North Ballarat Terminal Station in the current VNI RIT-T, which has prevented submitters being able to respond in a meaningful way?[29]

A. AEMO is confident that the consultation carried out for the Western Victoria RIT-T complies with the National Electricity Rules and the Australian Energy Regulator's (AER's) RIT-T application guidelines.

AEMO and TransGrid are in the early stages of a joint Victoria to New South Wales Interconnector West (VNI West) RIT-T to assess the technical and economic feasibility of expanding interconnector capability between the two states to increase supply reliability and facilitate efficient resource sharing. The network need identified in the VNI West RIT-T is distinct to that of the Western Victoria RIT-T, and requires a separate option assessment and consultation process to satisfy the regulatory requirements. More information on the VNI-West RIT-T currently underway is available online.

Q67. Does AEMO think it is necessary to have a 'social licence' in order to bring the community along with the important projects in the ISP2020? What does the idea of 'social licence' mean to AEMO?[30]

A. Social licence is made up of three components: legitimacy, credibility and trust. Social licence is an ongoing effort between communities, companies and organisations to create shared values. It creates an environment to communicate concerns, intentions and expectations. It builds opportunities to request and provide information and facts, and to collaborate on problems, opportunities and solutions. It provides avenues to work together to minimise impacts and identify and avoid or mitigate risks, and to acknowledge and appreciate different perspectives, even if consensus can't always be reached. AEMO believes cultivating social licence is as much about the approach, as the outcome.

The current regulatory framework assesses ISP projects according to their technical and economic merit over a 20-year planning horizon to guide governments, industry and consumers on the investments needed for an affordable, secure, sustainable and reliable energy future. AEMO recognises that this framework does not currently fully consider the social and environmental factors that underpin social licence.

We consider engagement on the ISP as a first step in building social licence for the energy infrastructure projects that are required to support Australia's world-leading energy transition. While evaluating social licence for ISP projects is beyond the current scope of the regulations, AEMO

[29] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q6/27, #25 in MCHPA list].

[30] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q7/27, #3 in MCHPA list]. Preliminary verbal response also available on the session recording.

recognises that demonstrating legitimacy and credibility and building trust through our interactions with stakeholders is critical to the successful delivery of projects.

We continue to improve our stakeholder consultation on the ISP and we appreciate and acknowledge the important social, environmental, amenity, cultural and community matters raised by stakeholders in relation to various ISP projects.

Q68. In Project Update 1 - July 2018 and Project Update 2 - December 2018 for the Western Victoria RIT-T, AEMO states 'AEMO values feedback and advice from the industry and the community, and is committed to ongoing dialogue with stakeholders' and 'AEMO has commenced stakeholder engagement on its preferred solution and is now seeking feedback from the Western Victoria community and local Councils and other interested parties' and 'AEMO seeks to engage with the communities involved and encourages feedback throughout this entire project'. Just how did AEMO do that when not a single landowner or community between Sydenham and Bulgana knew about this RIT-T or the preferred option until we received letters from AusNet telling us that our land might be needed for the WVTNP?

A. AEMO recognises that community and landowner engagement is critical to the successful delivery of the project. The early community engagement undertaken by AEMO for the Western Victoria RIT-T was the first stage of a targeted, long-term stakeholder engagement program that would be led by the successful tenderer in the event that the project satisfied the RIT-T.

AEMO is confident that our consultation process for all stages of the Western Victoria RIT-T complies with the National Electricity Rules and the Australian Energy Regulator's (AER's) RIT-T application guidelines.

AEMO provided a summary of stakeholder engagement activities carried out during the Project Assessment Draft Report consultation period in Appendix 5 of the Western Victoria RIT-T Project Assessment Conclusion Report.

Following a multi-stage, competitive tender process, in December 2019, AEMO selected Mondo, the commercial division of the AusNet Services Group (AusNet Services), to plan, design, construct, own, operate and maintain new infrastructure required as part of the WVTNP. This includes leading stakeholder engagement on the project and securing the necessary planning and environmental approvals.

AEMO appreciates and acknowledges the important social, environmental, amenity, and cultural matters raised by community members in relation to the project. As the project proponent, AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts. AusNet is also responsible for securing the necessary planning and environment approvals.

AusNet Services has commenced an extensive stakeholder consultation and project impact assessment process to understand and consider stakeholder concerns in relation to the project and to inform its planning and development. The social and environmental impacts will be assessed at subsequent stages of the planning and approvals processes including as part of the Environment Effects Statement (EES).

Q69. In the 2016 review of the RIT-T process it was stated that the "The RIT-T is designed to be a consultative and transparent process for transmission planning. The test allows for public consultation and comment within a transparent framework." The community only heard of the WVTNP in June 2020, more than 3 years after the WestVic-RIT-T began: a. Why didn't AEMO deliver a transparent public consultation process from the start of the RIT-T? b. During the RIT-T, what consideration did AEMO give to the many submissions that were made by industry bodies and interested parties that flagged key issues with proposed overhead lines along this route corridor including the fact that the overhead lines would cause significant public backlash which would risk the project? a) Why didn't AEMO deliver a transparent public consultation process from the start of the RIT-T? b) During the RIT-T, what consideration did AEMO give to the many submissions that were made by industry bodies and interested parties that flagged key

issues with proposed overhead lines along this route corridor including the fact that the overhead lines would cause significant public backlash which would risk the project?[31]

A. Answered in two parts:

a) AEMO provided a summary of stakeholder engagement activities carried out during the Project Assessment Draft Report (PADR) consultation period in Appendix 5 of the Western Victoria RIT-T Project Assessment Conclusion Report. AEMO is confident that our consultation process for all stages of the Western Victoria RIT-T complies with the National Electricity Rules and the Australian Energy Regulator's RIT-T application guidelines.

We appreciate the feedback we have received on our consultation process, and will seek to assess and implement improvements for future consultations.

b) The matters that can and cannot be considered through a RIT-T are set out in application guidelines developed by the Australian Energy Regulator (AER). The RIT-T application guidelines reflect the objective of protecting consumers from paying more than necessary for electricity. Specifically, the RIT-T considers:

- Technical parameters (e.g. technical feasibility, options that provide benefits to electricity consumers);
- Cost parameters (direct costs); and
- Time parameters (timely completion of infrastructure).

The RIT-T application guidelines explicitly exclude matters related to social and environmental impacts on local communities in its assessment unless it conflicts with the law. The guidelines, for example, explicitly exclude consideration of an option's impact to the environment or for matters, such as, the loss of visual amenity, that are not regulated.

While AEMO must meet the parameters set out in the RIT-T application guidelines, we acknowledge the important social, environmental, amenity, cultural and community matters raised by stakeholders during the Western Victoria RIT-T consultation process. All stakeholder submissions to the Western Victoria RIT-T were published where consent was given and where applicable. Matters that were relevant under the RIT-T application guidelines were addressed through the market modelling, consultation and assessment reports. Matters raised by stakeholders that could not be considered as part of the RIT-T process were passed on to the successful tenderer for consideration in the project planning and delivery as part of the handover process.

AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts.

AusNet Services has commenced an extensive stakeholder consultation and project impact assessment process to understand and address stakeholder concerns. The social and environmental impacts will be assessed at subsequent stages of the planning and approvals processes including as part of the Environment Effects Statement.

Q70. The EES assumes that there WILL BE A PROJECT - you have utterly failed to consult years ago and understand the full impact to all of us -and now you are railroading us with saying that you will back support the project with your 'explanations' to the EES. Is that an admission that your process has failed spectacularly and that you will be working hard to 'support' it? No question but would be interested in a response.

A. AusNet Services: The project is in the planning and approvals phase. Over the next 18 months an independent Environment Effects Statement (EES) will be prepared in response to the Minister for Planning's scoping requirements. The EES includes detailed technical, environmental, heritage and social investigations to determine potential project risks and proposed mitigations. Community input

[31] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q16/27, #24 in MCHPA list]. Preliminary verbal response also available on the session recording.

has been and will continue to be sought throughout the process. If approved, the project will commence construction in late-2023 to late-2025.

A. AEMO: AEMO is confident that our options assessment and consultation process for all stages of the Western Victoria RIT-T complies with the National Electricity Rules and the Australian Energy Regulator's (AER's) RIT-T application guidelines.

A RIT-T can be likened to a business case for any project or venture. It is the first stage of the development and represents an early hurdle before a project can move on to the next stages of investment, planning and approvals. The early community engagement undertaken by AEMO for the Western Victoria RIT-T was the first stage of a targeted, long-term stakeholder engagement program that would be led by the successful tenderer in the event that the project satisfied the RIT-T.

Following a multi-stage, competitive tender process, in December 2019, AEMO selected Mondo, the commercial division of the AusNet Services Group (AusNet Services), to plan, design, construct, own, operate and maintain new infrastructure required as part of the WVTNP. This includes leading stakeholder engagement on the project and securing the necessary planning and environmental approvals.

AEMO appreciates and acknowledges the important social, environmental, amenity, and cultural matters raised by community members in relation to the project. As the project proponent, AusNet Services is committed to delivering a project that is sensitively designed, located and constructed to minimise environmental and social impacts, secures the necessary planning and environment approvals, and that the cost of the project does not outweigh the economic benefits to Victorian electricity consumers.

AusNet Services has commenced an extensive stakeholder consultation and project impact assessment process to understand and consider stakeholder concerns in relation to the project and to inform its planning and development. The project's social and environmental impacts will be assessed at subsequent stages of the planning and approvals processes including as part of the Environment Effects Statement (EES). For more information on the EES process, a factsheet is available on the WVTNP website here.

7. Other

Q71. Please explain the role of AEMO and how the electricity market operates, in particular what are the rules that govern the Australian electricity market, who makes those rules, and what consequences there are for AEMO or operators if they do not abide by those rules?[32]

A. Energy policy is the responsibility of Australia's states and territories, and the Energy National Cabinet Reform Committee provides oversight and coordination of energy policy at a national level. This governance framework separates decision-making on government policy, energy regulation and energy system operation. Energy regulation and energy system operation is the domain of three market bodies – each is an independent decision-maker with clear functions, accountabilities and powers to support efficient investment in, and operation of, Australia's energy system.

In simple terms:

- The Australian Energy Market Commission (AEMC) is the rule-maker for Australia's energy markets.
- The Australian Energy Regulator (AER) oversees economic regulation and rule compliance in Australia's national energy markets.

[32] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q17/27, #1 in MCHPA list]. Preliminary verbal response also available on the session recording.

- The Australian Energy Market Operator (AEMO) manages Australia's largest electricity and gas systems and markets in accordance with the relevant energy laws and legislation.

Market bodies

Australian Energy Market Commission (AEMC)

The AEMC is the rule-maker for Australia's energy markets. It makes and amends the National Electricity Rules, National Gas Rules and National Energy Retail Rules, all of which are the regulatory instruments that govern the national energy markets. It also monitors and reports on matters such as the level of competition in energy retail markets, future price trends and energy market performance.

The AEMC Reliability Panel reviews and reports on the safety, security and reliability of the national electricity system. AEMO is a key member of the panel, along with consumer groups, generators, network businesses and retailers.

Australian Energy Regulator (AER)

The AER oversees economic regulation and rule compliance in Australia's national energy markets. It forms part of the Australian Competition and Consumer Commission (ACCC) and enforces the rules set by the AEMC.

In the wholesale electricity and gas markets, the AER monitors, investigates and enforces compliance with national energy legislation and rules. It also monitors participant bidding, market dispatch and prices, network constraints and outages, and demand forecasts, and reports on market activity.

The AER regulates electricity networks and natural gas pipelines by setting the maximum amount of revenue they can earn. It also regulates the retail sale and supply of electricity and gas in states and territories that have adopted the National Energy Retail Law. This includes monitoring compliance with the energy laws and regulations, reporting on performance (including energy affordability), authorising retailers to sell energy and approving retailers' policies for dealing with customers in hardship.

Australian Energy Market Operator (AEMO)

AEMO manages Australia's electricity and gas systems and markets, helping to ensure all Australians have access to reliable, secure and affordable energy. AEMO's primary role is to perform the functions and exercise the powers given to us under national and Western Australian electricity and gas laws. These are outlined in documents including AEMO's constitution (article 2), the National Electricity Law (part 5), the National Gas Law (chapter 2, part 6), the National Energy Retail Law, the Australian Energy Market Operator (Functions) Regulations 2015 (WA) (section 4) and the Wholesale Energy Market Rules (WA) (clause 2).

These functions seek to promote the efficient investment in, and efficient operation and use of, gas and electricity for the long-term interests of Australian consumers in relation to price, quality, safety, reliability and security. This translates to the following areas of responsibility:

- Maintain secure electricity and gas systems.
- Manage electricity and gas markets.
- Lead the design of Australia's future energy system.

More information about AEMO's roles and responsibilities is available online.

Energy Security Board (ESB)

The ESB is responsible for the implementation of the recommendations from the Independent Review into the Future Security of the National Energy Market (the Finkel Review). It also provides whole-of-system oversight for energy security and reliability. Established in 2017 by the then Council of Australian Governments (COAG) Energy Council, the ESB consists of an independent chair, independent deputy chair, and the heads of the AEMO, the AEMC and the AER.

For more information on Australia's energy systems and markets, please see the Learn page on AEMO's website.

Q72. Please explain what consequences there are for AEMO or operators if they do not abide by the AERs?

A. This is a question best directed to the Australian Energy Regulator (AER), however we have provided a brief overview below. More information is available on the Australian Energy Regulator website.

The AER oversees economic regulation and rule compliance in Australia's national energy markets. It forms part of the Australian Competition and Consumer Commission (ACCC) and enforces the rules set by the Australian Energy Market Commission (AEMC).

Among other functions, the AER is responsible for monitoring, investigating and enforcing compliance with obligations under the National Electricity Law, National Gas Law, National Energy Retail Law and the respective Rules and Regulations (national energy laws).

When taking enforcement action, the AER seeks to:

- stop the unlawful conduct of the business in question;
- deter offending conduct both in the specific business and in the industry more generally;
- ensure future compliance with the law;
- encourage the effective use of compliance programs; and
- penalise offenders, where warranted.

Each case will be assessed on its own merits taking into account all the relevant facts and circumstances of the matter.

The AER's Compliance and Enforcement Policy sets out the principles to achieve compliance with the law and outlines its enforcement powers, functions and strategies. The policy explains its approach to promoting compliance with obligations under the National Electricity Law, National Gas Law, National Energy Retail Law and the respective Rules and Regulations. It also provides guidance on how it responds to potential breaches and the factors it consider when deciding whether to take enforcement action.

The results of the AER's compliance activities are published in compliance reports.

Q73. Please explain what consequences there are for AEMO or operators if they do not abide by the National Electricity Rules? What if they get it wrong?

A. This is a question best directed to the Australian Energy Regulator AER), however we have provided a brief overview below and more information is available on the Australian Energy Regulator website.

The AER is Australia's national energy market regulator.

When taking enforcement action, the AER seeks to:

- stop the unlawful conduct of the business in question;
- deter offending conduct both in the specific business and in the industry more generally;
- ensure future compliance with the law;
- encourage the effective use of compliance programs; and
- penalise offenders, where warranted.

Each case will be assessed on its own merits taking into account all the relevant facts and circumstances of the matter.

The AER's Compliance and Enforcement Policy outlines its enforcement powers, functions and strategies. The policy explains its approach to promoting compliance with obligations under the

National Electricity Law, National Gas Law, National Energy Retail Law and the respective Rules and Regulations. It also provides guidance on how to respond to potential breaches and the factors it may consider when deciding whether to take enforcement action.

The results of the AER's compliance activities are published in compliance reports. (See also previous answer.)

Q74. What is AEMO's relationship with state electrical safety regulators and what advice do the regulators provide AEMO with respect to trends in transmission safety and findings from incidents, specifically: a) what advice did ESV provide AEMO following the Jan 2020 Cressy Transmission line failures; and before that b) what advice did the SA Government Office of the Technical Regulator provide AEMO with regard to overhead tower failures that caused the September 2016 SA State Blackout event, on the suitability of Overhead Tower and transmission line designs; c) and the failure of TransGrid's 132kV line near Boorowa, NSW, just last week; and d) what has been AEMO's response to this advice?[33]

A. Community members have understandably raised concerns about the safety of overhead transmission lines. Many have proposed that it would be safer and more suitable for the modern day if the line was put underground. The community has every right to expect rigorous safety standards and to question how risks are assessed and decisions are made.

Each state and territory has its own governance framework to regulate and enforce legislation and standards that relate to technical safety cases and safety management schemes for the design, construction and maintenance of energy infrastructure. This includes enforcing compliance with the requirements of all applicable regulatory instruments and best industry practice.

In Victoria, Energy Safe Victoria is the independent technical regulator responsible for electricity, gas and pipeline safety. Part of Energy Safe Victoria's function under the Electricity Safety Act 1998 (the Act) is to "investigate events or incidents which have implications for electrical safety" and "advise the electricity industry and the community in relation to electricity safety". These guidelines provide the major electricity companies with guidance on reporting to the regulator in accordance with the Act and the Electricity Safety (Management) Regulations, the Electricity Safety (Bushfire Mitigation) Regulations and the Electricity Safety (Line Clearance) Regulations.

AEMO does not select, design, build, own or operate any physical transmission infrastructure (towers, wires, terminal stations, etc). In the WVTNP case, AEMO sets the network requirements that AusNet Services must provide. This includes the amount of power that the line needs to transmit and its reliability. AEMO also requires AusNet Services to comply with all relevant standards and regulation including those of Energy Safe Victoria. AusNet Services, who owns and operates the majority of Victoria's transmission network, will design, build, own and operate the WVTNP and work closely with Energy Safe Victoria to ensure that it complies with all relevant regulation and standards

As the independent power systems operator, AEMO works with transmission businesses to prepare the networks for the summer period, including bushfire mitigation activities and preventative maintenance to improve network reliability over the summer period. AEMO prepares both a summer preparedness plan and summer operations review report, which are available online.

In the event of an energy emergency, implements emergency arrangements as detailed in the Power System Emergency Management Plan. More information is available online. In Victoria, AEMO has additional energy emergency management responsibilities, detailed in the Victorian Electricity Emergency Communications Protocol (VEECP).

AEMO is also required under the National Electricity Rules to conduct investigations of unusual power system events that occur in the National Electricity Market. These power system operating incident reports, including the 2016 and 2020 incidents you mention, are published online.

[33] Part of the list of 27 questions asked by the Moorabool & Central Highlands Power Alliance (MCHPA) : [Q12327, #13 in MCHPA list].

Q75. Can I have details on the progress of re-instating the Cressy Towers which fell down in January 2020 i.e. how many have been re-built or and when was the rebuild completed?

A. AusNet Services: AusNet Services has completed the new towers and is currently liaising with AEMO to plan an appropriate time to make final connections of the new lines.

Q76. Alex[34], but the Moorabool battery needs the south-north link through Ballarat and Bendigo and beyond to be fully upgraded and needs that North Ballarat Terminal Station to blight our Class 1 arable land. Any comment on that?

A. The 'Victorian Big Battery' project is to be sited next to the Moorabool Terminal Station in Geelong. It is independent of, and does not require, the new terminal station proposed for the WVTNP.

Q77. If we find though an independent analysis now that the RIT-T was deficient or flawed, what recourse is there?

A. We are confident that the final assessment complies with the National Electricity Rules and the Australian Energy Regulator's (AER's) RIT-T application guidelines.

Stakeholders can also enquire with the AER, as the market body with responsibility for developing the RIT-T application guidelines under the National Energy Rules, and ensuring compliance with the operation and application of the RIT-Ts.

[34] AEMO Chief System Design & Engineering Officer Alex Wonhas addressed the meeting.

Full list of questions addressed at the session

At the session, AEMO gave preliminary responses to 12 questions, asked in the order shown below. Additional information is in this document, at the question numbers shown here. The initial remarks can be heard on the session recording on the Moorabool Council website.

QUESTIONS	FOR FURTHER REPLY
Please can we get an undertaking from the AEMO presenters that any questions that are not answered tonight on air, will be followed up with a written response from AEMO before Christmas?	Q64
Please explain the role of AEMO and how the electricity market operates, in particular what are the rules that govern the Australian electricity market, who makes those rules, and what consequences there are for AEMO or operators if they do not abide by those rules?	Q71
Does AEMO think it is necessary to have a 'social licence' in order to bring the community along with the important projects in the ISP2020? What does the idea of 'social licence' mean to AEMO?	Q67
RIT-T is a model developed in the abstract and used to justify investment assuming that the lowest cost achieves the goal of greater public good. Such abstract models may be manipulated to achieve palatable outcomes and do not often work in the inflexible real world. The public own common property resources such as indigenous species, healthy environment, functioning landscape and other natural assets (e.g. conservation reserves). An incomplete economic evaluation of Natural Assets under the RIT-T provides only partial analysis and an incomplete assessment. Without a full and balanced economic assessment of Natural Assets there is no way of arguing the RIT-T is for the public good. What process was used by AEMO to ensure a rational approach was correctly applied to natural assets and they were not economically devalued in order to achieve lowest costs and help justify proceeding with the Western Transmission Network project?	Q15
AEMO as the project proponent for the WVTNP has contracted AusNet to deliver this project. AusNet and its WVTNP representatives have provided misleading information to the public and bullied members of the community. As the project proponent, what processes does AEMO have to deal with this such behaviour by AusNet and how can the public access these processes?	Q65
The WVTNP is Victoria's first major transmission network augmentation in over 30 years. AEMO in its role as Victoria's transmission network planner undertook a tender for the project and awarded the tender and signed contracts with AusNet in Dec 2019. As a matter of public interest, would AEMO please make public the tender documents for the project issued in July 2019 (redacted as necessary)? If not, why not?	Q36
Given the intense and organised community backlash that has arisen to the WVTNP since the announcement of the RIT-T outcomes, does AEMO consider that ongoing, persistent and sustained community opposition to the overhead HVAC option is a risk to the project?	Q50
Under what circumstances would AEMO suspend, or modify the current contract with AusNet to investigate the feasibility and costs of credible alternatives, including undergrounding a HVDC solution for the WVTNP? Is it a question of government direction, and/or government investment?	Q37
Did AEMO ask the AER for a decision on whether the extra cost for underground HVDC was warranted and acceptable for the WVTNP given the superior risk mitigation potential that underground HVDC offers over overhead HVAC? If not, why not?	Q21

QUESTIONS	FOR FURTHER REPLY
In the 2016 review of the RIT-T process it was stated that the "The RIT-T is designed to be a consultative and transparent process for transmission planning. The test allows for public consultation and comment within a transparent framework." The community only heard of the WVTNP in June 2020, more than 3 years after the WestVic-RIT-T began: a) Why didn't AEMO deliver a transparent public consultation process from the start of the RIT-T? b) During the RIT-T, what consideration did AEMO give to the many submissions that were made by industry bodies and interested parties that flagged key issues with proposed overhead lines along this route corridor including the fact that the overhead lines would cause significant public backlash which would risk the project?	Q69
AEMO's RIT-T process for West Victoria defaulted to old methods using overhead HVAC systems without much consideration of contemporary technologies and alternatives. How has the AEMO Integrated System planning and RIT-T process allowed for and encouraged innovation and the entry of new technology and ideas to minimise risk to the community, and improve efficiency, resilience, and stability of electrical supply?	Q3