

Ms Sonja Terpstra
Chair
Environment and Planning Committee
Victorian Legislative Council

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Dear Ms Terpstra

Inquiry into Renewable Energy in Victoria

The Australian Energy Council (the “AEC”) welcomes the opportunity to make a submission in response to the Terms of Reference for the Legislative Council Inquiry into Renewable Energy in Victoria.

The AEC is the industry body representing 20 electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. These businesses collectively generate most of the electricity in Australia, sell gas and electricity to over ten million homes and businesses, and are major investors in renewable energy generation.

Summary

The AEC embraces the need to decarbonise the Australian economy and by mid-2020 began formally supporting Net Zero by 2050¹. Our membership operates the vast majority of Australia’s fossil-fuelled electricity assets but fully accepts the need to reduce electricity emissions over time. The electricity system is already making by far the most progress in decarbonisation of any sector, and the AEC’s members will continue to participate in providing the solutions to the many challenges that such a transition implies².

The AEC also considers the electricity system will be a key enabler to the economy’s overall decarbonisation through the displacement of liquid and gaseous fossil fuels. This displacement has economic and environmental benefits, even whilst the electricity supply is decarbonising³.

The AEC is a strong supporter of national, technology neutral and market-based ways to decarbonise the economy, such as traded carbon markets which it has always supported. The AEC cautions sub-national jurisdictions against introducing specific arrangements directed at particular technologies limited to one state. This a significantly more expensive way and less effective way to decarbonise.

Instead, the AEC recommends Victoria working through national processes to achieve national carbon reductions in the most cost-effective manner. In particular, the Coalition of Australian Governments (“CoAG”) provides an opportunity for Victoria to either impress this upon the commonwealth, or alternatively to develop national mechanisms through agreement between the states and territories.

Discussion

Role of Electricity in Decarbonisation

The Electricity Industry is undergoing profound and extremely rapid change as renewable energy technology costs have dramatically fallen whilst continuing to be supported by technology-directed

¹ <https://www.energycouncil.com.au/analysis/towards-net-zero-australian-energy-council-backs-long-term-carbon-policy/>

² <https://www.energycouncil.com.au/analysis/electricity-does-heavy-lifting-on-emissions-reductions/>

³ <https://www.energycouncil.com.au/news/electricity-is-doing-its-part-the-rest-of-the-economy-needs-a-plan-to-cut-emissions/>

subsidies. The sector’s resulting decarbonisation is effectively carrying the entire burden of Australia’s national commitments. Electricity’s achievements are welcomed, but the rate of the disruption is creating many challenges for the power system, such as:

- Ensuring sufficient dispatchable capacity remains available despite the intermittency of renewable energy to provide the continuous supply of electricity demanded by customers.
- Ensuring the grid has sufficient electrical services to continue to operate securely as their traditional sources, fossil fuel generators, decline⁴.
- Transforming the transmission grid and access to it to the new locations of generation.
- Managing natural community resistance to the construction of new transmission lines and large renewable generators.
- Managing the challenges that arise in networks from a high incidence of rooftop Photovoltaics (“PV”).

Australia’s proportional rate of adoption of renewable electricity in the last decade is at the world’s leading edge, particularly for rooftop PV, so it is hardly surprising that the disruption is creating many challenges. Australia’s rate of decarbonisation in all other sectors of the economy is however very disappointing, as seen from the latest Australian emissions projections figures.

Australian emissions by sector

Sector Emissions (Mt CO ₂ -e)	2005 (National GHG Inventory)	2019 (National GHG Inventory)	2030 (Projection)
Electricity	197	179	88
Stationary Energy	82	99	99
Transport	82	100	97
Fugitives	41	55	56
Agriculture	86	75	76
Industrial Processes and Product Use	31	32	28
Waste	16	14	11
Land Use, Land Use Change and Forestry	89	-25	-16
Total	624	529	439

Source: Australian Emissions Projections 2021

Economic options to decarbonise some major emitting sectors exist right now, but are not being advanced:

- In stationary energy, where highly efficient heat pumps can economically and environmentally replace natural gas for space and water heating⁵.
- In transport, where the thermodynamic advantages of light electric vehicles provide emissions benefits, even while the electricity supply remains partially fossil fuelled⁶.

These numbers show that electricity is already decarbonising quickly with existing cost relativities and subsidies. Thus, the appropriate focus by governments that wish to further accelerate Australia’s decarbonisation is not electricity but these other sectors.

⁴ For more information, see <https://aemo.com.au/en/energy-systems/major-publications/renewable-integration-study-ris>

⁵ See <https://www.solarquotes.com.au/blog/air-conditioners-vs-gas-heating/>

⁶ See <https://www.energycouncil.com.au/analysis/evs-are-they-really-more-efficient/>

Alternatively, if focus falls on electricity to carry even more of Australia's heavy lifting, especially in a non-nationally co-ordinated manner, then the resulting disruption may be felt negatively by the community through poor supply reliability, high prices and/or taxpayer exposure. Any of these have the potential to undermine the community support essential for decarbonising the economy.

National Context for Carbon Reductions

The AEC firmly believes emissions abatement is a policy that should be engaged at the national rather than sub-national level. Actions taken at the sub-national level are inherently less efficient, ultimately costing the Victorian economy more and can lead to investor disruption, increases in customer prices and falling energy supply reliability. They can even be environmentally ineffective due to "carbon leakage" effects.

The AEC also recognises that Victoria has greater environmental ambition than those presently adopted at the Commonwealth level. The AEC recommends that instead of "going it alone", the Victorian government should be prosecuting its view at the national level. This should be directly to the Commonwealth, and to all jurisdictions via the National Cabinet.

By working at that level, it may be possible to achieve the decarbonisation in a way that is lower cost, less risky to Victorians and ultimately more environmentally effective.

Emissions Reduction Opportunities

With respect to opportunities in the energy sector, it must be recognised that Victorian customers are supplied as part of a wider Eastern Australian gas and electricity market. For this reason, any actions taken in Victoria cannot be considered in isolation of the national context.

Firstly, there is the issue of carbon leakage. Large falls occurred in Victorian electricity generation emissions following closures of Morwell, Anglesea and Hazelwood brown coal plants. However, initially at least, this lost generation was mostly made up by fossil-fuelled electricity in other states, particularly New South Wales' black coal. It is impossible for Victoria to untangle the true environmental impact of its own actions. This history emphasises the disadvantages of a sub-national approach.

Secondly, there is the inefficiency of geographical non-neutrality. For example, each of Queensland, New South Wales and South Australia have superior solar resources than any part of Victoria, whilst Tasmania and South Australia have superior wind. That is not to suggest that renewable generation should never be built in Victoria – transportation is also costly - but that a geographically-neutral competitive path is likely to discover cheaper solutions.

Thirdly, a national approach has the advantage of exploiting wind diversity, and in accessing broader hydro and pumped storage resources as a back-up to variable renewable energy resources. Victorian hydro resources, whilst useful, are not of sufficient scale to provide the back up alone. However fortunately Victoria sits between large hydro resources in southern New South Wales and Tasmania, each of which can be accessed by the deeper national transmission networks being contemplated by the Australian Energy Market Operator ("**AEMO**") discussed below.

Fourthly, there is the problem of market disruption and instability. Mechanisms to directly subsidise Victorian renewable energy has distortionary effects on the electricity market and potentially threatens the reliability of supply. The Victorian Renewable Energy Auction Scheme's Contract for Differences model removes important short and long-term market signals from these generators. For example, it removes from these generators important market incentives to supply generation at the time of high prices, which reflect the time of greatest market need.

In turn, subsidised variable renewable generators, pushed into the Victorian market at large scale, can have major consequential impacts on the operability and viability of existing plants leading to

their early, and potentially disorderly, closure. Such closures inevitably result in a major bounce in wholesale electricity prices and place the overall reliability and security of the grid at risk. The AEC recognises that Victorian generators are subject to closure notice periods intended to mitigate a disorderly outcome. It should, however, be noted that these notice periods cannot be reasonably relied on in circumstances where a plant has become inoperable due to a major decline in plant or economic conditions that were unforeseen.

To the extent that government remains minded to impose sub-national arrangements, we encourage consideration of ways that mirror national schemes. For example, it should investigate arrangements that include certificates that can be traded across multiple sectors, finding the least-cost Victorian solutions. It may be possible to use offsets from outside Victoria, such as the Australian Carbon Credit Units, to reduce the cost to Victoria of its environmental ambitions.

Renewable Underwriting Arrangements

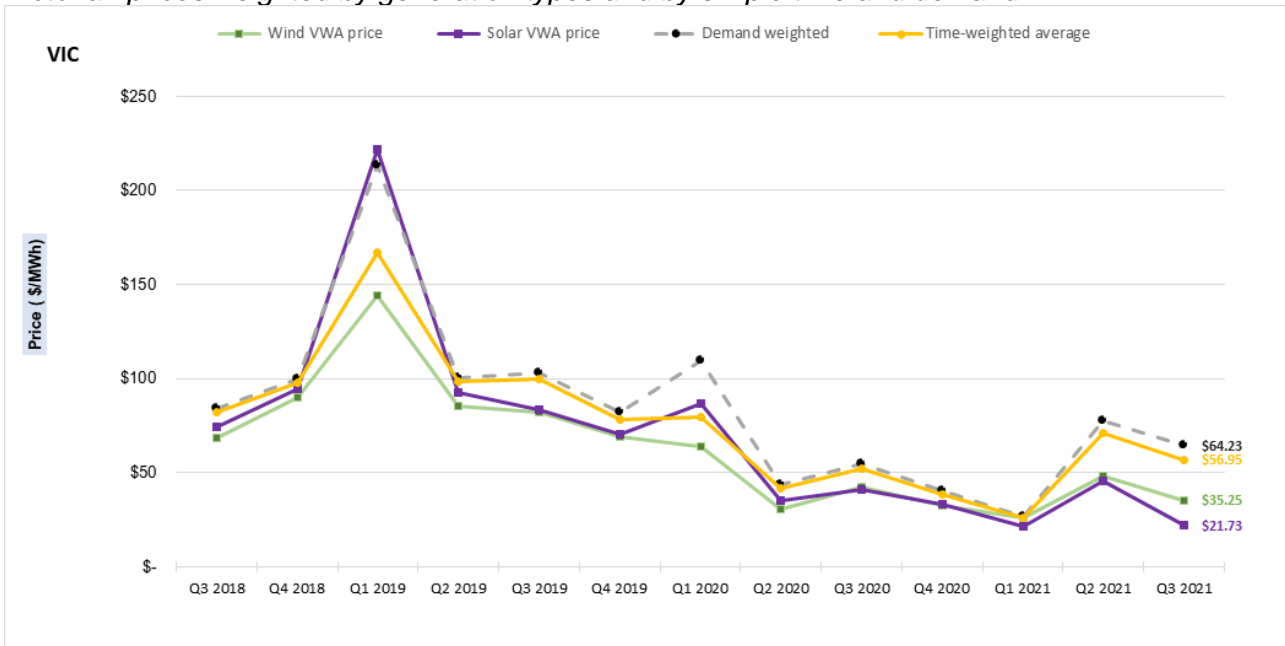
The National Electricity Market (“**NEM**”) was intentionally created to move financial risks upstream from customers and taxpayers to investors. The design countered previous circumstances where parties, generally captive consumers, uninvolved in investment decisions, carried the risks of bad investments. However, schemes such as the Victorian Renewable Energy Auctions run counter to this intention and instead place the risks with taxpayers.

Unsurprisingly, when a generator receives government-guaranteed contract for difference which effectively fixes its income for decades, it can access cheaper finance than if it took market exposure. But this misses the point – the risks still exist but are rather worn by those unable to mitigate them; in Victoria’s case, taxpayers.

In contrast, the natural pricing incentives of the NEM self-adjust and encourage investment in forms of supply most useful to customers. It encourages resources that are available when other sources are inoperative or exhausted. This might, for example, involve storage, peaking hydro or gas plants, or responsive demand. At the same time, it discourages excessive investment in the forms of supply that, due to their correlation, are least useful.

For this reason, the energy price realised by large-scale solar and wind generation is considerably discounted, as shown in the graph below. This is an expected and intentional market design outcome.

Victorian prices weighted by generation types and by simple time and demand



Source: AEC analysis of NEM prices demand and generation data.

By transferring price risk to the government, these market signals are removed upon the investor. At the same time, exposure to the declining realised prices caused by the growing over-supply of correlated generation is passed to the Victorian taxpayer.

Transmission Development

The electricity system's transition is also having profound impacts on the nature of the transmission grid which must be carefully planned to both accommodate the transition as well as not burdening customers with inefficient investments.

The eastern Australian transmission grid is very much interlinked across six states and territories and all parts interact with each other. This is particularly true for the Victorian grid: the most interconnected of all states.

Fortunately, AEMO and the Australian Energy Regulator ("AER") are national bodies that can plan and regulate the transmission grids effectively across the six jurisdictions. AEMO's Integrated System Plan ("ISP") is specifically tasked with efficiently and securely expand the national grid to manage the transition, which includes identifying the best Renewable Energy Zones ("REZ") nationally.

Victoria has however recently deviated from the national framework in two ways:

- The *National Electricity (Victoria) Amendment Bill 2020* enables transmission to be constructed under direction from the Victorian minister outside these national frameworks; and
- The *Victorian Renewable Energy Zones Development Plan* identifies Victorian REZs outside the national process and anticipates creation of a new authority *VicGrid* to develop them.

These developments confuse national planning processes and are likely to lead to investments that are inefficient from a national perspective.

Rooftop Solar

Rooftop PV has been more popular in Australia than any other country, and Victoria is no exception with over 500 MW a year presently being invested⁷. Australian customers' preparedness to invest in their roofs is certainly one of the major successes of decarbonisation.

Unsurprisingly this rapid rate presents many technical and economic challenges across the power system. This can be observed in Victoria repeatedly achieving ever lower record minimum daytime demands through 2021⁸. An outcome of this is negative energy market prices in Victoria occurring effectively whenever the sun shines strongly over Melbourne⁹.

It is important to understand how negative prices occur: when all fossil fuelled generators are switched off or at their minimum stable outputs (in order to be ready to increase output at sunset) and large-scale renewables are setting market price at their effective fuel cost (loss of renewable subsidies). This means that any further increase in the rooftop solar generation cannot reduce fossil fuels, but instead will simply displace another renewable energy source.

Whilst the Australian success of rooftop solar should be celebrated, it should be recognised that this technology is now mature and no longer providing the environmental benefits it once did. Thus, the case for ongoing subsidies is low. Some subsidies arise from the commonwealth, however the Victorian government's Solar Homes program should be diverted away from additional panels and refocussed on storage and energy management, both of which have environmental benefits.

The Victorian regulated minimum solar feed-in tariff is also subject to an assumed carbon intensity factor of displacing 1.27kg of CO_{2-e} per kWh which grossly overstates its environmental impact. The market's average emissions intensity is about half this¹⁰, and as explained above, PV's *marginal* emissions intensity is now close to zero.

Approach to the Review

The Terms of Reference includes a number of ambitious goals. Fundamentally, the objective should be to reduce and ultimately bring to zero net carbon emissions across the economy at the lowest cost. Whilst this will include a much greater penetration of renewable electricity generation, 100 percent renewable generation is neither a necessary nor sensible requirement to achieve this goal. As the Grattan Institute has reported¹¹, a more sensible goal is a net zero emissions power sector, which will include some fossil-fuel as a back-up supply to renewables, whose emissions can be readily offset with carbon sequestration.

This is particularly the case with respect to items (a), (b), (e) and (g) which refer to general energy supply (i.e. beyond the electricity grid) and appear to result from rushed drafting.

The AEC recommends that the committee approaches the review with respect to the intent of the Terms of Reference, rather than its specific drafting which is clearly problematic.

Conclusion

The AEC cautions Victoria from "go it alone" and "100 per cent renewable" ambitions for the electricity sector. These are sub-optimal approaches in achieving our ultimate goal: the lowering of carbon emissions across the economy. If pursued they will result in higher costs borne by either customers or Victorian taxpayers and less effective in achieving this goal. At worst they can lead to significant disruption, such as affecting the continuity or quality of energy supply, which will in turn jeopardise the public support essential for a decarbonising economy.

⁷ https://www.energycouncil.com.au/media/5zylveyr/australian-energy-council-solar-report_q3-2021.pdf

⁸ <https://aemo.com.au/en/newsroom/media-release/record-minimum-demand-levels-across-australia>

⁹ <https://www.energycouncil.com.au/analysis/new-nem-records-set/>

¹⁰ <https://aemo.com.au/-/media/files/major-publications/qed/2021/q3-report.pdf?la=en&hash=F7831B51290237F9033B5D22E52EF4C1>

¹¹ <https://grattan.edu.au/news/what-does-100-renewables-actually-mean/>

The AEC urges the Victorian government to re-commit to the national energy markets and to work through the national cabinet to achieve its ambitions in a national, rather than sub-national, context.

Electricity is clearly already Australia's stand-out sector in making progress towards the net zero goal. Rather than put additional pressure upon it, attention should move towards the sectors who have made negligible progress and consider how electricity can already provide the opportunities to assist those sectors in making the journey.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Ben Skinner', with a large, sweeping flourish at the end.

Ben Skinner
GM Policy
Australian Energy Council