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24 February 2023

Andrew Turley
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Energy Consumers Australia's submission to the AEMO's Draft Inputs, Assumptions and Scenarios Report (IASR) 2023

Dear Andrew,

Energy Consumers Australia, the national voice for residential and small business energy consumers, appreciates the opportunity to provide comments on the [Draft Inputs, Assumptions and Scenarios Report \(IASR\) 2023](#).

We commend the AEMO team on the effort and time taken to produce an IASR that is clearly a step forward from previous versions. A key piece of work for AEMO's Integrated System Plan (ISP), the IASR outlines how AEMO proposes to model Australia's energy future to plan for a system that meets the diversity of consumer needs.

We welcome the broader consultation process to date undertaken by AEMO in preparing and socialising this report to ultimately provide stakeholders, including ourselves, with more clarity to support or challenge adopted inputs, assumptions, and scenarios.

Nonetheless, given that the purpose¹ of the ISP is to establish a “whole-of-system plan for the efficient development of the [NEM] power system that achieves power system needs for a planning horizon of at least 20 years for the long-term interests of the consumers of electricity”, we encourage AEMO to reconsider how the IASR can genuinely support a whole-of-system plan—that incorporates supply and demand opportunities—for an efficient energy (electricity and gas) system that delivers not only for electricity consumers but all energy consumers².

To further expand the IASR capabilities, to inform and influence whole-of-system planning, policies and decision making towards a least-cost and most-efficient energy transition that puts consumers at the heart of solutions, we need more **integration, collaboration and communication**. Our submission is structured along these three key concepts.

In summary, we believe the broader ISP scope and methodology, including the IASR, needs to fundamentally change. More specifically, we recommend AEMO do the following.

- a) Integrate electricity system planning into broader energy system planning, more profoundly with the gas system, particularly in the context of the [National Energy Transformation Partnership](#) workstream on integrated energy infrastructure and enhanced ISP design.
- b) Model and disclose the likely retail price and consumer bill impacts and the necessary consumer investments from demand-side related assumptions across electricity and gas systems.
- c) Facilitate cross-sectoral integration between the broader energy system planning and mobility, urban planning, housing, resilience, and climate change adaptation plans to ensure inputs and assumptions across scenarios reflect the complexity of other sectors' transformations as well.

¹ As per [National Electricity Rules \(5.22.2\)](#).

² As per proposed change by the Department of Climate Change, Energy, the Environment and Water (DCCEE) in their '[Incorporating an emissions reduction objective into the national energy objectives](#)' Consultation Paper (p.8). Our submission to this consultation is accessible [here](#).

We understand such changes represent a major overhaul of current ISP processes, which will inevitably require more time and resources to be deployed than the present consultation timeline allows, but we trust these recommendations, if adopted, will improve the credibility of AEMO's energy planning exercises. Importantly, such an approach would provide a “value proposition” for household and small business consumer engagement in the ISP processes.

On the content of this Draft IASR 2023 consultation, we offer specific suggestions that can be addressed more quickly.

1. In the context of integrating broader socioeconomic shifts into energy system planning, there are foundational assumptions in the Draft IASR 2023 that should be revised. Our submission provides substantial evidence on population growth and dwelling stock growth changes, urban density and housing tenure trends that should be further investigated by AEMO, as their impacts on other inputs are critical, particularly from a demand and distributed generation perspective.
2. The scope and definition of social license in the Draft IASR 2023 should be expanded from a transmission-level and land conflict view to the broader ideals of collaboration, building trust and engaging consumers and communities in the transition in ways that address their concerns and provide additional value. In addition,
 - a. there should be special focus on the concept of social license to control/automate consumer energy resources (CER), as the level of orchestration of CER—and the system impacts thereof—are significantly different between scenarios; and
 - b. social license should be explicitly developed as a theme across scenario narratives.
3. A comprehensive review is required to support “appropriate transparency of planning assumptions, and increasing stakeholder understanding and acceptance of critical planning outcomes to support the energy sector’s transition”³. Which, how and why information is shared—particularly to consumers—through the IASR and supporting documents could benefit from best practices in communication. Clarity, conciseness, and transparency are key to enable clear comprehension and meaningful feedback.

All these recommendations are further detailed in our attached submission. If you have any questions about our position, please feel free to reach out to Caroline Valente, Senior Policy Associate, at Caroline.Valente@energyconsumersaustralia.com.au.

Yours sincerely,



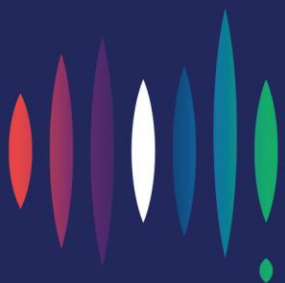
Brian Spak
Director, Energy Systems Transition

³ As in the [Draft Inputs, Assumptions and Scenarios Report \(IASR\) 2023 \(p.9\)](#).

Energy Consumers Australia's Response to the Australian Energy Market Operator's Draft Inputs, Assumptions and Scenarios Report 2023



February 2023



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Introduction

Energy Consumers Australia, the national voice for residential and small business energy consumers, appreciates the opportunity to provide comments on the [Draft Inputs, Assumptions and Scenarios Report \(IASR\) 2023](#).

A key piece of work for AEMO's Integrated System Plan (ISP), the IASR outlines how AEMO proposes to model Australia's energy future to plan for a system that meets the diversity of consumer needs and expectations in a net-zero economy. The ISP presents the most comprehensive planning process for Australia's future energy system, and planning for this decarbonised, smart and decentralised electricity grid may be the hardest task AEMO has ever had. All the more so due to the complexity and interconnectedness of this energy transformation with other global issues and major socioeconomic changes.

The extensive transformation on the way we generate, distribute, and consume energy to address the challenges of climate change is tied to broader societal, technological and cultural discussions and choices about how we live and work in more sustainable ways. Other emerging and more acute challenges, such as geopolitical conflicts, global economy and supply constraints, and cost of living pressures, also affect energy system planning, investment, and its impacts on end-use consumers.

On this matter, we believe that substantial **integration** of systems planning is needed—not only across the electricity value chain, but across gas infrastructure, urban planning, built environment, and transportation needs, to name a few. But for this integration to happen successfully, we need more genuine **collaboration**—within and across sectors, to ensure planning can be responsive and adaptable to changing conditions. Collaboration that enables diverse voices to feel heard and acknowledged, that contributes to building trust with each other, that results in the co-design of solutions that address major community concerns. And for collaboration to occur, we must focus on essential **communication** principles: clarity, conciseness and transparency. In other words, we must make the effort to communicate with each other in ways that allow clear comprehension, meaningful action, and feedback.

Integration, collaboration, and communication. Our response to the Draft IASR 2023 is structured along these 3 key concepts that hold such important and personal meanings for all of us. Section 1 is focused on the importance of integrating cross-sectoral systems' planning into our energy future design. To illustrate this inherent interconnectedness, we'll provide evidence on how some foundational assumptions of the Draft IASR 2023 may require revisions in light of the latest socioeconomic shifts, with their impacts on other inputs being critical, particularly from a demand and distributed generation perspective. In Section 2, we consider collaboration from the point of view of building social license and trust. Lastly, from a more practical perspective, we'll briefly touch on good practices for communication that can help AEMO in increasing household and small business consumer engagement and feedback (Section 3).

1. Integration – Our future energy system and the broader transformations in the way we live and work

If we want to ensure inputs and assumptions reflect the complexity of other sectors' transformation as the nation decarbonises, the broader ISP scope and methodology—including the IASR—needs to fundamentally change to pursue cross-sectoral integration between the electricity system and other critical sectors. More critically, we expand on the need to—at least—address electricity and gas system planning collaboratively but invite AEMO to reconsider how other critical sectors' planning and policies may significantly affect Australia's future energy system.

Electricity and gas integrated planning

We note the current efforts through the [National Energy Transformation Partnership \(NETP\)](#) to develop national alignment and cooperative action by governments to support the smooth transformation of Australia's energy sector. The NETP will provide an integrated framework to guide market bodies through reforms that will address the key challenges and opportunities of the energy transformation at a national level.

Commonwealth, State and Territory Energy Ministers have agreed, among other workstreams, to “develop detailed integrated energy infrastructure and regional planning scenarios that span gas and electricity networks [...]”¹. This workstream builds from Ministers “recognis[ing] the importance of addressing cross-sector challenges as part of the electricity transformation, including the deep interaction with gas markets”.

This integration is a major priority for consumers, as consumers will be the ones to face the burden and costs of a poorly integrated and overbuilt energy system. Leadership commitment and policy coordination at the national level will contribute to better integrating energy systems' planning.

We understand the IASR informs the Gas Statement of Opportunities (GSOO), which aims to forecast annual gas consumption and maximum gas demand in Australia over a 20-year outlook period, and reports on the adequacy of eastern and south-eastern Australian gas markets to supply forecast demand. The ISP is then informed by both the IASR and the GSOO and provides the “optimal roadmap” for the development of the National Electricity Market (NEM). What we don't understand is why potential consumer impacts, including costs, resulting from future gas network and infrastructure assumptions are explicitly disregarded in the IASR. In the [Multi-sector energy modelling 2022: Methodology and results: Final report](#),

Assuming hydrogen replaces natural gas with existing pipeline infrastructure, the capital cost of switching from natural gas to hydrogen technologies is not considered. Costs associated with upgrading gas network infrastructure to accept high blends of hydrogen are also not considered. It is therefore necessary to explicitly set a limit on blended hydrogen in the gas network in modelled scenarios. Where that limit is assumed to be higher than currently understood upper limits, any costs associated with reaching that limit are not considered by the objective function.

When AEMO chooses deliberately to not consider the potential costs—that flow through to gas consumers—associated with changes in gas demand and gas network infrastructure across the four scenarios (though more pronouncedly in the Green Energy Exports), then it is not planning for a least-cost system in the long-term interest of all energy consumers.

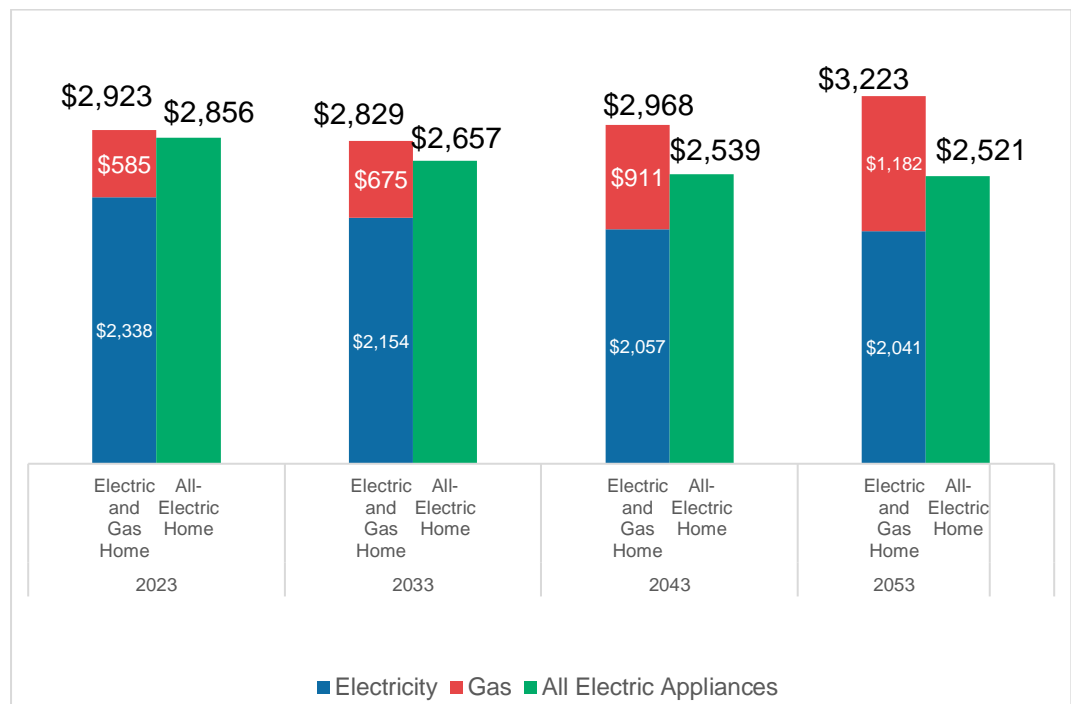
¹ From [Energy Ministers' Meeting Communique](#) - 12 August 2022.

We agree with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) that the increasing interaction between gas and electricity markets in the context of decarbonisation of the energy sector calls for consideration and management of the two systems in a more integrated way. Their [Consultation Paper](#) on 'Incorporating an emissions reduction objective in the National Energy Objectives' adds that,

[the] holistic consideration of the interrelated impacts of market bodies' decisions on the electricity and gas markets may facilitate outcomes which are in the long-term interests of all energy consumers.

In fact, our research² using 2022 ISP's Step Change assumptions has shown that increased network utilisation from higher levels of electrification lowers electricity network prices for all consumers. For those who remain connected to gas, increased gas network prices eliminate all potential electricity bill savings. The modelling suggests that Australian households that electrify completely both their domestic uses and transport in 2030 will spend \$30,000 less over twenty years than their neighbours that don't. Figure 1 illustrates the projected annual household energy bills of electricity-only consumers versus electricity-and-gas consumers (excluding transportation).

Figure 1 – Projected annual household energy bills



Source: (Energy Consumers Australia, 2023)

² Forthcoming publication: *Stepping Up: Enabling Consumers to Benefit from the Energy Transition*. This research focused on exploring the consumer impacts from the 2022 ISP Step Change Scenario. CSIRO, Dynamic Analysis and a large collection of other organisations helped frame the work, model and findings.

AEMO currently plans the electricity system assuming certain levels of electrification, but gas networks do not have to use similar forecasts and have their own optimistic assumptions about future gas demand. This is a recipe for over-investment in both systems that will result in increased costs and less efficient outcomes for all consumers. Plans should be aligned and genuinely integrated across fuels and sectors. The [RACE for 2030 Opportunity Assessment on Smarter Planning for the Energy Transition – Final report](#) indicates that Australia is failing to plan for a better and smarter energy future due to, among other factors, the absence of a truly integrated resource planning (least-cost planning) for the whole energy system, the limited understanding of current and future customer needs and aspirations, and how these can be expected to evolve in the future.

Our Energy Consumer Sentiment Survey research indicates that [affordability is consumers' primary focus in the energy transition](#): 67% of households say having affordable energy prices for all Australians is either the most or second-most important consideration in the energy transition – almost twice as highly rated as any other issue. An integrated approach to electricity and gas systems' planning is the only way to deliver lower prices for all consumers. This integrated approach should aim to model and disclose the likely retail price and consumer bill impacts and the necessary consumer investments from demand-side related assumptions across electricity and gas systems. Having even a ballpark figure of future consumer costs in each of the scenarios developed will undoubtedly assist all stakeholders in identifying scenarios' strengths and weaknesses and opportunities for action.

Breaking siloes – Energy system planning and other critical sectors

The IASR adopts a scenarios' planning approach for anticipating the potential challenges and opportunities associated with the energy transition and the possible pathways we may follow to reach net zero by 2050.

Surely, scenarios' planning is one of the best approaches for identifying some of the potential turbulences, uncertainties, novelties and ambiguities in this rapidly changing energy landscape we see ourselves in. Nevertheless, we must acknowledge that only some of these may be recognised from within—our organisations, the stakeholders we usually engage with, our limited circle of influence.

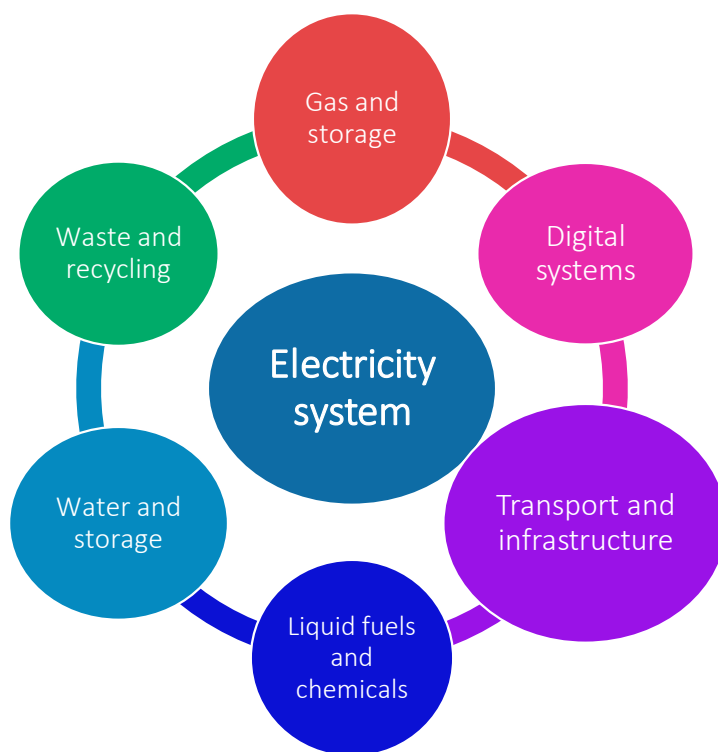
There will always be many unknowns in this energy transformation; factors that influence our contextual environment in unforeseeable ways. For this reason, good planning should allow us to be somewhat comfortable with this unknown and embrace disruption. For all the major shifts we've been experiencing lately, we must recognise that our society is nearing a tipping point—one at which history won't repeat itself.

We praise AEMO for using a scenarios approach to develop the ISP, but we also urge AEMO to take the next step and adopt more innovative, imaginative and collaborative techniques into scenarios' inputs and assumptions, taking into account the influence that major global and local transformations may have in our energy transformation. How is AEMO exercising precaution about not placing too much faith in a modelling full of unknowns? How adaptable and flexible are the scenarios for a future we cannot rely on historical data mining and past trends to predict? What are the risks of current assumptions about the future not eventuating? And how are these being identified and evaluated methodologically? Addressing these questions with transparency and genuine collaborative work will ensure we better understand emerging issues and provide innovative perspectives on solutions and ways to reach net zero.

Australia's planning process to reach net zero by 2050 is siloed, with electricity, gas, transport, housing and urban development, agriculture and manufacturing sectors all acting mostly on their own. Sadly, this seems to be mainstream across the world. To provide a potential solution, the World Economic Forum has published the [Electricity+ framework](#), which highlights the "opportunities to create value and optimise integrations between the electricity sector and other infrastructure to enable a transition to a net-zero economy".

This framework recognises that the electricity system will evolve to be the backbone of the future energy system and a major enabler of the global economic transformation. Thus, if we are planning for a highly electric future energy system, integration with other key infrastructures must be designed to create collaborations and maximise value. The framework outlines key integrations, as illustrated in Figure 2, across four main systems: buildings (including urban planning), mobility, industry and agriculture. This is line with our view that a successful transition to a net zero economy is only made possible by substantial integration of systems planning. Thus, we strongly recommend that AEMO considers the Electricity+ framework in future iterations of the IASR and the ISP.

Figure 2 - Key integrations between the electricity system and other critical infrastructure



Source: (WEF, 2023)

Socioeconomic shifts, foundational assumptions in the IASR, and their impacts on scenarios' inputs and narratives

Population growth and dwelling stock growth rate assumptions across scenarios.

The Draft IASR 2023 refers to the [Multi-sector energy modelling 2022: Methodology and results: Final report](#) for assumptions on household projections that impact demand forecasts, electrification, fuel switching, and energy efficiency inputs. A section of Table 2-14 (page 33) is depicted below (Figure 3) and details the residential buildings input assumptions.

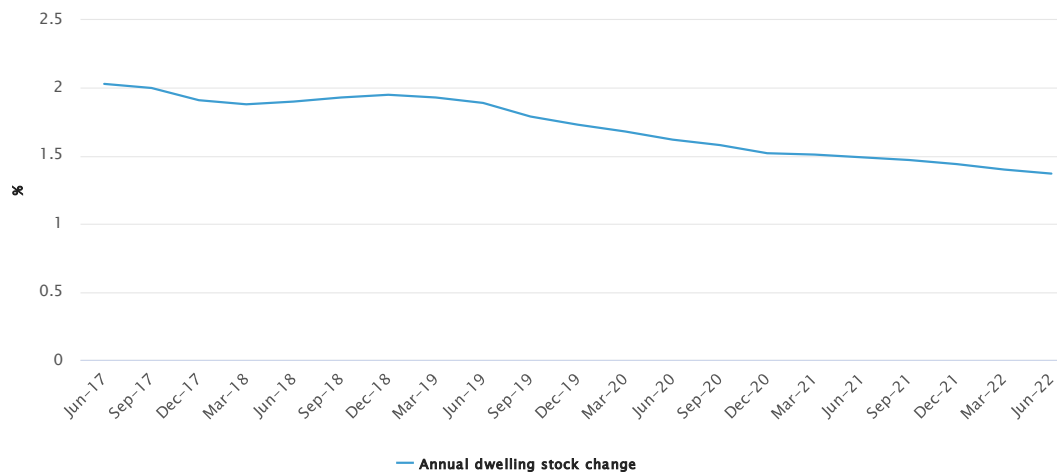
Figure 3 – Section of residential buildings input assumptions

Model Input Assumptions	Progressive Change	Exploring Alternatives	Step Change	Hydrogen Export
Household activity projection (millions of dwellings)	2016 ABS census on number of dwellings (driven by ABS Series II household projections) scaled to BIS Oxford Economics Macroeconomics Forecasts on population growth			
Compound annual growth rates: (net increase in dwellings)	1.19% p.a. from 2021 to 2055	1.38% p.a. from 2021 to 2054	1.38% p.a. from 2021 to 2054	1.69% p.a. from 2021 to 2055

Source: (Reedman et. al, 2022)

We are concerned that presuming a constant rate of annual growth for dwellings until 2054 is incompatible with current population trends and major international forecasts. The two central scenarios, Exploring Alternatives (referred in the IASR as Diverse Step Change) and Step Change (referred in the IASR as Orchestrated Step Change) assume a compound annual growth rate of 1.38% p.a. from 2021 to 2054. This percentage accurately reflects the [latest quarterly report from ABS](#) on estimated dwelling stock change (1.37% for the quarter ending in June 2022). However, if one analyses the trend from the last five years, it's clear that annual dwelling stock growth rate is declining. Figure 4 next, from the same ABS release, illustrates that 1.37% p.a. is the lowest growth rate since 2017.

Figure 4 – Annual dwelling stock growth rate from June 2017 to June 2022



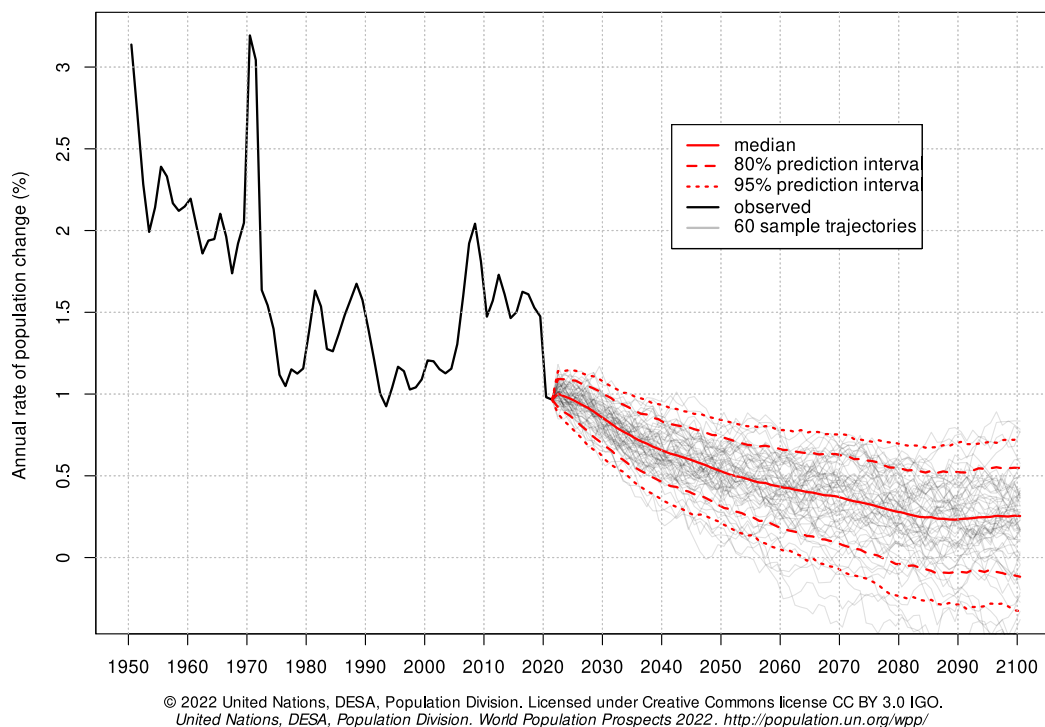
a. Annual growth calculated at the end of each quarter

Source: Australian Bureau of Statistics, Estimated dwelling stock June Quarter 2022

Source: (ABS, 2022)

Additionally, the 2022 United Nations World Population Prospects indicates that Australia's population is projected to grow at gradually lower annual rates (Figure 5), reaching close to 0.5% (median) in 2050. This is well aligned with other developed countries' projections.

Figure 5 – Annual rate of population change for Australia



Source: (United Nations, 2022)

As population projections inform annual dwelling stock growth, we recommend that AEMO thoroughly investigates the correlation between changes in population growth (with consideration to reduced fertility rates and potentially lower levels of migration) and dwelling stock growth rates to then come up with revised ranges for all scenarios. Even for Progressive Change, which is the most pessimistic of all four scenarios, a steady annual rate of 1.19% p.a. until 2050 is inconsistent.

Urban density, dwelling types and sustainable urban planning across scenarios

The IASR refers to CSIRO's [Small-scale solar PV and battery projections 2022](#) report and the [Electric vehicle projections 2022](#) report for different assumptions on the proportion of separate dwellings in relation to total number of dwellings across scenarios. These assumptions influence several inputs, including distributed PV forecast, battery and VPP forecasts, and EV uptake projections. The CSIRO reports explain that,

Owing to rising land costs in large cities where most residential customers reside, there is a trend towards building of apartments that are stratas, compared to detached houses (also referred to as separate dwellings in housing statistics). As a result, it is expected that the share of separate dwellings will fall over time in all scenarios. [...] The assumption for Exploring Alternatives and Step Change was built by extrapolating past trends resulting in separate dwellings occupying a share of 45% by 2050, around 18 percentage points lower than the 2021 ABS Census data. The Progressive Change and Hydrogen Export assumptions were developed around that central projection with Hydrogen Export experiencing a less rapid shift to apartments which supports higher rooftop solar and battery adoption.

We agree that the share of separate dwellings is likely to decline over time across all scenarios. However, it seems illogical that the two scenarios with stronger decarbonisation targets, greater climate change mitigation ambitions, and higher dwelling stock growth rates also adopt a central (Orchestrated Step Change) to slower (Green Energy Exports) shift to apartments and semi-detached homes. Research has shown that urban densification and the concept of 'compact cities' are more aligned with sustainable development strategies and effective in reducing overall emissions.

Compact cities refer to the urban planning model that supports higher density and mixed occupations, enabling the overlapping of its uses (homes, shops, jobs and services), prioritising public transport infrastructure and encouraging the active movement of pedestrians and cyclists. According to the [OECD](#), a compact city optimises land resources, increases the efficiency of public infrastructure investment, is more inclusive and accessible, minimises the impact on the environment, and discourages individual automobile dependency. [Researchers](#) have argued that the compact city concept is informed by spatial justice goals to “minimise alienation, increase accessibility and support the need for social interaction”. On the other hand, if urban sprawl is permitted, then cities grow randomly away from their centers over undeveloped land (green fields) in low density patterns, which is likely to result in automobile dependency, social exclusion and the need for infrastructure stretching and/or expansion of public services.

Many cities across the world are promoting policies towards more compact and smart urban developments. Smart growth planning, or the so-called '30-minute city', encourages medium to high-density and transit-oriented developments around public transport infrastructure and active mobility, which also reduce the need for private vehicles, even if electric. Major governments in Australia have either already adopted or are planning to integrate the compact and smart urban growth planning development idea.

The New South Wales Government, for instance, recently released its [Future Transport Strategy](#) with an explicit vision towards 30-minute cities and 15-minute neighbourhoods with stronger investment on public transport modes, walking and cycling networks and “reallocating road space to more efficient modes of transport like buses, walking, cycling and micro-mobility devices” to reduce private vehicle use. The [Victorian Government](#) has a similar initiative to support public, active and more efficient (including shared) modes of transport to realise the goal of 20-minute neighbourhoods. The [Queensland Government](#) is specific in detailing its approach for higher density, mixed use and transit-oriented developments to promote the creation of sustainable communities focused around public transport infrastructure.

Consequently, we argue that it is inconsistent to assume there will be a greater share of separate homes in scenarios that also assume a greater population number in Australia and more ambitious global and national climate goals. Scenarios of higher economic and population growth with stronger sustainability ambitions such as Orchestrated Step Change and Green Energy Exports are more likely to result in higher-density development—i.e., a lower proportion of separate houses—guided by smart urban planning approaches that also reduce private vehicle dependency. This last point also challenges CSIRO's assumption that these scenarios will have a greater share of houses that have two or more vehicles, which can undermine the scenarios' core principle of internal consistency.

Thus, we reaffirm the value of AEMO adopting an integrative approach to energy system planning like the [Electricity+ framework](#). The built environment, the homes we live in, the buildings where we work all represent a significant proportion of electricity demand. To avoid over-investment—and a less efficient outcome for all Australians—in generation and transmission, it is critical that energy system planning not only takes into account but purposefully integrates broader strategies, policies and planning considerations from the urban development, built environment, and transport infrastructure sectors.

Home ownership declining trend

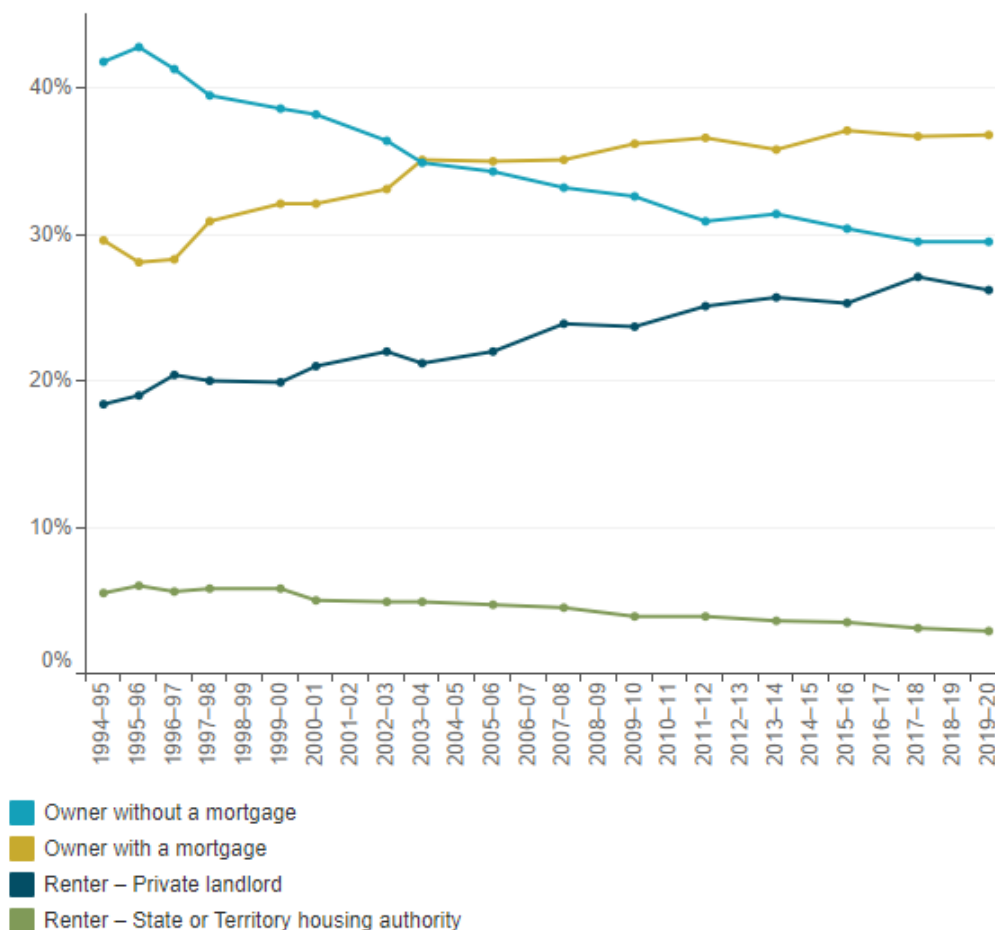
Both CSIRO's reports mentioned in the previous section also make assumptions on home ownership rates due to its relevance in increasing the ability of occupants to modify their houses to add or upgrade consumer energy resources, including small-scale embedded generation and storage, energy efficiency and EV chargers. CSIRO states that

Under the Exploring Alternatives [Diverse Step Change] and [Orchestrated] Step Change scenarios, the declining trend in home ownership is assumed to continue to wane to 2050 at a rate consistent with the last 10 years. For the Progressive Change scenario, a declining trend consistent with that of the last 20 years is assumed, leading to a slightly faster reduction in home ownership rates. For the Hydrogen Export scenario, consistent with higher solar and battery installation, a slower rate of decline in home ownership is assumed consistent with the last 25 years.

Across the four scenarios, home ownership rates range between 62% to 64%, with central projections (Exploring Alternatives/Diverse Step Change and Orchestrated Step Change) assuming 63% home ownership rate by 2050. Nevertheless, according to the [AHURI Report 328](#) published in May 2020, i.e., before the aggravation of the housing affordability crisis, the cost of living pressures, and the higher inflation and interest rates in 2022 and 2023, “there appears little chance of Australia sustaining home ownership at current levels. The [home ownership] rate is projected to decline by 2040 to around 63% for all households, and to not much more than 50%—down from 60% in 1981—for households in the 25–55 age bracket”.

This means that IASR assumptions should be revised to consider even lower levels of home ownership in 2050 for all scenarios, and perhaps a wider range (as 62% to 64% seems too narrow) that can encompass uncertainties in the housing sector. Alongside, outright homeownership has also declined considerably and is likely to continue to do so (see Figure 6), with [more homeowners in debt with mortgages for longer](#) (nearing retirement age), and potentially significant impacts on household disposable income for investments on consumer energy resources.

Figure 6 – Housing tenure in Australia from 1994-95 to 2019-20



See the related data cubes in the source data for the margins of error associated with these estimated proportions. Some estimates should be used with caution.

Source: ABS Housing Occupancy and Costs, 2019–20
<https://www.abs.gov.au/statistics/people/housing/housing-occupancy-and-costs/latest-release>
 Latest data: 2019–20 (biennial)

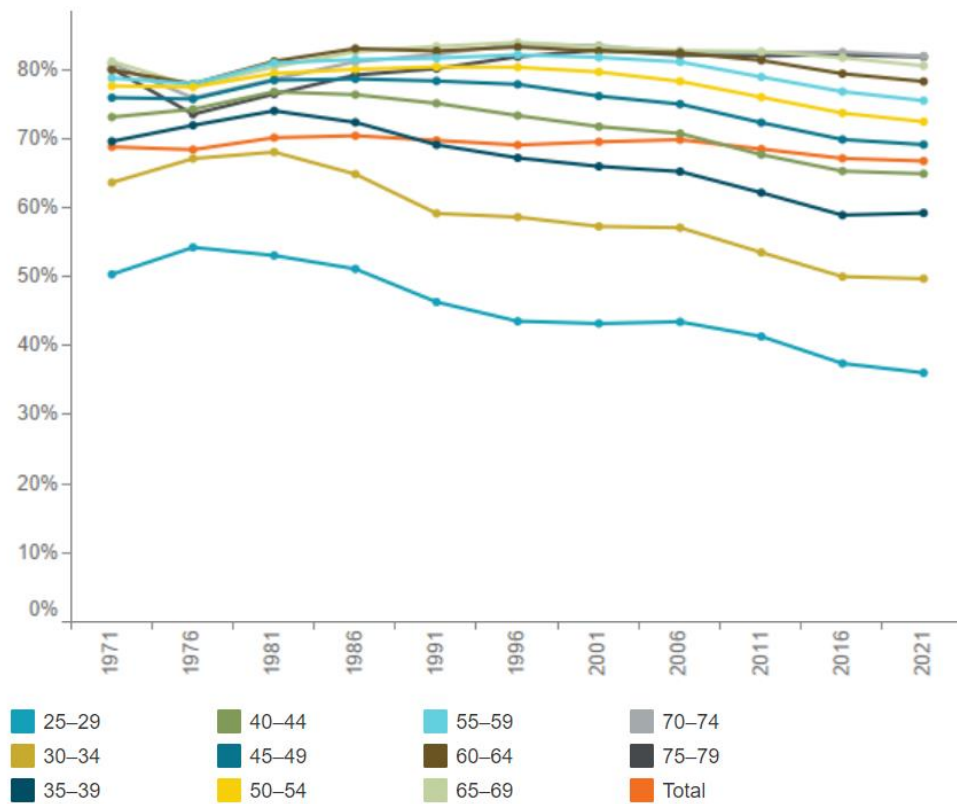
Source: (AIHW, 2023)

Furthermore, as Figure 7 illustrates next, home ownership rates across younger generations (25 to 49 y/o) are consistently lower than for other age groups. The same AHURI previously mentioned further clarifies that

*The weaker ability of the age cohorts 24–45 to purchase in the past two decades will be carried forward as a **demographic driver of lower ownership rates into future decades**; where in the past the ageing population has boosted rates of ownership, in the future it will reduce it.*

In fact, the *Australia Talks* (conducted by ABC) survey found that 65% of Australians (n=17,345) think owning a home isn't really an option for most young Australians anymore. International evidence reinforces the domestic trends, as ownership is in retreat in most developed countries.

Figure 7 – Home ownership rate (%) in Australia by age group, 1971-2021



Age group:

(All) ▼

Notes:

1. Analysis excludes not stated.
2. Home ownership rates reflect the year the household reference person was born.

Source: AIHW analysis of unpublished Census data, 2022
<https://www.abs.gov.au/statistics/people/housing/housing-census/2021>

Source: (AIHW, 2023)

Furthermore, while homeownership is not an option for many due to financial reasons, for others it's actually unsought. For many more in 'Generation Rent', the financial freedom, the opportunity to rent in a desired inner/middle city location and the lifestyle flexibility that comes from remote working **make renting more attractive**, even in a traditional home ownership society like Australia's. Knowing this, major building developers and state governments in Australia are embracing the overseas trend of large-scale, purpose-built rental housing that is held in single ownership and professionally managed, i.e., **built-to-rent developments**.

Thus, we suggest AEMO to review the home ownership rates assumed in all scenarios to better reflect most recent evidence and current trends. Not within the scope of this submission to discuss differences in history, housing policies, costs and renter-friendly regulations between the two countries, but, just as an example, **Germany's** home ownership rates fell 3.9% in ten years (from 53.4% in 2012 to 49.5% in 2022), with more than half of Germans (50.5%) now living in rented properties. What if a scenario in the IASR considered a larger proportion of Australians renting by 2050, perhaps between 50%-55%?

Finally, AEMO should reflect on potential regulatory and technical innovations that can inform how renters may have greater agency and participation in the energy system in coming years. This may enable the much-needed changes in policy and incentives to bring what may represent half of the Australian population on board the energy transition.

2. Collaboration – Expanding on what social license means for the energy transition and focusing on building trust

We support the view expressed in the [IEA's report from the Technology Collaboration Programme](#) that “issues of ‘social license’ [...] speak directly to the challenges of democratisation that arise from decentralisation”. If Australia is to decarbonise and decentralise in the most efficient and least cost way possible for all consumers, then there needs to be a monumental effort from governments, market bodies, networks, and other market participants towards building trust and strengthening collaboration through participatory processes that contribute to securing social license with Australians.

In this section, we argue that the understanding of social license in the IASR (and other ISP-related publications) should be expanded from a transmission-level and land conflict view to the ideals of collaboration, building trust and engaging consumers and communities in the this energy transformation in ways that address their concerns and provide additional value. In addition, this broader conceptualisation should acknowledge the role of social license at the demand side, which is critical to scenarios' inputs and assumptions associated with orchestration of consumer energy resources and load flexibility.

We commend AEMO on establishing an [Advisory Council on Social License](#), which will undoubtedly assist in exploring and interpreting social license issues in the energy transition from a consumer viewpoint. However, we note that in the Draft IASR 2023 (p. 121) social license has a rather limited definition:

Social licence is a term commonly used to refer to local community acceptance of new infrastructure development.

First, reducing social license to a purely “community acceptance” perspective ignores the crucial aspects of building relationships, developing trust, collaborating on common goals, and engaging communities in the co-design of solutions that address their concerns and needs in this particular context of new infrastructure development.

We also argue this definition adopted by AEMO is somewhat centered on the large-scale supply and transmission-level stakeholders' interests and issues, as “acceptance” is a rather passive³ term compared to the key role communities must play in the energy transformation. We have been strong advocates for the need to expand what social license means and how it can be addressed in the energy transition in Australia; social license is dependent on acceptance, confidence, collaboration and trust.

Evidently, securing social license for new large renewable projects and transmission investment is critical for enabling our future decarbonised energy system. The IASR rightfully acknowledges that lack of social license in this instance may lead to significant project delays and increased total system costs, either due to additional transmission augmentation, generator connection costs or land use penalties.

³ Researchers have pointed out that communities impacted by transmission projects and other infrastructure development may passively see themselves as “[sacrifice zones](#)”, having their liveability and wellbeing sacrificed for the “energy demands or profits of others”.

In fact, the [2021 Annual Report of the Office of the Australian Energy Infrastructure Commissioner](#) highlights that out of the 212 cases of complaint received in that year, the majority (111) related to proposed transmission projects, in which community engagement, natural environment, and economic loss were the most raised issues. This goes to show that land access and landholder relations are just one piece in the puzzle.

Ensuring that social license is secured and maintained with project neighbours and local communities is just as important. Adopting place-based approaches that seek to empower communities through this process and developing positive partnerships to regenerate their places for the future are a few ways to set communities in the active role they must take. On this matter, we strongly recommend that AEMO considers and adopts as appropriate, either in the final IASR or the future ISP, the guidelines in the forthcoming work commissioned by Energy Consumers Australia and produced by Sustainable Solutions Advisory Pty Ltd on the "*Opportunities to enable energy justice through place-based approaches to expanding transmission in Australia*". A panel discussion occurred during our Foresighting Forum 2023 on this topic can be accessed [here](#).

Equally critical, however, is acknowledging and investigating social license at the demand side, which is clearly missing from the Draft IASR 2023. Whilst social license for large-scale infrastructure investment may be specified as social license to build or operate, at the demand-side level this is categorised as social license to control or automate. As detailed in the 2020 report we commissioned to Cutler Merz on [Social Licence for Control of Distributed Energy Resources](#),

A social licence to control or automate consumer energy resources, where gained and maintained, results in individual consumers forgoing the complete control of their own devices and allowing others partial or full control due to perceiving the private benefits of CER control to be greater than the private costs or, at least, accepting the private costs in exchange for the public benefits.

The two central scenarios in the Draft IASR 2023—Diverse Step Change and Orchestrated Step Change—differ significantly on the level of coordination, orchestration and efficiency of consumer energy resources, all of which are entirely dependent on the level of social license secured. Nevertheless, it is implied that “successful deployment of orchestration technologies” and “continued advancements in digital technologies” will fill that gap and solve the problem.

Because we see the energy transition as a major socio-techno economic transformation, we do not agree that technology only will be suffice. Even if artificial intelligence, the Internet of Things, and innovative digital technologies can facilitate coordination and orchestration of CER, there will always be aspects of consumer agency, autonomy, choice and trust that must be earned and preserved.

The [management of consumer energy resources](#) can vary from manual processes of load shifting or saving that can be completely executed by the user, in one end of the spectrum, to full automation in which the user has no possibility via the provided interaction system to interrupt automation events at the other end. Thus, [the level of acceptance and confidence to secure social license](#) across this spectrum varies just as much and depends on consumers' view of legitimacy, credibility, and trust in energy industry actors. It's up to the entire energy sector to increase consumers' confidence and trust for a more orchestrated future through collaboration.

Ensuring that CER are coordinated and orchestrated at the most efficient cost⁴ partly due to increased levels of consumer trust and social license is imperative. However, consumer trust and confidence in the energy market have declined in the past few years as a result of recent crisis in the energy sector and cost of living pressures. As posed by our CEO in our 2021-22 Annual Report,

We know from our research that consumer trust and confidence in the energy market closely track energy affordability trends. When affordability is under control, consumer confidence rises, which opens the door for market reforms critical to a successful energy transition centred around consumer participation and consent. When affordability seems out of control the task is more challenging, for all in the energy system. At such a time there is more pressure on system planners and decision makers to understand and meet consumer expectations when it comes to current and future decisions. There is also more pressure on consumers, in the form of higher bills and the stress that comes with them.

According to our latest survey findings, only 35% of households surveyed believed the overall market is working in their long-term interests – this is the lowest level in the last three years. Rural consumers and those under financial pressure have even lower levels of confidence and trust in the energy sector. Consequentially, the effort needed to rebuild that trust and gain social license is greater than we could ever imagine. Building trust with households and small businesses and securing social license for reforms that capitalise on consumers' capacity to be flexible and to allow control of their resources to other stakeholders is a pre-requisite for our success in keeping energy costs down in the future.

Additionally, understanding that consumers have diverse and even competing motivations when it comes to owning and using their energy resources is also essential for developing narratives that resonate with them and assist in the process of building trust and securing social license. Some may be tech savvy and early adopters, others may be interested in the financial savings, or environmental benefits, or aiming to personally improve their self-reliance and independence from the grid, with others oriented towards community benefits.

In conclusion, we suggest that AEMO expands in the IASR (and future ISP-related publications) the definition of social license in light of above arguments. Further to that, we strongly recommend that AEMO investigates:

- the challenges that may arise from social license's dependence on consumer trust, confidence and affordability, and
- the implications (besides delays and additional costs) of social license across the electricity value chain as a specific theme in each of the scenario narratives.

Considering social license a sensitivity to be tested against reduces its critical role in enabling the reliable, flexible, affordable, modern and efficient transition all Australians prioritise.

⁴ Where social licence is obtained, it is likely to increase participation in voluntary CER control programs and potentially uptake of CER more broadly. Further, where social licence for mandatory programs is obtained, it is likely to increase compliance and therefore decrease the cost of compliance and enforcement activities, resulting in more efficient outcomes.

3. Communication – Clarity, conciseness and transparency to increase stakeholders' ability to provide meaningful feedback

Integrated systems' planning and collaboration are dependent on great communication. Clarity, conciseness and transparency are key. We also need to be empathetic towards understanding stakeholders' diverse perspectives and contexts, and we must be open to feedback that might challenge our own beliefs. Ultimately, we must make the effort to communicate with each other in ways that allow clear comprehension, meaningful action, and feedback.

We commend AEMO on the effort taken to organise specific sessions for consumer advocates to better understand the ISP process, the importance of the IASR in future planning activities, and what form of feedback is sought from consumer advocates in such processes. The [ISP Consumer Panel](#) is another great addition to the ISP process since 2021, and lifts up the concerns, values, expectations and long-term interests of consumers during development of the ISP.

However, the future of the energy system is highly complex, and most consumer advocacy organisations and professionals are spread thinly across multiple consultation and engagement activities. Moreover, despite the fundamental value of consumer perspectives, it's evident that the level of technical expertise required to absorb, digest and provide feedback on the Draft IASR 2023 (and its supporting documents) is well above the vast majority of the NEM's 11 million customers.

In this sense, if AEMO wants to encourage broader consumer feedback in its forecasting and planning activities, it should be clear and effortless for everyone to see—AEMO, industry stakeholders, and consumer advocates—where in the ISP process and in what specific sections of the ISP or IASP the most value lies for consumer participation. Of utmost importance is which information is shared with consumers and for which purposes, as they must be directly related to consumers' interests. From our perspective, it is unclear how consumer engagement shapes the broader ISP process, and until that question can be answered succinctly, consumer engagement in the ISP will struggle.

More specifically, consumers want to be certain that their interests, concerns and expectations are given adequate weight in Australia's most comprehensive energy system planning process. Demand-side inputs and assumptions concerning consumers' behaviour towards investment and/or social practices related to energy resources should be accompanied by crystal-clear explanations about what's being asked or expected of them.

To make it simpler for consumer advocates to engage with the extensive documentation provided by AEMO and be able to provide meaningful feedback, information must be distilled in a much more detailed, visual, replicable, easy-to-understand and accessible way. In other words, information should be easily "digestible" and communicated in plain English, avoiding technical jargon whenever possible. Having to jump through multiple documents to understand the train of thought of a single input or assumption can be tiring and frustrating. Changing names of various scenarios in different documents requires the reader to work much harder than they need to, and much harder than they likely would if genuine feedback was sought.

We suggest AEMO use more interactive and user-friendly ways to share data, including PowerBI solutions. Graphs and tables that allow easy interpretation and manipulation can facilitate the process of interpreting inputs. The [IEA's Monthly Electricity Statistics](#) or the [ABS's Population data](#) are useful benchmarks.

The [Commonwealth's Budget](#) is another good example of how complex modeling—the entire macroeconomic outlook for Australia—can be purposefully made understandable by both specialised and general lay audiences. There are a number of different papers, factsheets, reports and statements to explain the Budget's content and details at varying complexity levels to cater for various audiences' background and walks of life. It's made simple for the audience to choose how they wish to engage with which topics and at what depth or breadth. Basically, this attitude towards sharing information in ways that facilitate users' interaction, i.e., that considers the users' experience, empowers people.

These suggestions would contribute to effectively achieving the broader ISP and IASR indispensable purposes of informing market participants, investors, decision makers and consumer advocates about the needs of our future energy system.

Lastly, we encourage AEMO to further their efforts in explicitly signalling where consumer feedback is most sought and in resourcing and equipping consumer advocates in relevant matters for consultation. Expanding on the idea of the "What is the ISP and why does it matter to consumers?" webinar (on 24 January 2023), a more comprehensive training course could be developed with an approach similar to the [AEMO's National Electricity Market \(NEM\) Overview training course](#).

Final considerations

Thank you again for the opportunity to provide feedback on the [Draft Inputs, Assumptions and Scenarios Report \(IASR\) 2023](#). This critical work produced by AEMO is one of the most comprehensive analyses of Australia's energy system, and its current and upcoming opportunities for a decarbonised future. Whilst there are several opportunities for improvement, we acknowledge the process is progressively evolving with each iteration.

The three key points in this submission—integration, collaboration, and communication—aim to assist AEMO in considering more ways of planning for an energy future that puts consumers at the heart of the system. Actually, it's much more than that: it's an energy future that puts people—with all the different roles they play aside from being consumers of energy, and the diverse ways the wish to lead their lives—at the heart of a better and inclusive system.

As a final consideration that restates our key arguments, we'd like to conclude with some insightful ideas on the approach to "[Consumer-Community Oriented Integrated Energy System Planning](#)" to address climate mitigation and adaptation. Paul de Martini, from the Pacific Energy Institute, gave a [keynote presentation during our Foresighting Forum 2023](#) about this innovative approach to distribution network planning across the US. It aims to address, through place-based and community-scale solutions, key overlapping areas of consumers' interests in the context of mitigating climate change impacts and increasing resilience of communities against extreme weather events. The community-oriented energy system planning offers a new and local perspective on service quality and reliability, CER integration and electrification, flexible services, and operational efficiency for least-cost total system costs.

Paul reflects on the evolving landscape of energy system planning, and the need to remove siloes for a more holistic and cyclical view on how energy is produced, transported, and consumed. Whilst the inputs needed for electricity distribution planning 50 years ago were few and rather limited, the global and local transformations arising from climate change impacts and mitigation strategies require us to think more broadly. The energy ecosystem has developed enormously, and new products and services will continue to come up to meet everchanging consumer needs.

Energy generation, transmission/distribution network planning, and demand are becoming more and more intertwined. Whilst AEMO recognises that distribution networks and demand-side participation are essential for an efficient, reliable, and secure power system, the IASR and the ISP don't currently address constraints existing across the distribution-level system.

As renewable generation gets increasingly dispersed across Australian homes and businesses, supplemented by local storage, then local planning and resilience to disturbances (extreme weather events, natural disasters and other threats) must be a key part of energy system planning. Consumer and community engagement is the essential starting point to identifying the key planning objectives and understanding how the future energy system can deliver on desirable consumer outcomes. Figure 8, from Paul's presentation in the Foresighting Forum 2023, illustrates this interdependence.

Lastly, we congratulate AEMO for being in a position of openness to constructive feedback, and we hope our response is useful in advancing the IASR and the ISP towards a more integrated and collaborative exercise enabled by transparent and clear communication practices that empower consumers and other stakeholders to play an active role in the energy transformation.

Figure 8 – Integrated distribution planning inputs in an energy future increasingly interdependent upon consumer energy resources, community sustainability and resilience planning



Source: P. de Martini, 2023

