NEM WHOLESALE MARKET SETTINGS REVIEW – INITIAL CONSULTATION SUBMISSION

AUSTRALIAN SUGAR MILLING COUNCIL
17 FEBRUARY 2025

The Australian Sugar Milling Council is the peak industry body for the Australian sugar manufacturing sector - contributing $4.4 billion annually to the Australian economy and supporting more than 23,000 jobs. The ASMC works with its members, industry stakeholders, other industry representatives and government to develop and promote policies that enhance the sustainability, viability and economic contribution of the sugar industry in Australia.

The ASMC appreciates the opportunity to provide input into the NEM Wholesale Market Settings Review. This submission utilises preliminary findings from a study undertaken to expand the cogeneration capacity of sugar mills, funded by the ASMC and Queensland Government. The final report will be available early April 2025. Preliminary findings have been summarised in the ***attached*** slides.

The sugar industry's contribution to renewable energy

The Australian sugar industry is already an active participant in renewable electricity generation through cogeneration, utilising bagasse (a byproduct of sugar milling) as a biomass fuel:

- Over 350 MW cogeneration capacity at mills across Queensland.
- Cogenerated electricity supporting both on-site milling operations and export to the grid (with more than 50% exported).
- Cogeneration acts in a similar way to baseload power, providing a reliable source of electricity, without the intermittency of other sources of renewable electricity.
- Cogeneration supports decarbonisation, potentially reducing Queensland's emissions by c.1.5% by 2035.

The benefits of expanding sugar's cogeneration capacity

The ASMC undertook a project with the Queensland Government to determine the viability of expanding cogeneration capacity from 350MW to close to approximately 1 GW of capacity. Augmented cogeneration capacity could provide up to 2.1 TWh per year of additional energy, enhancing grid stability and reducing wholesale electricity prices.

Modelling (based on AEMO's ISP modelling workflow) suggests that expanded cogeneration could lower wholesale electricity prices by up to 10-15% between 2028-2035. This

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represents a saving to Queensland consumers of c.$9 billion from 2029–2050, with most of those savings occurring in the late 2020s and early 2030s.

This reduction in wholesale generation prices will largely be achieved by reducing the number and severity extreme supply shortfalls, where wholesale generation prices spike exponentially (i.e. reducing the role and price setting capability of gas peaking plants).

Investment and regulatory challenges for sugar cogeneration expansion

Despite a 10-15% reduction in Queensland wholesale generation prices (and downward pressure on prices NEM wide), there are significant capital costs involved in cogeneration capacity expansions that is not adequately funded by market revenues and incentives.

A primary concern is that mills are not scheduled generators, limiting revenues available to them, despite the overall benefits they create through lowering wholesale generation prices, reducing energy emissions, and ensuring the stability and reliability of the grid.

Mills may not want to be scheduled generations, noting their core operation is sugar manufacturing and it is unlikely that mills would jeopardise sugar production operations to adhere to all AEMO dispatch obligations. While mills can certainly, on the most, comply with dispatch obligations, there will be times where compliance would be commercially impractical, where it significantly impacts sugar production operations.

There is further revenue uncertainty as Large-Scale Generation (LGCs) certificates are being phased out by 2030, and it is uncertain what (if any) mechanism will replace LGCs. Currently, LGCs provide a substantial amount of revenue to sugar mills, making the provision of renewable cogenerated electricity to the market viable.

Similarly, sugar cogeneration does not have access to a Capacity Investment Scheme (CIS), nor would it be likely be eligible to participate in such schemes if they existed in Queensland, as it would not meet some requirements, despite being able to provide the sought benefits of the CIS.

Market incentives and rules must ensure that the quantifiable benefits of cogeneration capacity expansion is recognised to facilitate investments in capacity expansion. This includes the need to replace LGCs with an equivalent scheme to recognise low emissions synchronous electricity generation, and potentially a contract-for-difference (similar to the CIS) arrangement for cogeneration to provide some revenue certainty for mill investment in cogeneration.

Conclusion

The expansion of cogeneration aligns with government and energy market objectives, including:

- Enhancing grid stability and reliability during the transition to net zero – cogeneration does not suffer from intermittency.
- Ensuring affordability by lowering generation costs for consumers – 10-15% in Queensland.
- Reducing emissions and contributing to Australia's net-zero targets – 1.5% reduction of Queensland's total emissions in 2035.

The ASMC urges the Panel to ensure market design and rules look to facilitating outcomes sought from the NEM, namely ensuring affordable, reliable and clean electricity for all Australians.

Sugar mills can provide significant quantifiable and tangible benefits to the NEM – energy market rules shouldn't act as an arbitrary barrier to participation for atypical stakeholders. A prescriptive one-size-fits-all approach with narrow conceptions of what market stakeholders may look like, will doom Australia's energy transition to being an expensive one.

To suggest the onus should be on the atypical stakeholder to jump through often needless, narrowly defined market rules is a derogation of duty. Without financial and regulatory incentives to overcome barriers to investment and energy market participation, the potential benefits from cogeneration will be left unrealised.

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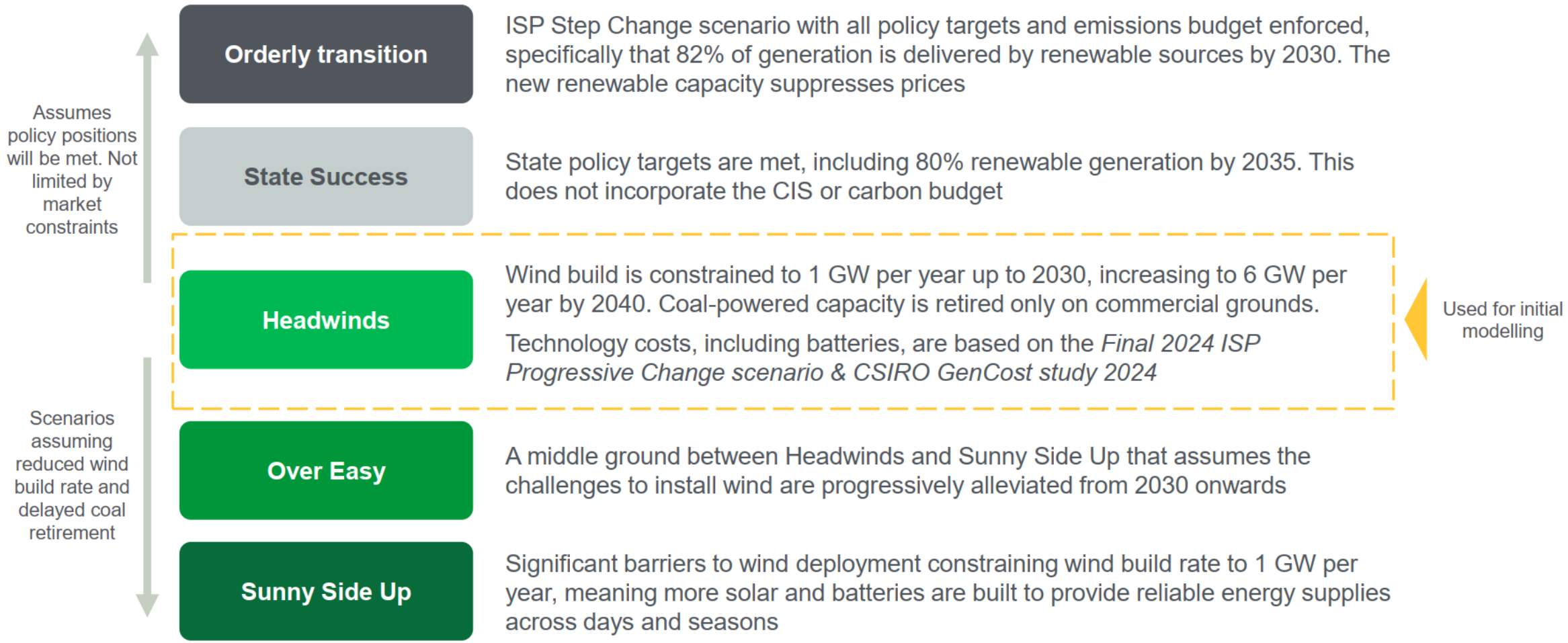
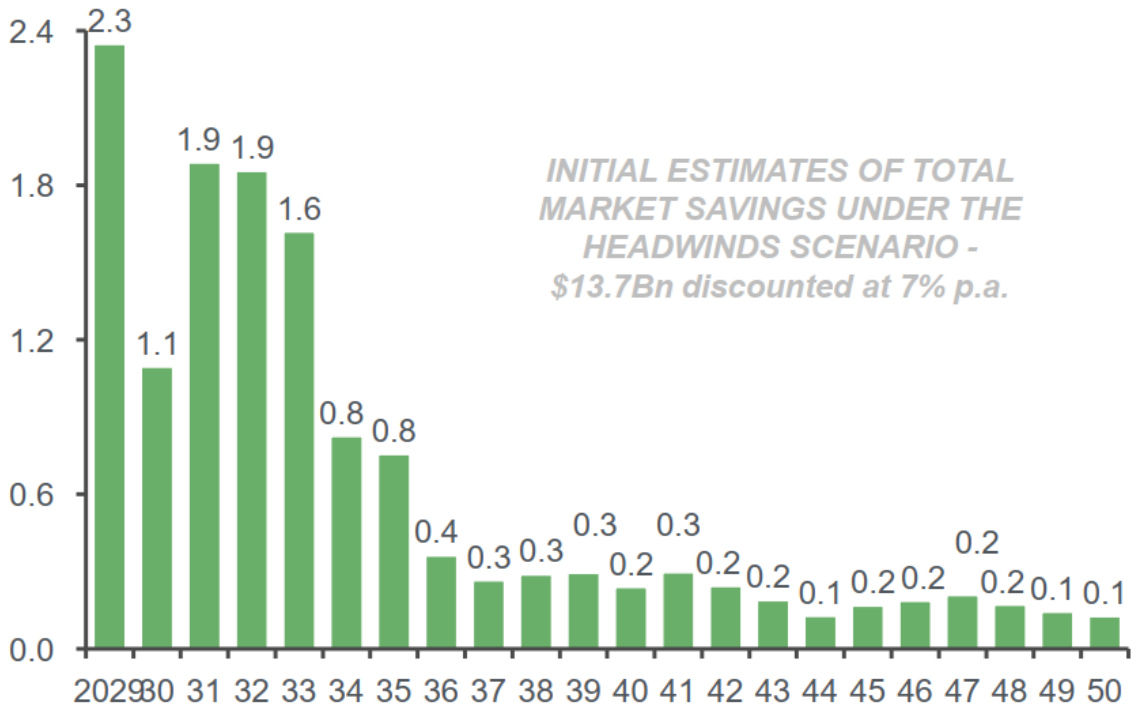
Five scenarios representing possible futures of QLD's energy market are used for modelling; the middle-of-the-road 'Headwinds' scenario is the base case discussed today



Modelling demonstrates that mill augmentation delivers a significant impact on wholesale prices, and a benefit of c. $13.7B to Queensland electricity consumers

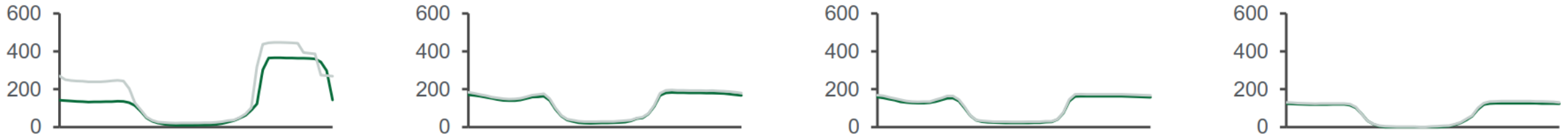
Regional wholesale pricing with augmented cogeneration – Headwinds (2028F-2050F)
$AUD/MWh (volume-weighted average)

Annual savings from augmentation for Queensland electricity users (2028F-2050F)
Billions of AUD (discounted at 7% p.a.)

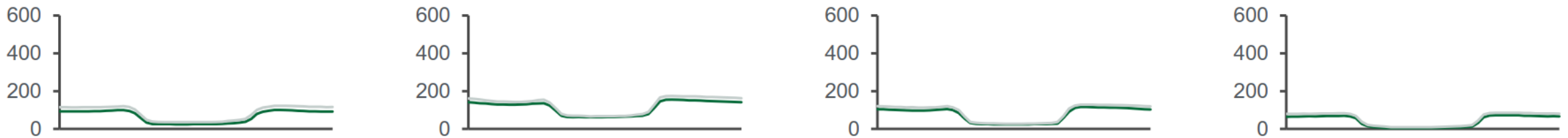


The most significant reductions in the wholesale energy price occur in summer (Q1), particularly in the late 2020's and early 2030's

Queensland regional wholesale electricity price by time of day (2030)
$AUD/MWh



Queensland regional wholesale electricity price by time of day (2040)
$AUD/MWh



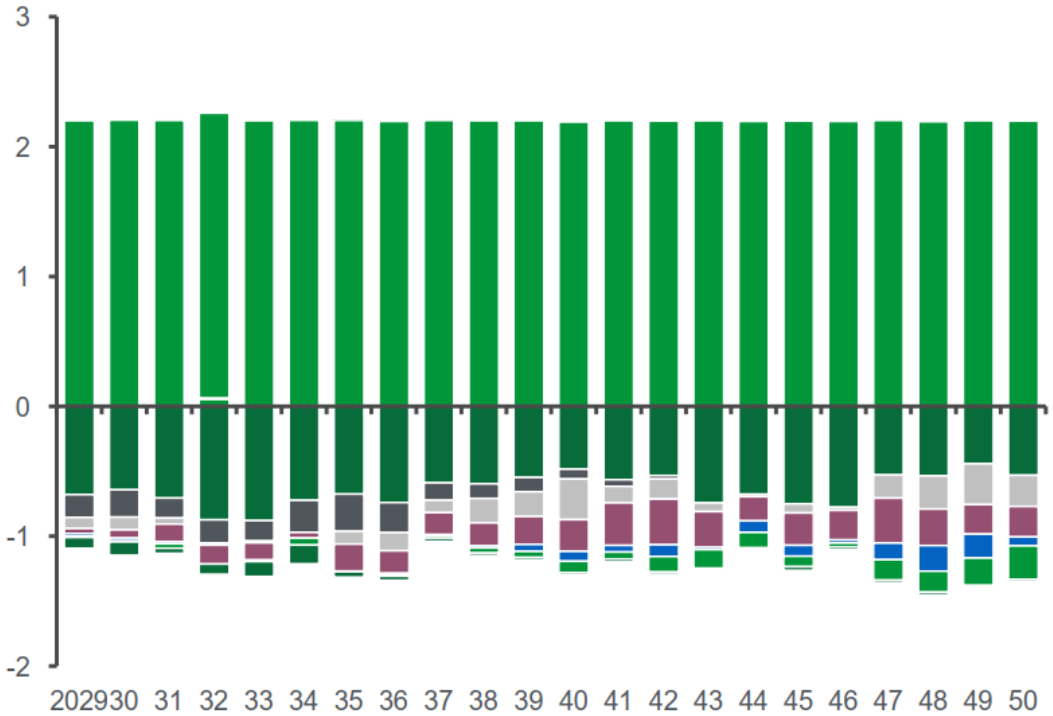
January - March | **April - June** | **July - September** | **October - December**

High power prices in the January to March quarter mean generation during this period has an outsize impact of both commercial returns and reducing market prices. This effect reduces over time as the summer peak is influenced by increased battery capacity

The cogeneration portfolio's augmented capacity reduces the requirement for alternative dispatchable generation (primarily gas) across the NEM

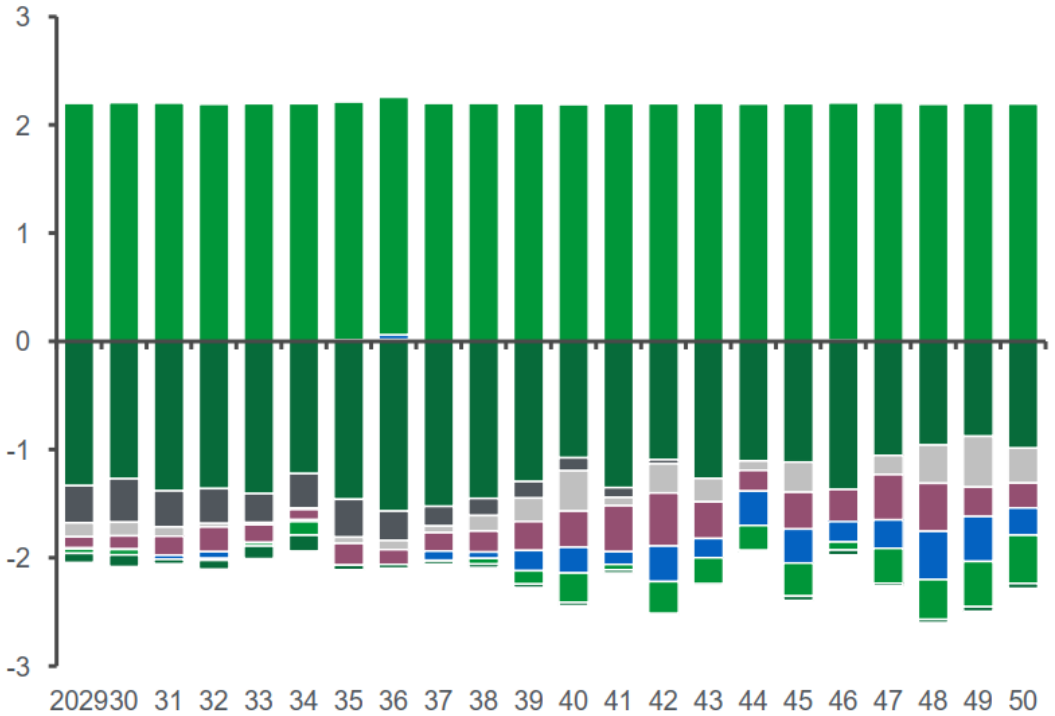
Change in annual QLD generation by source, vs pre-augmentation (2029F-2050F)

TWh



Change in annual NEM wide generation by source, vs pre-augmentation (2029F-2050F)

TWh

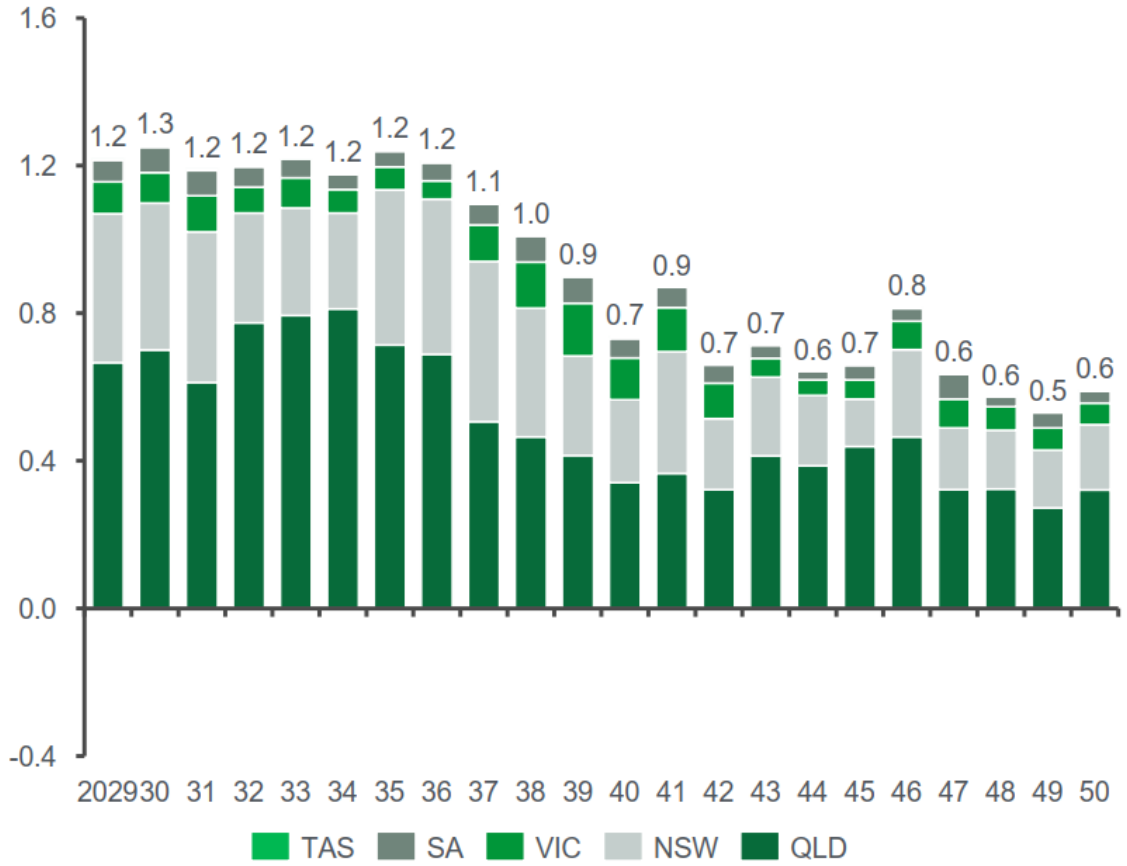


Biomass Gas Coal Hydro Battery Wind Solar Other

Adding the cogeneration augmentations in the Headwinds scenario reduces Queensland's total emissions by c.1.2 million tonnes in 2035, representing 1.5% of the state's emissions

Reduction in energy emissions resulting from portfolio augmentation (2029F-2050F)

Millions of t-emissions (millions t-CO_2e)*



Note: * Assumes achievement of 2035 emissions target, resulting in c.50MT-co2e p.a. emissions

- The reduction in emissions resulting from portfolio augmentation makes a **significant contribution** to Queensland's long term **emissions reduction targets**:
  - Queensland's 2035 emissions reduction target is c.75% reduction on 2005 levels. This implies c.48 million tonnes of emissions in 2035
  - In 2035, emissions avoided in Queensland are c.0.7 million tonnes, which is a **c.1.5% reduction in emissions in 2035**
- Augmentation reduces the electricity sector emissions of other connected states as well as Queensland – of the c.1.2 million tonnes of emissions avoided in 2035 **c.0.5 million tonnes are in other states**

Modelling suggests a significant benefit to Queensland electricity consumers from augmentation of the cogen portfolio, and highlights the value of delivering augmentation with urgency

Electricity consumer savings

- Under the Headwinds scenario, adding the cogeneration portfolio would save Queensland energy users $13.7B between 2029 and 2050 through lowering wholesale energy prices
  - This total excludes in Queensland electricity market savings that could be achieved without augmentation through optimising electricity production

Emission reduction

- Augmenting the cogeneration portfolio reduces carbon emissions by c.700K tCO2 a year in Queensland by displacing gas and coal-fired power generation.
  - This is 1.5% of Queensland's total expected emissions in 2035
  - this is in addition to a further c.500K tCO2 displaced outside Qld

Short-term benefit

- The greatest benefits from augmenting the cogeneration portfolio are achieved in the late 2020s and early 2030s, during which cogeneration has the largest impact on electricity prices.
  - The price impact is in addition to other market benefits such as supporting system reliability during high-demand periods, reducing energy transition risks from project delays, and reducing carbon emissions. This suggests considerable value from moving quickly to add cogeneration capacity