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By email: stakeholderrelations@aemo.com.au

DRAFT 2021 INPUTS, ASSUMPTIONS AND SCENARIOS REPORT

Dear Nino

Thank you for the opportunity to provide a submission to the Australian Energy Market Operator's (AEMO) consultation on the *Draft 2021 Inputs, Assumptions and Scenarios Report* (Draft IASR 2021).

Energy Consumers Australia (ECA) is the the national voice for residential and small business energy consumers. Established by the Council of Australian Governments (COAG) Energy Council (the Energy Council) in 2015, our objective is to promote the long-term interests of energy consumers with respect to price, quality, reliability, safety and security of supply.

The IASR is a critical document because it underpins three of the most important planning processes in the National Energy Market – the Integrated System Plan (ISP), the Gas Statement of Opportunities (GSOO) and the Electricity Statement of Opportunities (ESOO). The ISP alone contemplates \$690 million of investment in electricity transmission infrastructure every year until 2042 which is indicative of what is at stake for energy consumers who will ultimately foot the bill.¹

Our comments on the draft IASR 2021 in this submission build on our contributions in the consultation workshops that were held in 2019, as well as our input on the development of the ISP over a number of years.

Our review of the Draft 2021 IASR is guided by the following strategic questions:

1. Do the scenarios, assumptions and inputs reflect the range of plausible futures that are consistent with the values, needs and expectations of Australian household and small business energy consumers?
2. Does the IASR reflect the impact of the 2019-2020 bushfires and the COVID-19 pandemic on energy consumers?
3. Do the scenarios, assumptions and inputs properly account for the process of decentralisation that is one of the most important features of the energy transition in Australia, a consumer phenomenon that is now being driven by the extraordinary investment residential and household energy consumers are making in rooftop solar PV, smart appliances and other modular technologies?
4. Does the model appropriately account for the 'direction of travel' in relation to the decarbonisation of the economy, in particular the growing Australian and international consensus around the need to achieve Net Zero emissions by 2050?

¹ See page 36, 2020 Integrated System Plan, AEMO, <https://aemo.com.au/-/media/files/major-publications/isp/2020/final-2020-integrated-system-plan.pdf?la=en>



The energy system is transitioning to a very different form and traditional forecasting approaches, which rely heavily on the past being a good guide for the future, are less useful. We welcome AEMO adopting scenario planning techniques because they provide a better basis for making good, least-regrets decisions on behalf of Australian energy consumers in an uncertain environment.

The five scenarios in the Draft 2021 IASR are richer and more expansive than we have seen in previous years which we welcome. One of the important ways AEMO has done this is by considering three new dimensions (relative cost competitiveness of renewables and storage, electrification and economic activity and population growth), alongside the two (decentralisation and decarbonisation) that formed the basis of the 2020 scenarios.

Consumer values, needs and expectations

While we agree with AEMO that these five dimensions are significant drivers, uncertainty about where systems, markets and technology is heading, means there is a need to build in a more explicit, and deeper 'consumer view' into the framework. The virtue of this is that social and business practices around energy (many of which have built up over decades) can be a more enduring, and better guide to the future than technical and market metrics which can be more volatile in times of disruption and transition.

An explicit consumer view also recognises that consumers in the future could have the opportunity to participate in energy markets, enabled by access to technology, at sufficient scale to change the nature of the energy system. In this context the common misunderstanding that the energy transition is a 'background infrastructure switch' that will leave everyday practices untouched needs to be corrected. According to Professor Cameron Tonkinwise, UTS Design School who is advising ECA on the Post 2025 Market Design Project, "even infrastructure adoption depends on capacity for people to adapt their everyday practices to new technologies".

The challenge for AEMO is that the industry stakeholders who dominate the consultation process tend to have a technical and commercial focus and are not always well placed to adequately factor in a consumer view. In a survey of 64 digital technology and energy sector reports to identify current industry trends, predictions and visions for how everyday practices are anticipated to change in the future, Monash University Digital Energy Futures project found:

"While the [technology and energy sector] scenarios bring together novel combinations of energy and digital technology futures, applied to the everyday practice domains in the home, they only include technology that is to some degree already existing, or reflect macro trends that are already present-day concerns. Therefore, while the scenarios reflect possible near futures (2025-2030), as well as some conservative elements of medium-far futures (2030-2050), they should primarily be considered the dominant visions of the energy or technology sector in the present."²

In the context of the IASR, this increases the chance that the framework fails to engage with the full range of plausible futures that will impact the utilisation and economics of long-lived assets like transmission infrastructure which are contemplated by the ISP and other planning mechanisms. We have the lessons of the lived experience in recent decades in failing to anticipate the opportunities that technological change would provide - whether that be greater access to heating and cooling appliances, distributed generation and energy storage - for consumers to fundamentally challenge the

² https://www.monash.edu/data/assets/pdf_file/0008/2242754/Digital-Energy-Futures-Report.pdf



capacity and design of the energy system.

We appreciate that building in a nuanced consumer view, drawing on social relevant science methodologies and insights, into what started out life as an engineering planning framework is a complex task that will take some years, and iteration, engagement and debate, to perfect. Energy Consumers Australia is keen to continue to work with AEMO to progressively incorporate this consumer view into the IASR and ISP frameworks.

Impact of 2019-20 Bushfires, COVID-19 pandemic

The impact of COVID-19, and indeed the 2019-20 bushfires on the draft IASR 2021 scenarios and assumptions around DER and other elements is another area that we believe requires more work. The main way it appears that the impacts of these shocks are being considered (rightly) in the document, is at the macro level in terms of population growth and economic activity. The document also then considers, how changes in relation to these dimensions of the scenarios flow through to energy demand growth and, DER uptake.

What the document does not appear to do is engage with are the longer-term changes in energy consumers' social and business practices, or indeed in their values and expectations influencing their behaviour and decisions, that might flow from these shocks.

It is plausible (or even likely) that the pandemic has accelerated a trend towards remote working and organisations existing 'virtually', with many people not 'returning to the office'. This could contribute to a structural shift in energy demand profiles – with more energy used during the day – going some way to addressing, for example, minimum demand challenges caused by a surplus of solar PV generated electricity in residential areas. The link between new working practices and electric vehicle uptake and usage/charging behaviours also needs to be reconsidered – given that it may mean people are more likely to charge their EV at home rather than at the office after a (potentially long) commute. The most recent Queensland Household Energy Survey found that 83 per cent of those who already own EVs almost always charge their vehicle at home.³

The scenarios should also explore ways in which the uncertainty, anxiety and disruption associated with the bushfires and COVID-19 could change the way Australians think about energy. It is very plausible for example, that consumers will respond to these shocks by placing and even higher value on their ability control their energy use and costs, or even self-supply for those in bushfire affected areas. The surprisingly good health of the property market is at least in part seen as being because Australians have prioritised 'home' – of which energy is an integral part.

The Australian Bureau of Statistics (ABS) has built a rich, almost real-time picture of the way COVID-19 is impacting the Australian community which provides an evidence base for AEMO to explore the implications for the scenarios and assumptions. In addition to surveying a range of variables relevant to the broader economic impacts, including at risk populations, housing characteristics, change in payroll jobs and employment distributions, the ABS is publishing interactive maps showing how the pandemic is impacting regions differently. Given the relevance of 'place' to decisions about energy infrastructure, the availability of this kind of granular, geospatial data, opens up new possibilities for energy system planning which AEMO should explore.

³ Queensland Household Energy Survey, 2020, <https://www.talkingenergy.com.au/ghes>



Importantly, the ABS is collecting information on electricity use to provide insights about the impacts of COVID-19, focussing on how consumption patterns in Melbourne changed during the lockdown.⁴ While this is data that AEMO collects itself and would have to hand, the opportunity we see is to explore the way it relates to the insights the ABS is collecting about how the pandemic is changing the way we live and work. The Household Impacts Survey reveals, for example, that one in five people (21 per cent) surveyed in November 2020 were unsure or felt that life would never return what it was before COVID-19– a data point that can inform our thinking about how long energy behaviour changes might endure.⁵

Trust as a critical dimension for the scenarios

In 2019 ECA, with input from consumer groups and market bodies, developed four plausible energy futures using the Oxford Scenarios Methodology. These scenarios approach the issues from a consumer perspective. These and other such scenarios could be used to test and extend the draft 2021 IASR scenarios:⁶

1. *'Bundle'* – what happens if consumers' heat, light and power needs get bundled with employment and other services?
2. *'Patchwork'* – could declining trust see the national energy grid fragment, requiring local action?
3. *'Plenty'* – What is catastrophic climate change frees us to generate abundant wind and solar power?
4. *'Rescue'* – what if a new movement drives transition to cheap renewable energy whilst compensating incumbents?

While each of the scenarios explores the potential for energy system change in different ways, one of the most important drivers or dimensions in all of these scenarios was consumer and community trust in the energy sector in relation to energy services and the energy transition more generally. In *Patchwork*, low trust in the national grid's ability to deliver affordable, reliable and clean power sees states and localities to become more energy independent, with weaker physical and commercial links – and less need for electricity transmission infrastructure one of the most important implications. The *Rescue* scenario explored how trust might be restored, in this case as Australia develops a renewable energy export industry, which helps reframe the energy transition as an opportunity.

In future IASR processes, we think AEMO should aim to develop new scenario dimensions around issues like trust that influence the decisions consumers make about energy, from whether they choose to, for example, buy energy from a retailer in the traditional way, invest in solar and other technology to become more self-sufficient or participate in energy markets through trusted intermediaries. In relation to the Draft IASR 2021 though, a way to begin to build a richer, consumer view of the future into the scenarios is to test the sensitivity of the five scenarios to different levels of consumer and community *trust* in the energy sector and support for decarbonisation policy.

⁴ Using electricity to understand COVID-19 impacts, ABS, 2020, <https://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4661.0Main%20Features502020?opendocument&tabname=Summary&prodno=4661.0&issue=2020&num=&view=>

⁵ Household Impacts of COVID-19 Survey, ABS, November 2020

<https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/latest-release#life-after-the-covid-19-pandemic>

⁶Futures of Heat, Light and Power: Scenarios for the Australian Energy Sector in 2050, Mechanical Dolphin <https://energyconsumersaustralia.com.au/wp-content/uploads/Futures-of-Heat-Light-and-Power-Scenarios-for-the-Australian-Energy-Sector-in-2050.pdf>

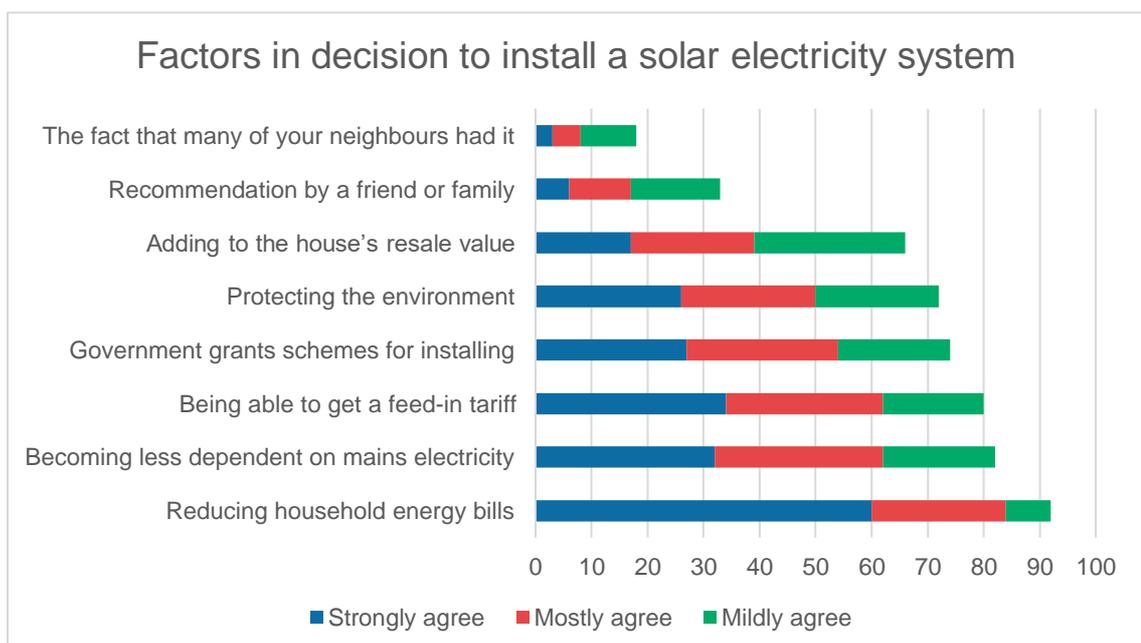


We would encourage AEMO to think about, for example, how different levels of trust would influence the way the *Export Superpower* scenario might play out – drawing on ECA’s *Rescue* scenario. Those promoting the potential for Australia to capitalise on export opportunities, argue that in addition to the direct economic benefits, it would also increase public support for decarbonisation policy – an outcome which is consistent with the narrative in the draft IASR 2021. Where the narrative could be extended is around who would pay for the massive investment in infrastructure that would be required to export the volumes of electricity and hydrogen contemplated by the scenario and what the implications might be for energy bills for households and critically, domestic businesses. A critical policy challenge in this scenario would be ensuring that the mistakes of the growth of Australia’s LNG export industry, which contributed to significant increase in East Coast Gas prices, are not repeated.

Similarly, residential energy consumers faced with higher bills associated with the build-out of infrastructure to support exports could respond by investing in rooftop solar PV at even higher rates that we are currently seeing – rates which are already high but could be super-charged by a repeat of the 2010s experience in New South Wales in and Queensland where investments in the electricity distribution network to meet reliability targets saw a blow-out in energy bills. We note AEMO is proposing to apply ‘High DER Growth’ settings for the *Export Superpower* scenario which is consistent with this view.

Better forecasting the growth of DER, and particularly solar PV, is an area that AEMO acknowledges needs to be improved in Draft IASR 2021, after the 2020 edition underestimated uptake across most regions. We believe one way this could be addressed is by more closely exploring the interplay between levels of energy bills, trust, and other motivators, particularly the preference for clean energy, and the rate at which consumers invest in rooftop solar PV and other forms of DER.

ECA’s consumer surveys have consistently indicated that low levels of trust in energy companies – after a ten-year period of sharply increasing energy prices – has been and continues to be a strong motivator for people to invest in rooftop solar PV.⁷



⁷ Usage of solar electricity in the National Electricity Market, UMR, 2016
<https://energyconsumersaustralia.com.au/wp-content/uploads/UMR-Usage-of-solar-electricity-in-the-national-energy-market.pdf>



ECA's 2019 Consumer Expectations Research also found a widely held expectation that in the future, energy should be 'clean', with many of the people who participated in the survey equating rooftop solar PV with a clear trend in this direction.⁸ The quotes from three consumers surveyed for the project reflects this sentiment which often linked clean with affordable:

"I think people are going to look into ways to reduce energy like solar panels and wind farms. Solar panels are something I'd look into if I had my own home."

"I think there will also be a lot more solar – that's the only way people are going to be able to afford electricity. I really hope that the government builds more windfarms and that solar becomes more and more affordable for people to get in."

"I hope we stop using so many natural resources and embrace things like solar or wind power – cleaner energy. I think it's an important step we need to take to protect the future."

Consumers also value the technology for the choice and control they see it providing:

"[the energy future is] definitely renewable. Maybe more self-managed. If I have solar panels, and a battery, then I can figure out how much I'm using and have left."

"I wish I had more information about how to get help and how to change, more about solar and its benefits and about all the different products that are available so I could be more informed about my choices. There needs to be more energy providers talking about stuff and offering services. The more you get told, the more you know, so being informed early is really important."

The evidence suggests to us that consumer preferences in relation to rooftop solar PV provides is, to an extent, 'locked-in' and will not necessarily abate in response to lower electricity prices in a way that forecasters – who are not taking a broad enough view of the value consumers place on not being exposed to, for example, price volatility or contributing to the transition to cleaner energy – expect.

Similarly, AEMO should also be cautious about the extent to which it assumes – as it appeared to do in the *Step Change* scenario in the 2020 IASR – that government policy is needed to sustain high levels of interest in rooftop solar PV and other forms of DER. The evidence suggests that the Australian community's embrace of these technologies is a consumer and cultural phenomenon that has created its own momentum and likely has much more scope to grow. A recent study by the University of New South Wales (UNSW) found that Australia is currently using less than 5 per cent of the potential capacity for rooftop solar.⁹

Thought about in this way, we would question whether AEMO should be applying anything other than 'high' rates of rooftop solar PV and DER settings across the scenarios, and particularly in relation to the important Central scenario which is most influential in the decisions it makes about the ISP and other important planning processes. It is not clear what would act in that scenario, or indeed in *Diversified Technology* which adopts a low distributed solar PV and other DER settings – what acts to suppress the consumer preferences and values that are driving uptake.

⁸ A Future Energy Vision: Consumer Expectations Research, Forethought 2019, slide 27
<https://energyconsumersaustralia.com.au/wp-content/uploads/Future-Energy-Vision-Forethought-Household-Full-Report.pdf>

⁹ Roberts M; Nagrath K; Briggs C; Copper J; Bruce A; Mckibben J, 2019, How much Rooftop Solar can be Installed in Australia? Report for the Clean Energy Finance Corporation and the Property Council of Australia, <http://dx.doi.org/10.13140/RG.2.2.25871.02722>, <http://apvi.org.au/http/apviorqau/wp-content/uploads/2019/06/isf-rooftop-solar-potential-report-final-.pdf>



We note that AEMO has not yet included new DER projections in the Excel workbook that accompanies the draft IASR 2021 consultation document. This gap makes it very difficult to assess the extent to which the updated model has been adjusted to correct for the DER underestimation issue. While we understand work is underway on a new set of numbers, it is critical that future consultations do not proceed until all the relevant data has been updated to reflect latest scenarios and assumptions.

In particular, we would also like to understand whether AEMO has, or plans to, incorporate the results of the Energy Synapse report on demand response in the NEM that was commissioned by the Energy Security Board (ESB) as part of the Post 2025 Market Design project.¹⁰ This report, which used data from the AEMO Demand Side Portal, found that by 2035, potential flexibility from DER and demand resources could range from between 37.6-87.4GW – up from an estimated 4.3GW in 2020. Even if only the low end of these projections is realised, this would amount to a transformative development in the NEM, placing flexible DER services at a scale comparable to the capacity that is contemplated by the ISP.

The energy transition and Net Zero

We support AEMO incorporating a stronger set of assumptions around the decarbonisation of the economy in the Central Scenario. As the consultation paper notes, all Australian states and territories have Net Zero by 2050 targets, and the Prime Minister in his recent National Press Club address made it clear that the Australian Government's goal was to achieve Net Zero by "as soon as possible, and preferably by 2050".¹¹ We note that the Central Scenario is based on an assumption that Net Zero will be achieved in the second half of the century, which should now be updated to reflect the latest developments.

Thank you for the opportunity to make this submission. If you would like to discuss this submission further, please do not hesitate to contact Chris Alexander, Director Advocacy and Communications, on chris.alexander@energyconsumersaustralia.com.au.

Yours sincerely

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Chief Executive Officer

¹⁰ Demand Response in the NEM, Energy Synapse 2020, <https://esb-post2025-market-design.aemc.gov.au/directions-paper>

¹¹ <https://www.pm.gov.au/media/address-national-press-club-barton-act>