



WESTERN VICTORIA RENEWABLE

Project Assessment Draft Report

Industry Deep Dive Forum - 30 January 2019

Agenda

1. Recap of first industry forum
2. Assumptions and methodology
3. Market benefits
4. Planning approvals and land
5. Next steps

Recap of first industry forum

The identified need, the preferred option and initial stakeholder feedback

Western Victoria RIT-T overview

• **The RIT-T process**

- Regulated, three-step market consultation process designed to assess the technical and economic viability of transmission investment options to meet an identified need.
- The best option identified will deliver the highest net market benefit to those who produce, consume and transport electricity in the market.
- Designed to protect consumers from paying more than necessary for their electricity in the long-term.

• **AEMO's approach**

- First step in a larger, strategic transmission infrastructure development plan underway to assess and coordinate future transmission and generation in the National Electricity Market (NEM).
- Work closely with stakeholders to deliver the most appropriate transmission infrastructure to efficiently accommodate increasing levels of generation in Western Victoria.
- Deliver affordable, reliable, secure energy to consumers, now and in the

The identified need

Figure 1 – Western Victoria transmission network as at November 2018

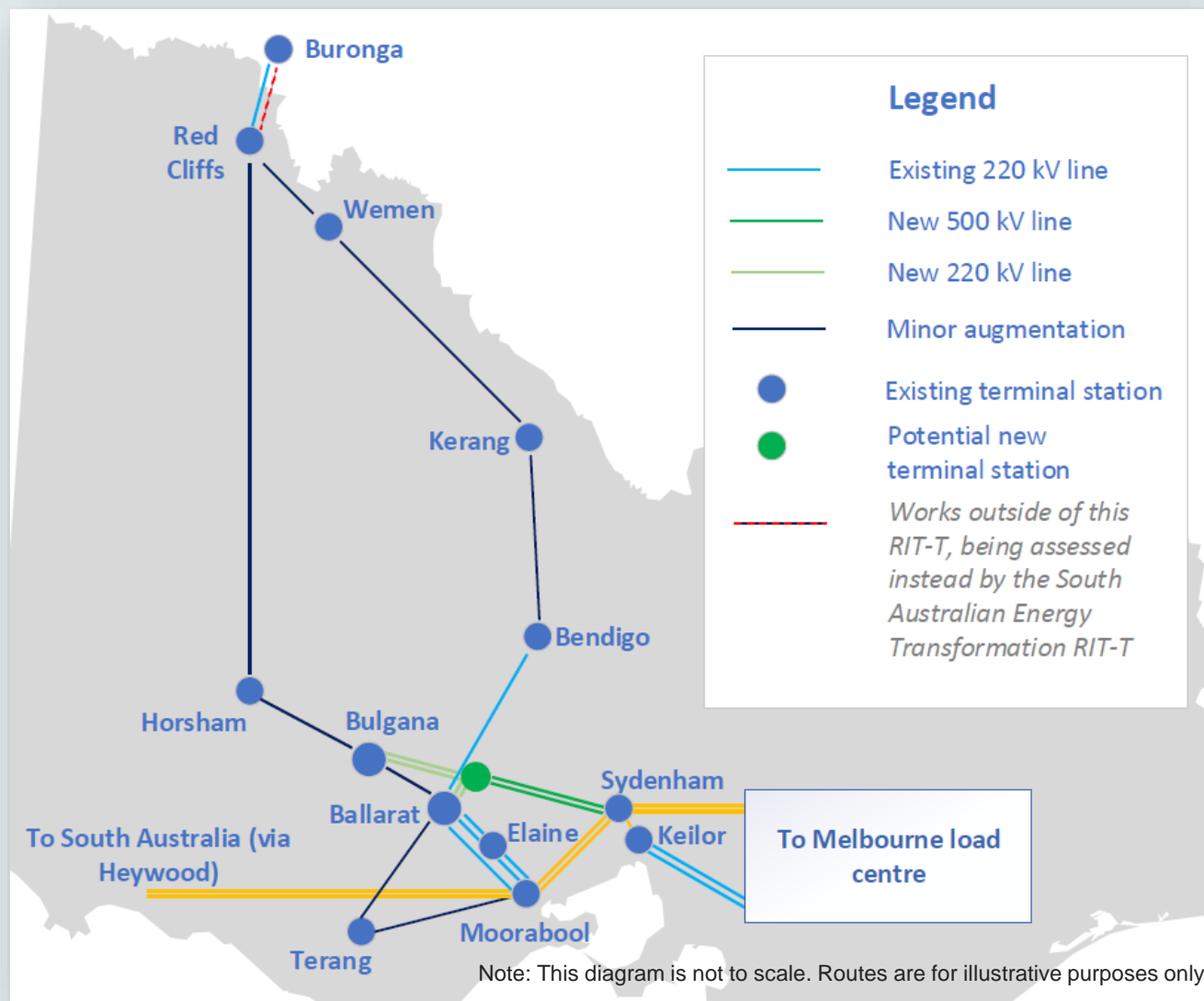


- Around 2,000 megawatts (MW) of committed new renewable generation will be built in the Western Victoria region by 2020.
- A further 3,000 MW will be constructed in the region by 2025, based on proposed renewable generation in the region and VRET.
- Generators connecting at 220 kilovolt (kV) and below are expected to be heavily constrained by emerging thermal limitations which if not addressed, may result in:
 - Inefficient generation dispatch
 - Inefficient development of new generation
- These inefficiencies are expected to lead to higher costs to consumers.

The preferred option

The preferred option provides for staged development:

- **Short term: present to 2021.**
 - Minor transmission line upgrades on the Red Cliffs to Wemen to Kerang to Bendigo, and Moorabool to Terang to Ballarat, 220 kV transmission lines.
- **Medium term: 2021 to 2025.**
 - The following major transmission network augmentations (staged):
 - **By 2024:** New 220 kV double circuit transmission lines from Ballarat to Bulgana.
 - **By 2025:** New 500 kV double circuit transmission lines from Sydenham to Ballarat connecting two new 1,000 MVA 500/220 kV transformers at Ballarat¹.



1. Initial assessment has indicated that there may be insufficient space in Ballarat Terminal Station for the proposed 500 kV plant. AEMO has assumed that a new terminal station will be established close to Ballarat with connections back to the existing Ballarat Terminal Station in its assessments.

Submissions to the Project Specification Consultation Report (PCSR)

Long term transmission network development plan for Victoria

Non-network options

Control schemes

Large scale solar
generation
developments

Interconnector
with NSW

Cost of outages

Beyond the RIT-T

Future network transformation in Victoria

- **Western Victoria area**

- Preferred option has allowed for 500 kV lines to facilitate future Snowylink South interconnector (Ballarat – Bendigo – Kerang to NSW).

- **Victorian interconnector expansions**

- Red Cliffs to Buronga upgrade – expected to be implemented as part of South Australia to New South Wales interconnector upgrade.
- Victoria to New South Wales interconnector upgrade - RIT-T Project Assessment Draft Report scheduled for 2019.
- Snowylink South interconnector – Economic timing of 2035 as per 2018 Integrated System Plan (ISP).

Methodology and assumptions

RIT-T application, transmission expansion, generation expansion,
cost estimates, demand

Application of the RIT-T

- Compare **states of the world** with and without credible options.
- Analysis carried out using a number of **reasonable scenarios**.
- Use **market development modelling** and **market dispatch modelling**.
- **Market development modelling** used to develop generation and transmission expansion plan:
 - Must be least cost, and can also be market driven.
 - Committed projects – must achieve 5 criteria (planning, construction, land, contracts and financial).
 - Anticipated project – must achieve 3 criteria (out of the 5).
 - Modelled as per the generation expansion plan.

Market benefits – NER 5.16.1 (4)

- **Included:**

- Dispatch costs.
- Capital, and fixed operating and maintenance costs of plant.
- Differences in timing of transmission investment.
- Other classes of market benefits were found to be immaterial to the preferred option.

- **Not included:**

- Wealth transfers.
- Any benefit which can not be measured as a market benefit:
 - External to the market (e.g. jobs).
 - Benefits associated with jurisdictional policies that do not impose a penalty on market participants.

Scenarios assessed

Scenarios (based on 2018 ISP)

Neutral

Fast change

Slow change

Neutral with
storage

Sensitivities

No un-committed
interconnector developments

No un-committed generator
developments

Early coal retirements

Additional sensitivities

$\pm 30\%$
Augmentation cost

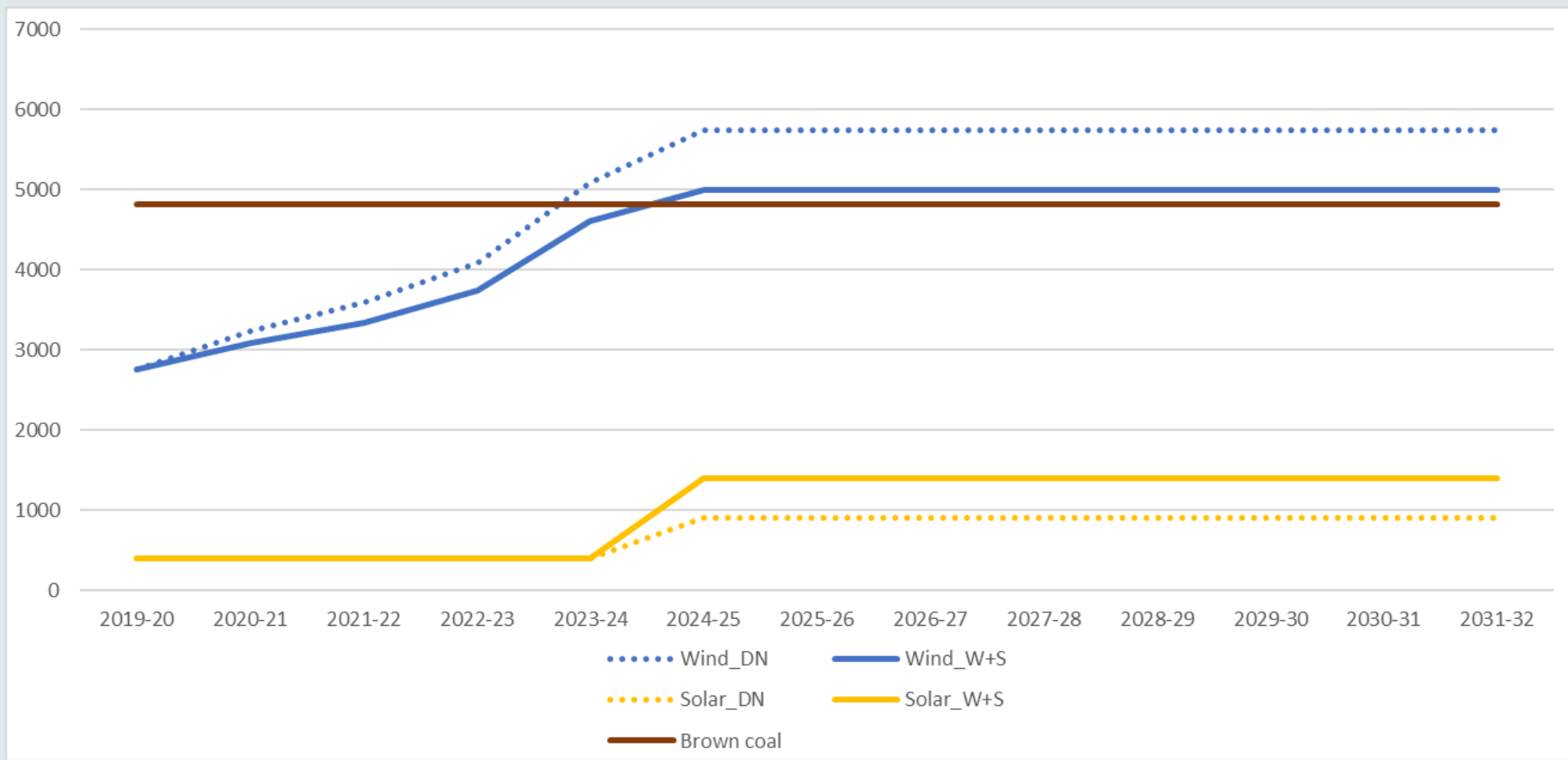
± 2.5 Discount rate

Scenario
weightings

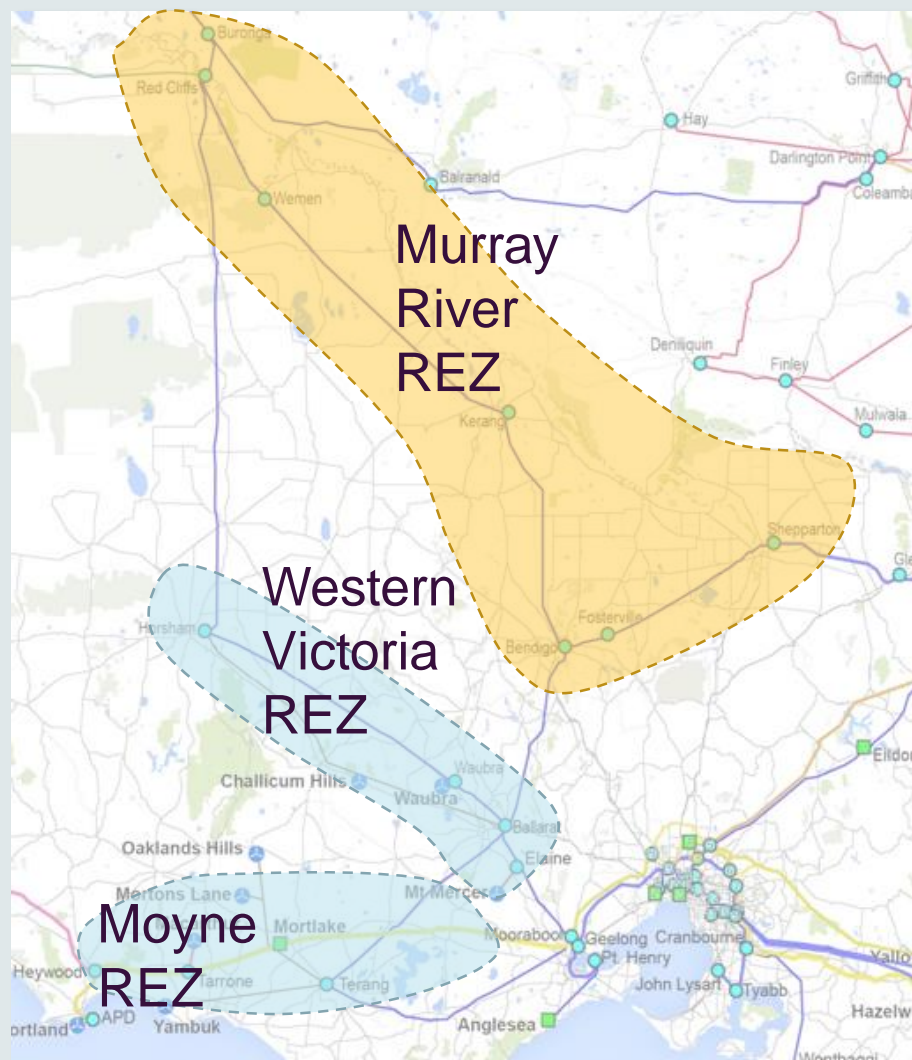
Transmission expansion considered

Interconnector	Incremental capacity increase (MW)	Year
Vic-NSW	170/-	2020
NSW-Qld	460/-190	2020
NSW-Qld	0/-378	2023
SA-NSW	750/-750	2025
Vic-NSW	1,930/-1,800	2035

MW capacity of Vic generation – Neutral scenario



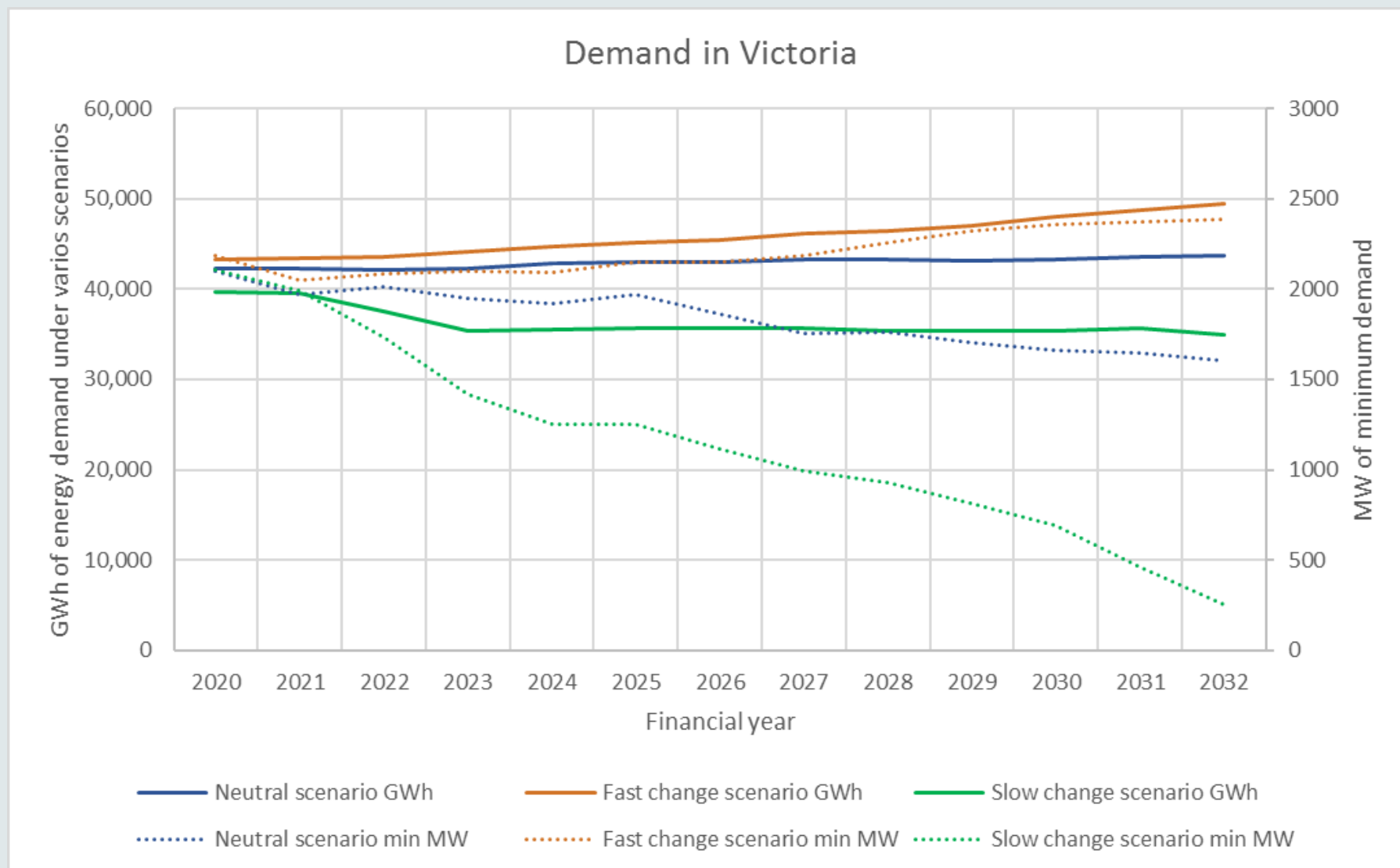
VRET and modelled generation



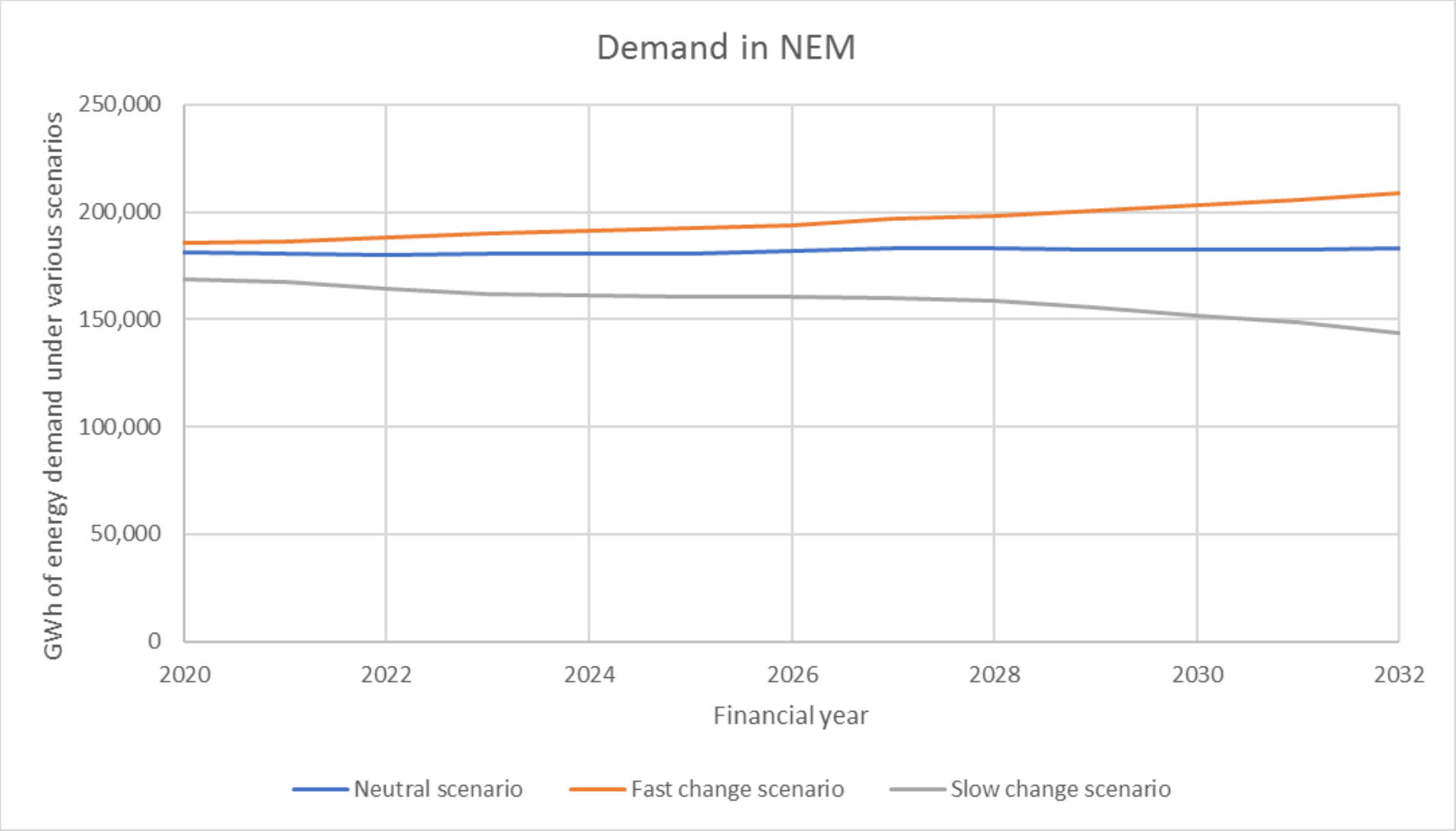
Implement preferred option with other ISP developments	
VRET target – 40% renewable generation by 2025	45%
Murray River	1,407 MW
Western Victoria	1,935 MW
Moyne	2,958 MW

* Including generation that is existing and committed. New generation may still be constrained due to non-thermal limitations and limitations outside of Western Victoria.

Demand in Victoria



Demand in National Electricity Market (NEM)



Cost estimates of credible options

Option Name	Average \$M	AusNet Services \$M	Vendor A	Vendor B	Vendor C	Operating costs (% of capital)
Option B2	406	432	393	364	436	0.60%
Option B3	340	359	330	308	361	0.60%
Option B4	303	311	300	291	311	0.60%
Option C1	287	330	284	245	289	0.70%
Option C1 component	156	184	154	128	157	
Option C2	203	215	197	183	217	0.90%
Option C2 component	296	332	293	260	297	
Option E1 (non-network option)	117					

Costs – National Electricity Rules (NER)

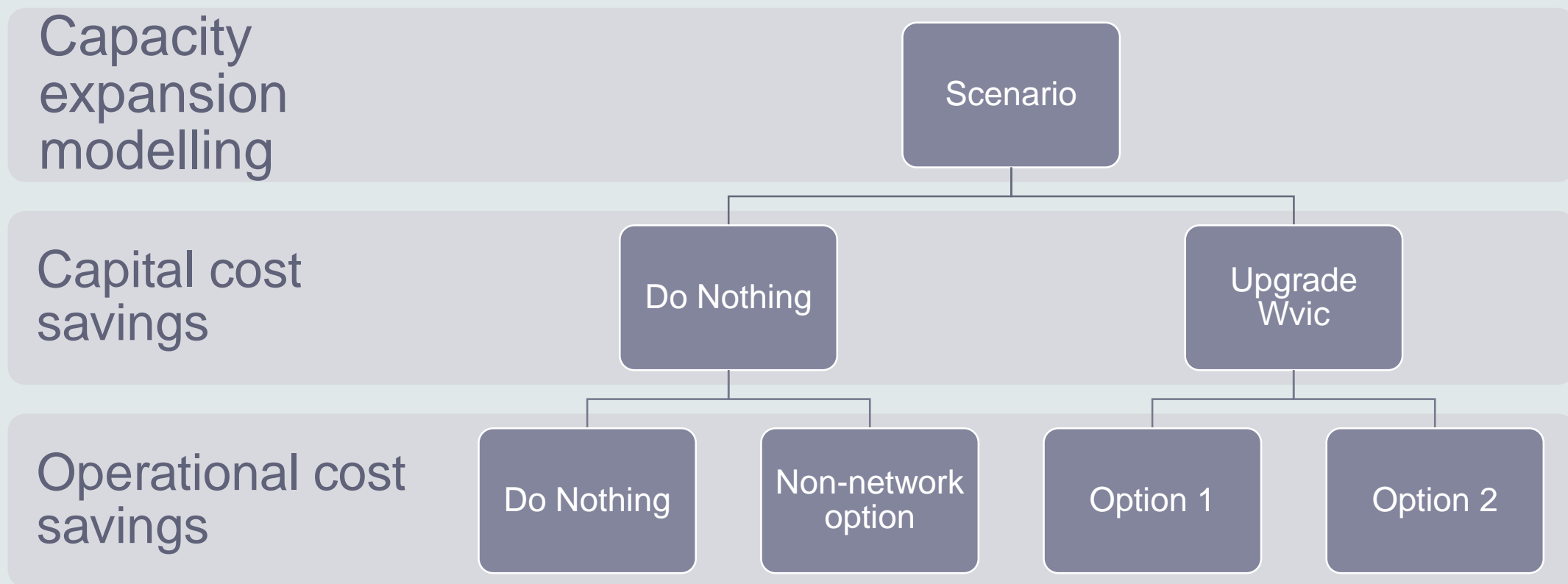
5.16.1 (8)

- **Included:**
 - Costs in constructing or providing the option.
 - Operating and maintenance costs.
 - Costs of complying with laws, regulations and administrative requirements.
- **Not included:**
 - Costs not regulated or legislated by any relevant law, regulator or administrative requirement.
- **Treatment of external contributions:**
 - If external contribution reduces project cost to below RIT-T threshold (currently \$6 million) then a RIT-T is not required.
 - If project cost remains above RIT-T threshold then only those cost contributions from **outside the market** can be used to reduce RIT-T costs.
 - Cost contributions from market participants are treated as a wealth transfer and RIT-T must justify entire project cost.

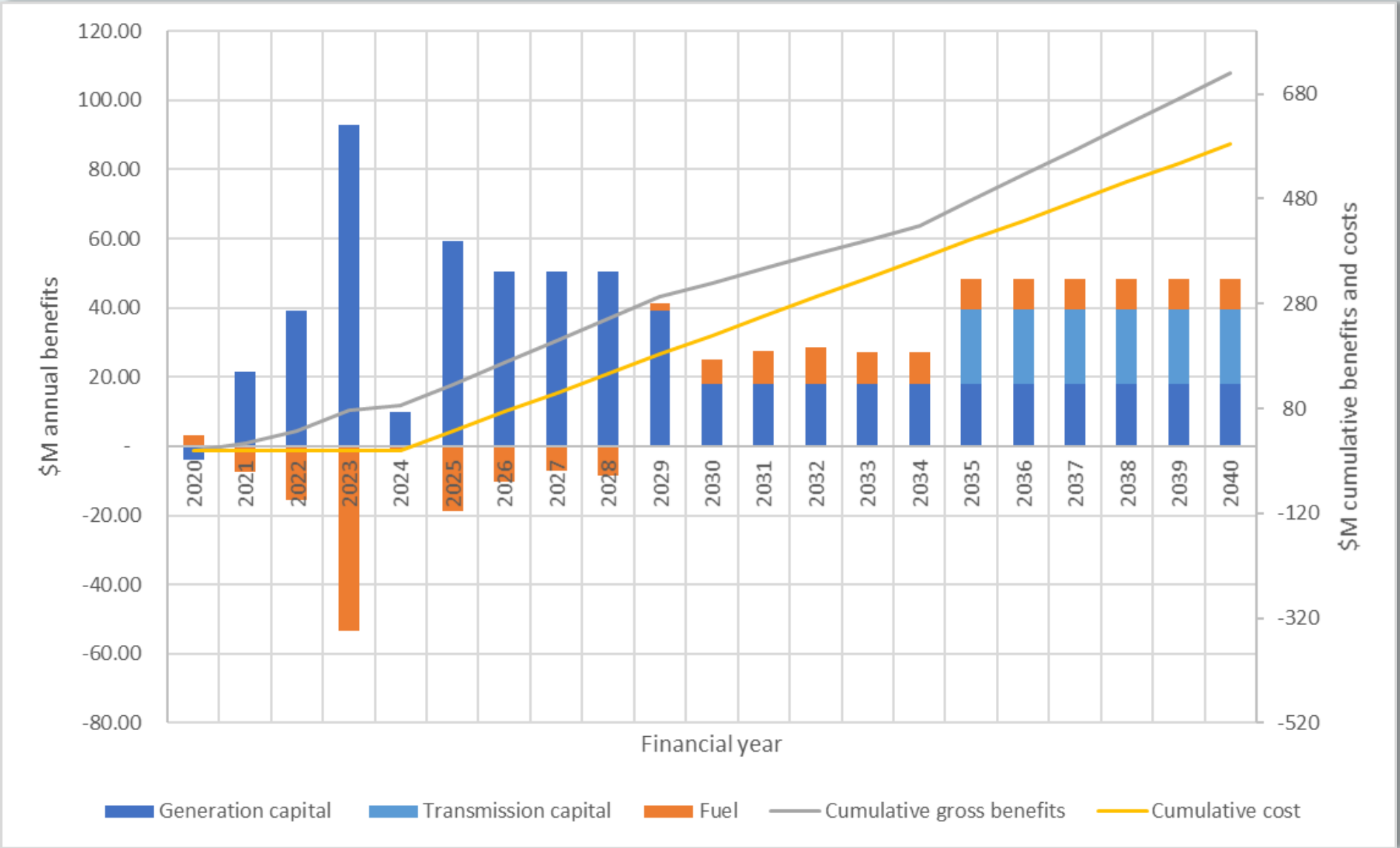
What drives market benefits?

Capital and fuel cost savings, interconnector constraints

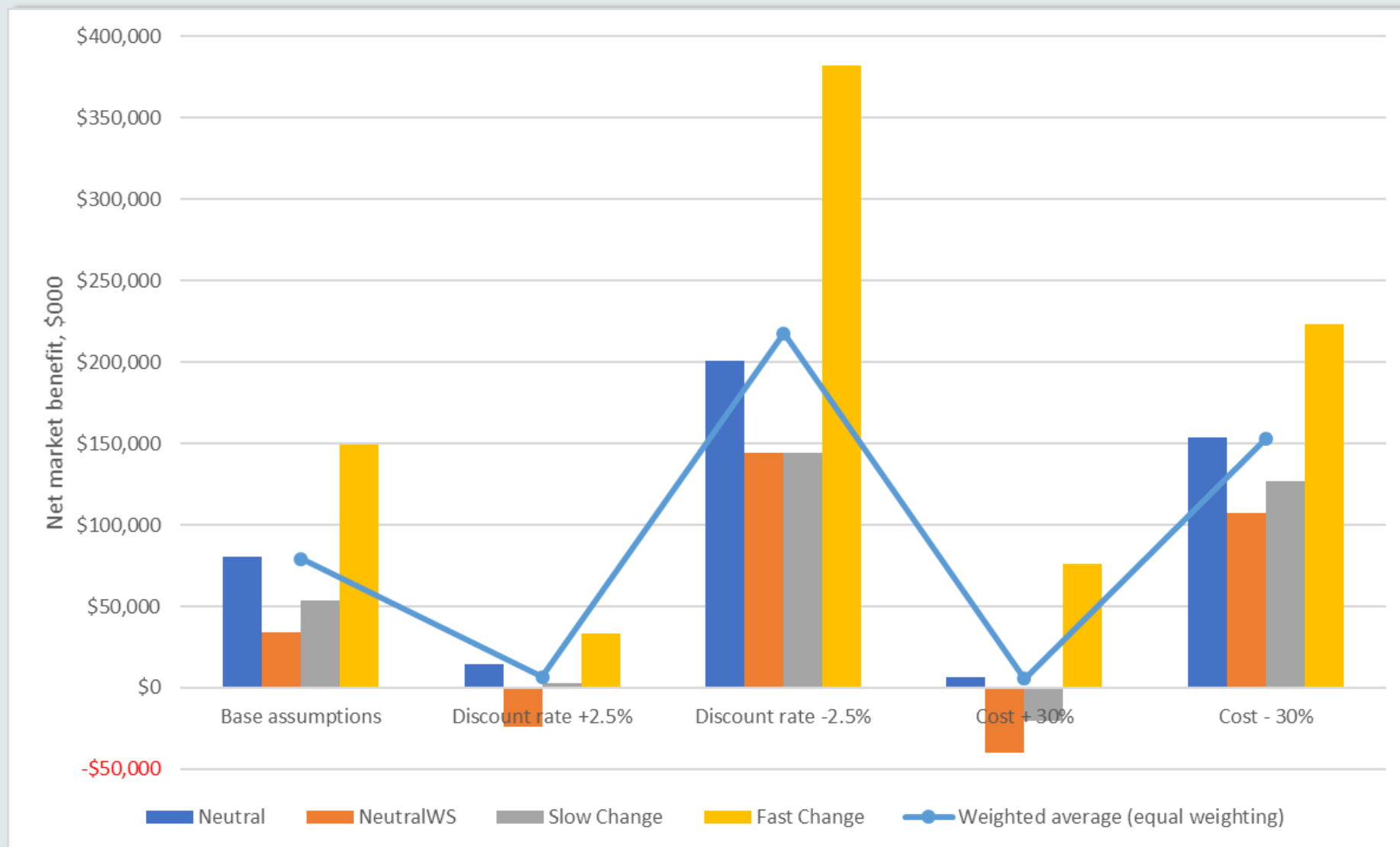
Market modelling methodology



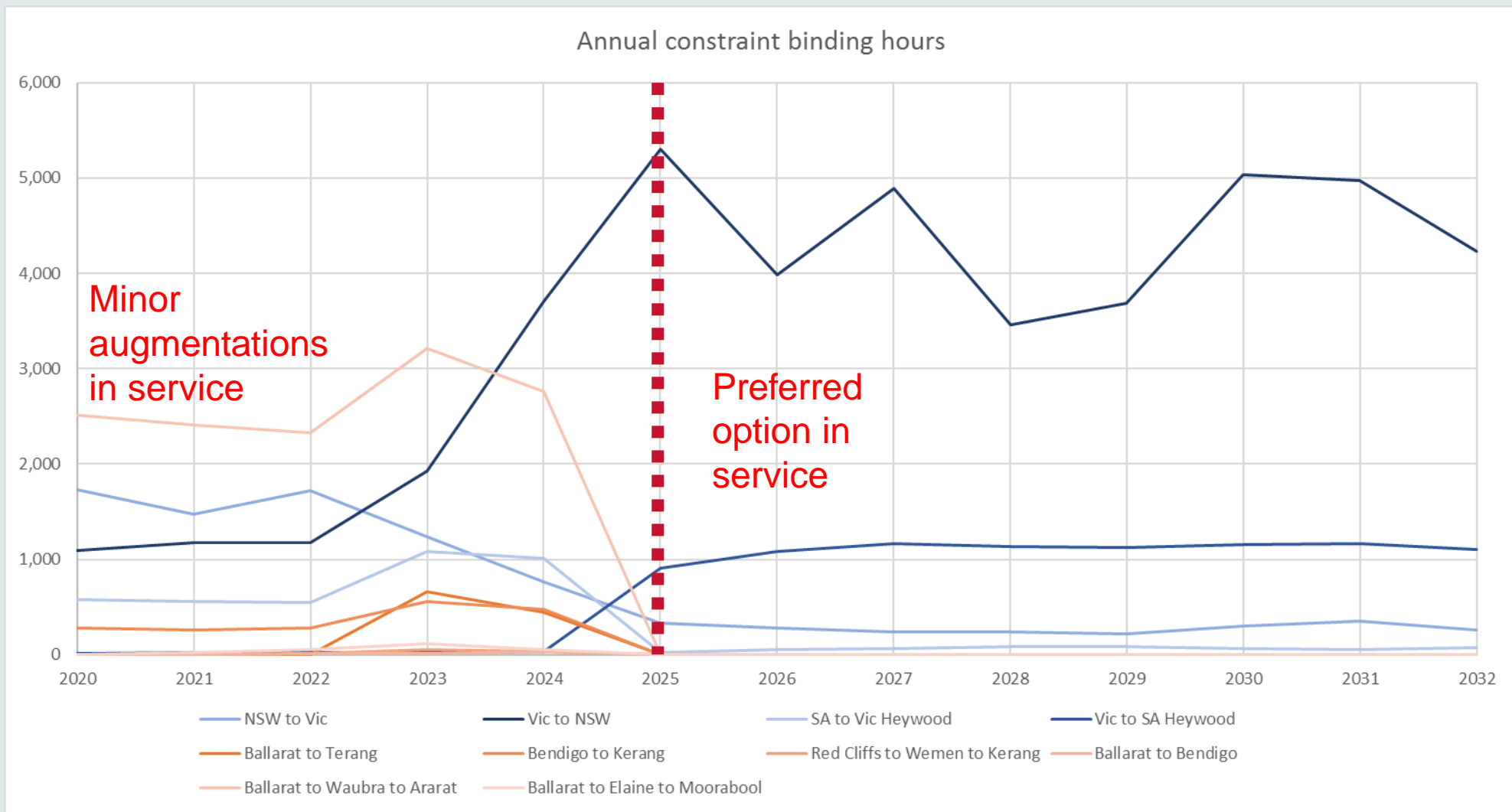
Market benefit – Neutral scenario



Market benefits – different scenarios and sensitivities



Constraint binding hours – Neutral scenario



Transmission augmentations in slide 14, and Red Cliffs – Buronga augmentation are already included.

Summary

- **Future transmission network development**

- More new generation and transmission augmentation in Western Victoria alone, may not return higher net market benefits.
- Additional benefits will be driven by generation retirement and interconnector expansion.

- **The preferred option**

- Addresses medium term transmission limitations.
- Facilitates future transmission expansion requirements (Snowylink South interconnector).
- Is consistent with AEMO's long-term transmission network development plan for the NEM outlined in the 2018 Integrated System Plan.

Planning approvals and land

Strategic approach and considerations

Approach to planning approvals and land

- To be undertaken by successful Tenderer.
- **Requires long lead-times** for design, community engagement and regulatory approvals.
- **Involves a range of stakeholders** across Local, State and Commonwealth governments, regulatory bodies and authorities, as well as landowners and occupiers.
- Approvals that recognise smaller components reflecting specific impacts and complexities and responsive to design processes.
- **Requires careful strategic consideration and thorough due diligence** about the known social, cultural, economic and environmental landscapes.
- Effective delivery of the project will require certainty for all stakeholders through the approval and land processes.

Approach to planning approvals and land

- **RIT-T considerations:**

- The cost of easements are estimated on the basis of estimated land values.
- Timing of options incorporate estimates for planning/environmental approvals and easement acquisition (subject to refinement once route/designs are known).

- **Project delivery considerations:**

- Route/corridor assessments.
- Planning due-diligence studies – social, cultural, economic and environmental landscapes.
- Planning approvals and land/easement acquisition strategies.
- Early and ongoing engagement with key stakeholders including Registered Aboriginal Parties, Traditional Owner Groups, Government, regulatory bodies, landowners/occupiers and community.

Next steps

Next steps

- Engagement with key stakeholders: In progress.
- Call for Expressions of Interest: Closing 18 Feb 2019.
- PADR consultation period: Until 28 Feb 2019.
- PACR publication: Mid 2019.

- All information is available at: <http://www.aemo.com.au/WestVicTNP>
- PADR submissions are due by 28 February 2019.

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