



Electricity and Energy Sector Plan Taskforce

Department of Climate Change, Energy, the Environment and Water

Submitted via consultation hub.

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Electricity and Energy Sector Plan discussion paper

AGL Energy (AGL) welcomes the opportunity to make a submission in response to the Australian Government's Electricity and Energy Sector Plan discussion paper (Discussion Paper).

AGL is a leading integrated essential service provider, delivering 4.3 million gas, electricity, and telecommunications services to our residential, small, and large business, and wholesale customers across Australia. We operate Australia's largest electricity generation portfolio and have the largest renewables and storage portfolio of any ASX-listed company, having invested \$4.8 billion in renewable and firming generation over the past 20 years and added more than 2,350 MW of new generation capacity to the grid since 2003.

We support Australia's ambition of net zero by 2050 and believe this will underpin the competitiveness of the Australian economy. This will be realised by Australia generating low-cost power using zero emissions wind and solar resources, backed up by technologies like batteries, hydro power and, for some of this transition, gas. As the global community responds to the risks of climate change, AGL recognises the large part that we must play in the transition to a low carbon economy.

Our inaugural 2022 Climate Transition Action Plan (CTAP) outlines AGL's ambition to become an integrated low-carbon energy leader, including:

- Targeting a full exit from coal-fired generation by the end of FY35;
- Ambition to meet customer energy demand with around 12 GW of new firming and renewable assets by 2036; and,
- An initial target of 5 GW new firming and renewables by 2030.

AGL has also committed to repurposing its large thermal generation sites into low carbon industrial energy hubs.

AGL is supportive of the Australian Government taking a whole-of-economy approach to developing Australia's Net Zero Plan, which will guide how Australia can transform our economy to net zero by 2050.

The individual sectoral plans that cover all the major components of Australia's economy can ensure that the Net Zero Plan and the development of strong 2035 targets is informed of all of opportunities, challenges, and constraints faced by Australia in meeting its net zero ambitions. There are important interactions between each of the sector plans, with the Electricity and Energy Sector Plan (E&E Sector Plan) playing a key enabling role for all the other sector plans.

The energy transition needs a clear long-term vision, supported by detail on how Australia will identify, acknowledge, and overcome transitional challenges along its journey to net zero. The transition will also involve all parts of the Australian economy contributing towards an accelerated ambition to net zero emissions, in a way that provides opportunities to reduce energy input costs for Australian customers and



leverages new industries to create value and opportunities for all Australians. Long-term certainty and signalling of bigger structural changes or policy shifts are critical to deliver the investment that will underpin the energy transition.

It is also important for governments to focus on meaningful structural changes that can support and enable a step change in outcomes. Given that there are many elements that will influence the pace and direction of the energy transition, it is particularly important to ensure that energy markets are resilient to a range of different pathways and scenarios.

While the vision of a decarbonised future should be aspirational, it should not understate the major impacts that the transition will have across the entire economy. The Australian Government's Net Zero Plan should be grounded in maintaining system reliability and security and keeping energy affordable for all Australians in addition to reducing carbon emissions in the energy sector and supporting emissions reductions in other sectors.

Decarbonising the electricity and energy sector will be central to the Australia's Net Zero Plan. This will require rapidly increasing the share of renewable energy sources, uptake of electrification and consumer energy resources (CER) to reduce the dependence on fossil fuels. This will need to be supported by significant investments in grid infrastructure, storage solutions, and demand response mechanisms to ensure reliability and security of supply. Most importantly, achieving the necessary rate and scale of transition will need a coordinated approach among federal, state, and local governments, market bodies, industry, and consumers.

A key challenge for the energy transition is for the price of energy to remain affordable and for system reliability and security to be maintained. If these two factors are not appropriately balanced with the emissions reduction imperative, it will result in poor short-term outcomes for consumers and the energy system generally and undermine the social licence for transition.

We have provided a more detailed response to the themes outlined in the Discussion Paper in **Appendix A** below.

AGL looks forward to continuing to work with the Australian Government to support the energy transition and help Australia reach its net zero by 2050 ambitions.

Should you have any questions in relation to this submission, please contact Leilani Kuhn (Policy Manager) on 03 8633 6934.

Yours sincerely,
AGL Energy



APPENDIX A – AGL’s response to the Discussion Paper

Mobilising investment to transform energy

As highlighted in the Discussion Paper, two of the key elements required to create a positive investment environment include policy certainty and reducing investment risks.

One way to provide policy certainty is to legislate targets and schemes to minimise the risk of reversal if there is a change in government. Furthermore, more collaboration and coordination between various government departments and the states will also provide more confidence that there is a clear and committed plan.

We recognise and support the collaborative approach that the Commonwealth, state and territory governments are taking through the National Energy Transformation Partnership (NETP) and the Renewable Energy Transformation Agreements (RETA) to work together on reforms to help transform Australia’s energy system to achieve net zero by 2050. Building on this, we would encourage the federal government, where possible, to develop policies that cover all Australian jurisdictions to ensure consistency in objectives and outcomes.

Australian Energy Market Operator’s (AEMO) Draft 2024 Integrated System Plan (Draft ISP) identifies and articulates the key risks to the delivery of the optimal development pathway (ODP) for transmission and Renewable Energy Zone (REZ) development. The risks are significant and need careful management as the contingencies are not merely ‘possible’ but are already being realised and are creating real barriers to delivering the energy transition at the very rapid rate identified by the ODP.

AGL agrees with all the risks identified in Draft ISP, including that: market and policy settings are not yet ready for the rate change; uncertainty is risking timely investment; the full benefits of customers’ investments in CER may not be realised; the necessary social licence and developing the necessary skilled workforce and supply chains will be significant challenges.

While governments and policymakers are taking steps to address the challenges identified by AEMO in the Draft ISP, timelier and more coordinated policy and reform will be required. Lack of coordination in policy and reform is a key risk to the energy transition.

Reducing financial risks

With respect to reducing investment risks, we acknowledge the work already done by the Australian Government, in particular the expanded Capacity Investment Scheme (CIS).

The proposed design of the CIS is intended to reduce financial risks to proponents of renewable and zero-emissions firming generation. While this addresses a key risk faced by investors in new projects, we consider there remain other risks and barriers to the deployment of 32 GW of renewable capacity and clean dispatchable capacity projects by 2030, which the design of the scheme does not necessarily address. Complimentary policies and reforms in other areas will therefore be required to successfully accelerate the deployment of new infrastructure.

Some of these challenges arise from the need for coordination of all market reforms under development. Landmark reforms include potential changes to transmission access, a process now having been underway for several years and that continues to pose significant risks of curtailment to developers. Additionally, we



have previously provided feedback on the proposed Orderly Exit Management Framework (OEMF),¹ particularly the risk of distortions arising from requiring significant amounts of thermal generation that were forecast to exit to remain in the market while concurrently seeking to drive more supply into that same market. The potential price suppressing effect of the OEMF in such circumstances could have significant implications for the costs of the CIS and for existing assets, such as renewable plant, which are not underwritten by an NSW Roadmap Long-Term Energy Service Agreements (LTESA) or CIS contract. This is particularly the case post-2030 after the Renewable Energy Target rolls off. It will be important for taxpayers and energy consumers to coordinate investment and disinvestment interventions under the CIS and OEMF.

Importance of competitive markets and private sector investment

Maintaining market competition and appropriate economic signals is imperative to ensuring ongoing efficient investment in the energy transition. Market competition promotes innovation, efficiency, and cost-effectiveness, ultimately benefiting energy consumers through lower energy bills and enhanced product offerings.

Appropriate market signals must be preserved to support the efficient operation of markets as this indicates where investment is most needed. If, for example, contract market competitiveness and liquidity is not maintained, there is a risk that the benefits of new investment in renewable and storage will not translate fully to benefits on customers' bills.

Encouraging household investment in energy transition

Along with encouraging large scale private capital, there is important work to be done to continue to encourage households to invest in the energy transition.

CER have the potential of providing significant system benefits and could offset the need for grid-scale investment. To fully capture the potential benefits, CER needs to be orchestrated and appropriately integrated into the National Energy Market (NEM) in a way that supports power system reliability and security. Customers need to understand and see the benefits and have trust in the energy sector to achieve this. We discuss CER in further detail below.

Non-financial investment barriers

While the CIS is focused on helping reduce the financial risks faced by investors in the energy transition, there are still several non-market barriers that sit outside the scope of the CIS design, which need to be addressed concurrently. These include planning approvals, connection processes, and supply chain constraints including workforce availability affecting the construction of new projects and social license issues, as identified in the Draft ISP.²

While the Australian Government's Rewiring the Nation plan will have positive impacts on some of these issues, particularly in expanding transmission capacity, significant barriers to project development remain.

In AGL's view, to keep Australia's energy transition on track, we need to prioritise and expedite approvals for those projects that are most readily achievable while considering the important issues of delivering on our environment and social licence. This would mean an immediate focus on those projects that utilise existing infrastructure, such as transmission connection.

While AGL acknowledges the importance of having robust planning and environmental approval processes in place, the need for the energy transition to make significant gains in the next six years means that

¹ See: AGL's submission to the [proposed Orderly Exit Management Framework consultation](#).

² See: AEMO's [Draft 2024 Integrated System Plan](#), section 8.3



efficiencies in the planning process and a streamlined connection process are key to keeping the transition on track.

AGL acknowledges the work that the federal and state governments are already doing in this space and would encourage further focus on these areas going forward. We welcome governments leaning into a whole of government approach to the energy transition and engaging across the various portfolios, particularly planning and transport.

Some of the areas where we think the federal government can add the most value include:

- Providing a coordinating role to ensure that the finite resources are being directed into the right places and that the objective that is trying to be achieved is clear.
- Providing clear policy direction to help create a positive investment environment.
- Helping to accelerate planning approvals and connections.
- Assistance in sequencing the work that need to be done to keep the energy transition moving forward.

Wholesale market design

Another key area is ensuring the wholesale market design has a clear focus on ensuring that consumers benefit and can access competitive supply contracts, primarily through electricity retailers but also for the large customers who directly manage their own wholesale contracting.

AGL has made several submissions to both the LTESA design process and previous CIS design consultation processes,^{3,4} which have highlighted options to improve the schemes by strengthening contracting incentives to drive efficient outcomes while minimising adverse unintended consequences.

The Australian Government's announced post-2030 review of the NEM (post-2030 review) is an opportunity to address some of these challenges and help ensure that the wholesale electricity market design operates effectively while also continuing to drive investment in a renewable future. We would encourage the federal government to think carefully about the principles that will guide this important piece of work to ensure that it results in an optimal market design that is suited to our future state of high penetration of variable renewable energy (VRE) and CER. We would also encourage the federal government to ensure that this review does not function as a barrier to investment, which will need to continue to accelerate.

One of the important questions for the post-2030 review is how the necessary market reform can be undertaken while maintaining effective price signals to assist in the economic dispatch of a new fleet of generators with fundamentally different operational characteristics than the older generators they will be replacing. Maintaining and strengthening the reliability, safety, and security of our energy system and the other elements of the national electricity objectives is critical. Ensuring that the market works in the long-term interests of consumers will help build confidence in the community and the social licence to undertake necessary investment.

We also note the introduction of an emissions reduction objective to the national energy objectives (including the electricity objective). This work has led to the release of an interim Value of Emissions Reduction (VER) from Energy Ministers, through the Ministerial Council on Energy.⁵ The interim VER has been designed

³ See: AGL submission to [Capacity Investment Scheme Public Consultation Paper](#).

⁴ See: AGL submission to [Draft LTESA Term Sheets](#).

⁵ See: advice from Energy Ministers on the interim value of greenhouse gas emissions reduction [here](#).



through a ‘target-consistent’ methodology, meaning that the value broadly reflects the marginal cost of abatement to achieve targets across the jurisdictions and Australia.

While the impact of the VER is yet to be seen, we are hopeful that it will help drive efficient investment across the NEM – particularly around network investment – to help achieve the various renewable energy and emissions reductions targets.

The establishment of the VER in the energy sector may be instructive for the development of a broader economy-wide value to help guide policymakers and better support interactions and dependencies between sectors. This is a relevant consideration given the E&E Sector Plan will feed into a broader Net Zero Plan, which will consider the six sectoral decarbonisation plans that cover all major components of the economy.

Enabling electrification for a smooth transition

As the AEMO Draft ISP projections show, electrification is a critical enabler for the industrial, transport and other domestic sectors to reach net zero emission objectives.

Electrification and the sustained uptake of CER will continue to shape energy needs along with the decarbonisation of transport and industrial sectors, which could potentially significantly increase system demand. Given that electrification is the most likely decarbonisation pathway for residential consumers, considering how impacts on system load can be mitigated through better demand management (i.e., by improving energy efficiency and productivity) and orchestration will be critical.

AEMO’s 2024 Gas Statement of Opportunities (GSOO) continues to forecast risks of natural gas shortfalls on extreme peak demand days from 2025 and the potential for small seasonal supply gaps from 2026, predominantly in southern Australia, ahead of annual supply gaps that will require new sources of supply from 2028.⁶ This makes the roll out of residential electrification an imperative as there are sectors of the Australian economy that are unable to electrify and will be reliant on increasingly scarce gas supplies.

To drive residential and small business electrification at pace and at scale, government support is essential. Through the right incentives, regulatory frameworks, and policy settings, governments can ensure electrification is a feasible alternative to natural gas.

AGL is a strong supporter of electrification and is in a good position to support governments to meet their electrification ambitions. One key example of our market leading work is the launch of AGL’s [Electrify Now](#) platform to Australians across the NEM in March 2024. Electrify Now helps households to understand the potential benefits of electrifying their homes by providing personalised information for the most impactful upgrades. It also helps customers to understand their potential energy bill and carbon savings if their home switched to solar, battery, heat pump hot water, an electric vehicle (EV) and/or induction cooktop, with users able to pick and choose which upgrades suit their budget and lifestyle.

AGL is also a market leader in the development of innovative products and services that enable consumers to utilise their CER assets to optimise their energy load profile and better manage their energy costs. Our current CER product and services include our leading-edge [Virtual Power Plant \(VPP\)](#), [Peak Energy Rewards](#) demand response program, retail [Night Saver offer](#) for Electric Vehicle (EV) owners and [EV subscription](#) service. Additionally, through our South Australian Hot Water Orchestration Trial, we control hot water load to maximise benefits for customers from the optimisation of hot water demand and make use of

⁶ See: AEMO’s [2024 Gas Statement of Opportunities](#).



SA Power Network's 'solar sponge' time-of-use tariff that incentivises daytime usage of electricity to enable higher renewable energy generation.⁷

CER orchestration and demand response

Through research led by Energy Consumers Australia, we know that the three main reasons why Australians are investing in CER like solar PV and battery storage are to save money, to be less dependent on mains electricity and to make more efficient use of energy.⁸ On top of this, only 31 per cent of Australians think that the energy market currently works in their favour, dropping to 27 per cent when thinking about the future market.⁹ With customer appetite for rooftop solar PV increasing, uptake of EVs starting to accelerate, and electrification taking a foothold, CER policy is at a critical juncture.

Electricity consumers are participating in the renewable energy transformation through unprecedented investment in CER. The Draft ISP noted that the uptake of CER is increasing faster than initially predicted, with AEMO forecasting 18GW more rooftop solar capacity by 2050 compared to the 2022 ISP forecasts.¹⁰ Furthermore, according to recent CSIRO analysis, better CER co-ordination would lower average electricity bills for all households, regardless of whether they have CER, by \$30 to \$50 per year from 2030–2050.

Given the prominence of CER in achieving the more ambitious scenarios outlined in the Draft ISP, it is important that appropriate policy settings are accelerated to help ensure the delivery of integrated and orchestrated CER, including the importance of being clear on the roles of industry participants, and need for appropriate standards.

AGL welcomes the recent announcement from the Energy and Climate Change Ministerial Council (ECMC) regarding the development of a national consumer energy resources roadmap. The establishment of an expert taskforce under the roadmap to consider national reforms for efficient CER integration, and how CER can help households reduce costs and benefit from the opportunities provided by electrification is a step in the right direction.

CER has the potential of providing significant system benefits and could offset the need for grid-scale investment. To fully capture the potential benefits, CER needs to be orchestrated and appropriately integrated into the NEM in a way that supports power system reliability and security. Customers need to understand and see the benefits and have trust in the energy sector to achieve this.

AGL considers that retailers, who interact directly with customers, are well placed to educate and demonstrate the benefits of CER integration and orchestration to customers. This can be done through activities such as education campaigns, trials, pilot projects, and by innovative product offerings. Some examples of this include AGL's Electrify Now platform discussed above and AGL's Electric Vehicle Orchestration Trial.¹¹

Barriers to electrification

Based on current trends, electrification is the preferred method of decarbonisation for customers in the residential and small business sectors.

⁷ See: [AGL's South Australian Hot Water Orchestration Trial](#).

⁸ See: Energy Consumers Australia's [Behaviour Survey Household Results](#), Oct 2023

⁹ See: Energy Consumers Australia's [Sentiment Survey Household Results](#), Dec 2023

¹⁰ See: AEMO's [Draft 2024 Integrated System Plan](#), page 18.

¹¹ See: AGL's [Electric Vehicle Trial](#).



According to the 2024 GSOO, since the publication of the 2023 GSOO gas consumption has noticeably declined across all sectors, with emerging indications of fuel-switching from gas to electricity. Electrification and other drivers in the Step Change scenario are forecast to reduce natural gas consumption by around 135 petajoules (PJ) to around 280 PJ by 2043.¹² Moreover, some state governments have implemented measures, which AGL supports, to restrict new residential gas connections and encourage electrification for small customers.¹³

According to the Grattan Report *Getting off gas: why, how and who should pay?* (Grattan Gas Report), all-electric homes are cheaper to run, have lower emissions, and are better for people's health. This technology is also already available and in widespread use, with more than 30 per cent of Australian households already using electric heating, cooking, and water heating.¹⁴

However, the Grattan Gas Report also acknowledges that there are barriers to the electrification of households and businesses, such as high upfront costs, customer preferences, and lack of information.¹⁵ Moreover, customers experiencing vulnerability, renters, and apartment dwellers face further barriers to electrification due to affordability issues and constraints about what fuel they can use and choice of appliances in their home.¹⁶ Furthermore, First Nations Peoples and remote communities face their own unique barriers due to their geography, lack of infrastructure and potential extreme weather,¹⁷ along with barriers relating to the skilled workforce required to enable electrification, which will be discussed in further detail below.¹⁸

As such, it is important to provide customers with clear and reliable information about the benefits of switching to electric appliances, as well as incentives and support to overcome the initial costs, especially for low-income households.

We acknowledge the work that the Australian Government is already doing to help overcome some of these barriers, including its national consumer energy resources roadmap, First Nations Clean Energy Strategy and Future Gas Strategy.

Some other key measures that AGL considers would help remove barriers include:

- Expansion of electrification upgrades to all social housing stock. The federal government commitments made as part of the Energy Savings Package are very welcome, and we would encourage the Australian Government to look to expand this further.¹⁹
- Targeted subsidies that encourage the uptake of electric appliances and protect vulnerable customers that remain on the gas networks. The federal government could also look to coordinate with the state-based programs that provide incentives for electrification (i.e. the Victorian Energy Upgrades program).

¹² See: page 6 of AEMO's [2024 GSOO](#).

¹³ These include Victoria and ACT. For more details please see [the Victorian Government announcement](#) and [the ACT Government announcement](#).

¹⁴ Grattan calculation based on Energy Networks Australia (2021) and Gas Energy Australia (2023). For further details, see p14 of the Grattan report [Getting off gas: why, how and who should pay?](#)

¹⁵ See: page 20 of the Grattan report [Getting off gas: why, how and who should pay?](#).

¹⁶ See: page 22 of the Grattan report [Getting off gas: why, how and who should pay?](#)

¹⁷ For further details on barriers to electrification see Energy Consumers Australia's [Stepping Up: A Smoother Pathway to Decarbonising Homes](#) [here](#), the [Switching On](#) report by the Monash Climate Change Communication Research Hub [here](#), and the Grattan Institute's [Getting off gas: why, how and who should pay](#) [here](#)

¹⁸ See: page 41 of the Grattan report [Getting off gas: why, how and who should pay?](#)

¹⁹ See: detailed announcement from Department of Climate Change, Energy, the Environment and Water [here](#).



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- Implementation of mandatory disclosure of household energy performance for sale and renting of houses.²⁰
 - Tax incentives for landlords to electrify rental properties.
 - Introduction of solar PV subsidies with income means testing.
 - Introduction of rebates for households installing a bundled solar/battery system.
 - Tax breaks for small-medium-sized businesses installing both solar and batteries.
 - Introduction of a framework that provides assurance regarding the quality and safety of installation and products, similar to the framework currently in place for the Small-scale Renewable Energy Scheme (SRES).
 - Fast-track the roll out of smart meters across Australia to help unlock potential consumer benefits.²¹

AGL is also committed to helping customers make informed decisions about their energy use and providing them with solutions that suit their needs and preferences, as shown through the development and launch of our [Electrify Now](#) platform.

Energy efficiency and performance

Any discussion about electrification needs to also consider energy efficiency and productivity. One of the key sectors that can benefit from electrification and decarbonisation is the building sector, which accounts for about 20 per cent of Australia's greenhouse gas emissions. While Australia's energy efficiency standards for new buildings and households have been improving, of the 10 million homes in Australia, approximately 60 per cent were built prior to 1995.²² Houses built prior to this time typically only have an average House Energy Rating of 1.5 out of 10.²³ As such, there is a real opportunity to improve the energy efficiency and performance of Australia's housing stock through relatively simple improvements like insulation.

AGL welcomes the Australian Government's National Energy Performance Strategy (NEPS), which cements substantial commitments made to energy efficiency and decarbonisation in last year's Budget. The NEPS also recognises the important role that improving energy performance will play in reducing emissions and lowering energy bills for Australian households and businesses.

These measures will help consumers reduce their energy bills, manage their demand, and lower their carbon footprint. AGL supports these initiatives and is committed to offering innovative products and services that enable customers to choose cleaner and smarter energy solutions.

AGL looks forward to working with the Australian Government to implement these commitments and encourages the government to continue to explore more opportunities in this space given its importance in helping Australia realise its net zero ambitions.

We also note the important linkages between the E&E Sector Plan and the Built Environment Sector Plan on this issue and encourage the government to ensure that there is close collaboration between the relevant departments when developing the respective sector plans.

²⁰ An example of this are the Energy Performance Certificates that are required by landlords and sellers in France to rent or sell a house, see further details [here](#).

²¹ We note that the AEMC is currently consulting on its [Accelerating smart meter deployment rule change](#).

²² See: page 35 of Monash Climate Change Communication Research Hub report [Switching On: Benefits of Household Electrification in Australia](#).

²³ See: page 35 of Monash Climate Change Communication Research Hub report [Switching On: Benefits of Household Electrification in Australia](#).



Growing alternative low carbon fuels

The role of liquid fuels in the net-zero transition, including natural gas, will vary significantly depending on the specific application, as well as other factors such as access to replacement technologies, cost, and location.

As AGL outlined in its submission to the Australian Government's Future Gas Strategy (**Gas Strategy**),²⁴ we support a competitive ecosystem that has the right incentives in place to develop a range of technologies to deliver outcomes at the lowest cost. For most applications, we consider that renewable electricity is likely to provide the most cost-effective pathway to accelerated decarbonisation; however, this will not immediately be the case for all applications, especially for some industrial processes where different decarbonisation pathways may be necessary over the short to medium term.

Any approach taken by the government should focus on enabling the broadest range of technologies, products, and services, to provide optionality for existing gas customers. Policies should be designed in such a way that they incentivise early decarbonisation, leverage private co-investment, and unlock the benefits of competitive markets such as product innovation, efficiency, and higher levels of service. Effective funding frameworks are critical to supporting a multi-stage technology ecosystem, while maintaining both reliability and security of supply.

AGL supports the rapid transformation of energy systems to support Australia's emissions reduction targets. As stated above, the 2024 GSOO states that gas consumption has noticeably declined across all sectors since the publication of the 2023 GSOO, with emerging indications of fuel-switching from gas to electricity. Electrification and other drivers in the Step Change scenario are forecast to reduce natural gas consumption by around 135 petajoules (PJ) to around 280 PJ by 2043.²⁵

Nevertheless, forecasts suggest that while steadily declining, gas demand for residential and commercial applications will continue to be material for some time.²⁶ This is because of the scope of replacing existing gas appliances that would be required to fully electrify, and because of commercial and industrial applications where electrification may be more challenging; for example, feedstock gas and high-temperature process heat applications.

We would also emphasise that the Australian Government should focus on supporting sectors where it is currently difficult to substitute natural gas (e.g. high-temperature industrial processes, such as those for cement kilns and petrochemical plants), rather than sectors where electrification is the more likely decarbonisation pathway.

Reliance on gas for some existing applications, notably domestic and commercial heating, may also be able to be significantly reduced by amending standards for new and existing buildings to improve energy performance and efficiency.

Gas Powered Generation

Alongside new transmission infrastructure, DER, storage, and demand response, electricity generation from liquid fuels is also likely to be necessary to support Australia's energy system both now and in the future.

²⁴ See: AGL's submission to the Australian Government's [Future Gas Strategy](#).

²⁵ See: page 6 of AEMO's [2024 GSOO](#).

²⁶ See: AEMO's [2024 GSOO](#)



As noted by AEMO in its Draft ISP, Gas Powered Generation (GPG) is one of the key technologies to provide the firm capacity the power system needs to support high penetrations of VRE such as wind and solar.²⁷

In South Australia we are already seeing the importance of efficient, flexible gas peaking plant in firming a system with high penetration of VRE. AGL's 210 MW Barker Inlet Power Station (BIPS) can operate at full capacity within five minutes, meaning it provides a rapid response to changes in renewable generation supply. Consisting of 12 reciprocating engines capable of generating about 18 MW of output each, BIPS is also highly flexible and often generates in the morning and evening peaks, when demand from households is high and output from solar is limited.

Although increasingly storage technologies such as batteries and pumped hydro will support the grid, as aging coal generation exits the market, some amount of gas generation will be needed to ensure system reliability, with the Draft ISP suggesting that GPG will increase to 16GW by 2050.²⁸

Meeting peak demand and ramping challenges, as well as other system services, will require careful market design, and appropriate price signals to ensure all system requirements are always met. Although services provided by new technologies such as inverter-based resources and demand response will have an increasing role in supporting the grid, gas generation currently provides a range of essential system services to the power system, in particular for ramping requirements and system strength. As coal-fired generation continues to exit the market, existing gas generators may increasingly be called upon to provide essential system services while the grid transforms to a fully decarbonised system where services can increasingly be provided by zero-emissions technologies.

At the same time, reliance on gas generation to support the broader electricity grid can also be mitigated through rapid electrification and innovation in customer products and services. As discussed above, given that AGL considers that residential electrification is the most likely decarbonisation pathway, broader grid impacts may be resolved through better demand management and orchestration of existing and growing CER. For example, orchestration of flexible residential demand from applications such as hot water and EV charging, may shift load from evening peaks to the daytime solar soak period, reducing the need for gas-peaking.²⁹

Gas network costs

A key consideration for governments and regulators is how to equitably recover the gas network costs from customers while usage declines, and how to plan for the eventual decommissioning of gas networks.

Gas networks are typically regulated as natural monopolies, and their revenues are determined by the Australian Energy Regulator (AER) based on the expected level of demand and the cost of providing services. As demand falls, the unit cost of maintaining the network increases, and this is reflected in higher network charges for the remaining customers.

The AER has flagged as a critical concern that the current regulatory framework may not be well suited to deal with the rapid and uneven transition away from gas and could result in unfair outcomes for customers who are unable or unwilling to electrify.³⁰ For example, customers who live in rental properties, apartments,

²⁷ See: page 65 of AEMO's [draft 2024 ISP](#).

²⁸ See: page 65 of AEMO's [draft 2024 ISP](#).

²⁹ See: [AGL's South Australian Hot Water Orchestration Trial](#) and [AGL's Electric Vehicle Trial](#).

³⁰ See: AER's [final decision for AusNet's Access Arrangement Determination 2023-28](#)



or low-income households may face barriers to switching to electric appliances and may end up paying higher gas bills or being disconnected from the network.

One of the key issues discussed in the AER's final decision for AusNet Gas Services Gas distribution access arrangement 1 July 2023 to 30 June 2028 (AusNet's Access Arrangement Determination 2023-28) was a hybrid cost recovery method for the abolishment of gas supply. During AusNet's review, the AER became aware that some customers, who are choosing to move away from gas, are avoiding a higher charge by seeking temporary disconnection measures designed for a short-term pause of supply rather than the safer, permanent removal of connection assets. One of the safety concerns that have been raised with this approach include concerns that, over time changes in property ownership will further increase the safety risk, as the new owners may be unaware of the live gas assets within the premises.³¹

As such, the AER decided that while paths to electrification are still uncertain, and to reduce the price difference between the two disconnection services, there be an upfront cost of \$220 for connection abolishment and the remainder to be shared between all customers. The AER noted that this was not a long-term solution and will put upwards pressure on haulage tariffs in the 2023-28 period until a more sustainable solution is identified.

This will be a key consideration for the AER for future determinations, especially if in future periods we see a further decline in demand and an increase in customers leaving the network, meaning that the upwards pressure on tariffs for remaining customers will only grow.³²

As we stated in our submission to the Gas Strategy³³, AGL would support further consideration of more efficient processes for bulk gas abolishments, as opposed to mechanisms that simply support abolishing connections on a house-by-house basis. Similarly, GPG, which provides an important role in supporting the electricity system through the transition, may face higher gas costs or reduced availability of gas supply.

Some potential options to help address these issues include:

- Implementing a clear process for customers who disconnect from the gas network including the process to disconnect and/or abolish gas meters by networks.
- Providing subsidies or incentives for customers who face barriers to electrifying, such as low-income households, renters, and apartment dwellers, to help them access more efficient and affordable electric appliances.
- Developing a long-term strategy for the future role of GPG in the electricity system and ensuring that gas network costs and charges are aligned with the value that GPG provides to the grid. This could include assessment of the cost of alternatives to pipelined natural gas for generation that may only be required infrequently, given that at low utilisation the higher cost of some options could compare favourably to gas from pipelines.
- Establishing a clear and consistent policy framework for the decarbonisation of the gas sector and supporting the development and deployment of renewable gas alternatives, such as biogas and hydrogen which we will discuss further below.
- Engaging with gas network owners and operators, customers, and other stakeholders to develop a coordinated and consultative approach to the planning and management of gas network assets and

³¹ See: page 7 of the AER's [final decision for AusNet's Access Arrangement Determination 2023-28](#)

³² See: page 7 of the AER's [final decision for AusNet's Access Arrangement Determination 2023-28](#) and [AGL's submission to Gas Distribution Network Tariffs Review 2023](#)

³³ See: AGL's submission to the Australian Government's [Future Gas Strategy](#).



ensuring that network investment decisions reflect the changing demand patterns and customer preferences. A key issue will be in striking a balance between the risk placed on consumers and the risk placed on distribution networks in the energy market transition. If future access arrangement periods see a winding down of gas networks, there could be fewer customers to share the fixed costs of the network over time. This could result in customers who cannot afford to electrify facing higher bills, raising equity concerns. As such, this issue needs to be considered within the context of ensuring that customers who may be still reliant on gas are paying no more than necessary for a safe, reliable, and secure supply.³⁴

These options should be assessed against the criteria of efficiency, equity, reliability, security, and environmental sustainability, and should be informed by robust analysis and evidence. The government should also ensure that any changes to the gas network regulatory framework are consistent with the broader energy market reforms and objectives and support the transition to a low-carbon economy.

Low carbon fuels

AGL is very supportive of alternatives to natural gas for some specific use cases, including electrification, biogas, and hydrogen.

Hydrogen can itself be an alternative fuel or feedstock in a range of use cases, and hydrogen derived fuels (e.g. synthetic diesel, synthetic aviation fuel and synthetic methane) can be drop-in replacements that are compatible with existing infrastructure and appliances. AGL supports the development of these use cases for future fuels within Australia to assist the decarbonisation journey.

To support the transition of high emission industries to a cleaner future, in 2022 AGL acquired Energy360 Pty Ltd (Energy360). Energy360 is a leading provider of solutions for sustainable energy systems, by producing biogas through the break-down of residue organic materials in an oxygen-free environment, providing an effective renewable solution for commercial and industrial customers within agricultural, landfill, food processing, and waste management industries. These are behind the meter solutions which are providing strong decarbonisation solutions for AGL customers. Energy360 is also developing projects which will upgrade biogas to biomethane for grid injection and participate in the Green Gas Certification process.

AGL considers that biomethane is likely to provide a promising short-term solution to substitute natural gas in the commercial and industrial sectors while helping meet Australia's decarbonisation and energy security objectives.

As mentioned above, AGL has also launched its Electrify Now platform, which supports customers looking to switch away from natural gas appliances such as gas heating, gas hot water, and gas cooktops to electric alternatives.

Small customers' preference for electrification should be considered when considering the role of renewable gases going forward. As stated in our submission to the Gas Strategy³⁵, it is our view that low carbon fuels should focus on supporting sectors where it is currently difficult to substitute natural gas (e.g. high-temperature industrial processes, such as those for cement kilns and petrochemical plants), rather than sectors that already have a clear decarbonisation pathway through electrification (e.g. residential and commercial sectors).

Electric vehicles

³⁴ See: AGL's submission to [Gas Distribution Network Tariffs Review 2023](#)

³⁵ See: AGL's submission to the Australian Government's [Future Gas Strategy](#).



Australia has an opportunity to stimulate the widespread uptake of EVs for the benefit of consumers and the environment. From a consumer perspective, barriers to EVs have centred around choice, affordability and charging network limitations.

Accelerating the uptake of EVs will be an integral technology pathway for decarbonising Australia's economy, as transport currently accounts for 21 per cent of Australia's emissions.³⁶ As we previously observed in our submissions to the [2018 Select Committee on Electric Vehicles](#) and the [2021 Senate Economics Legislative Committee's Inquiry](#), the widespread uptake of EVs, when coupled with the decarbonisation of the electricity grid and increasing penetration of local solar photovoltaic technologies, presents a substantial opportunity to deliver emissions reductions consistent with Australia's long-term commitments under the Paris Agreement.

AGL welcomes the introduction of a National Electric Vehicle Strategy and its focus on establishing a national framework for the uptake of EVs as part of Australia's decarbonisation ambitions. We support the objectives and outcomes set out in the strategy including increasing supply of affordable and accessible EVs, establishing the resources, systems and infrastructure to enable rapid EV uptake, and encouraging increase in EV demand. AGL also supports the introduction of the New Vehicle Efficiency Standard that will incentivise car companies to supply new cars that use less fuel per kilometre.

AGL conducts multiple EV projects and trials and has developed a market-leading understanding of the implications of EV uptake. A key project for AGL has been our AGL's Electric Vehicle Orchestration Trial that commenced in November 2020 with funding from ARENA as part of ARENA's Advancing Renewables Program. The trial on EV charging patterns showed that the assumption that EV owners would plug in every day and max out their charging was not necessarily correct as the data from the trial showed customers responded well to price signals and opted out of charging during peak times.³⁷ This led to AGL launching its [AGL Night Saver Energy Plan](#) to provide customers a discounted offer at a time that has been shown by our trials to suit them and sees customers pay a lower than off-peak rate between midnight and 6am.

AGL also offers an [Electric Car Subscription](#), which provides choice and flexibility with customers able to swap, upgrade or cancel at any time, while also including registration, insurance, tyres, repairs, roadside assistance, optional installation of an EV charger and carbon neutral credits as part of the subscription.

Low carbon liquid fuels

While we see electric vehicles as key for road transport, we recognise that low carbon liquid fuels (LCLF) will play an important role in decarbonising fuel reliant sectors that can't readily electrify. This is particularly true for aviation, heavy vehicles, maritime, construction, mining, and agriculture.

AGL supports the Australian Government developing a framework to support the domestic LCLF industry and help the market overcome barriers in the short, medium, and long-term. We also support the Commonwealth's investments in projects through the Sustainable Aviation Fuel Funding Initiative and the Hydrogen Headstart program. In fact, investment in sustainable aviation fuel (SAF) technologies and production facilities in Australia is urgently needed given SAF is a drop-in replacement for jet fuel. As feedstocks for bio-SAF become less able to satisfy the global demand for SAF, investment in eSAF (produced from green hydrogen) will be required to ensure sufficient volumes are produced for the global aviation industry. This will drive a need for additional investment in carbon capture technologies like DAC (direct air capture) to minimise the carbon emissions created by the eSAF production process.

³⁶ See: [Australian's emissions projections 2023](#).

³⁷ See: [AGL's Electric Vehicle Trial](#).



We also consider the proposed policy areas outlined in section four of the Discussion Paper are the correct areas to focus on in looking to transform Australia's liquid fuels market.

Building Australia's clean energy workforce

The energy transition presents both a massive opportunity and major challenge with respect to energy workforce transformation.

As outlined in the Discussion Paper, some of the opportunities presented by the transformation of the energy workforce include new employment opportunities in renewable energy and other emerging technologies and industries. The energy transformation also presents an opportunity to increase diversity in the energy sector.

However, the transformation of the energy workforce also presents some major challenges including a significant increase in the demand for a technically skilled and diverse workforce, particularly engineers and electricians along with corporate professionals skilled in community liaison, commercial trading, and project management. There will also be significant impacts on those in the regions and currently working in the fossil fuel industries.

AGL welcomes the forthcoming National Energy Workforce Strategy and the establishment of a national Net Zero Economy Authority (NZE). We also welcome the work being undertaken by the states in this space, including the Victorian Energy Jobs Plan³⁸. To bring a whole-of-society focus on this important issue, we would encourage both the state and federal governments to work closely together on ensuring that workers and communities are supported through Australia's transition to net zero.

The energy transition is an industry-wide transformation that will involve significant changes to the way AGL operates. In our CTAP, we set out our approach to supporting workforce transition, acknowledging that labour and skills required to operate our generation assets will change over time. AGL is committed to working constructively with employees and their representatives, as well as state and federal governments, in relation to workforce and site transitions.

Increasing awareness of energy transition opportunities

To develop the workforce required to enable the energy transition, it is crucial that Australians understand the requirements for the transition, and the opportunities that it presents to workers, as well as more broadly to society.

There is a lack of clarity around what career opportunities exist in the energy sector, what particular jobs entail, and the pathways for entering these jobs. Students may not be aware of the career opportunities that exist and lack relevant experience, while existing workers from other industries may lack the knowledge of how their skills translate into a career in clean energy.

AGL recommends the following to promote the energy industry and help raise awareness of job opportunities:

- Industry, government, and education providers working together to map out career and training pathways for particular jobs and workers, as well as driving awareness of non-STEM careers in the sector. The Clean Energy Council (CEC) and Energy Efficiency Council (EEC) jointly launched the

³⁸ See: AGL's submission to the [Victorian Energy Jobs Plan](#).



Careers for Net Zero campaign in 2023³⁹ to help fill Australia's skills gap and encourage job seekers to pursue a clean economy career, of which AGL was a sponsor for its launch.

- Working more closely with industry and skill and education providers to develop industry-led competencies and short courses for transition training (including recognition of prior learning for previous qualifications). For example, plumbers could help meet the expected surge in demand for electricians and/or tradespeople with electrical licences, as restricted electrical licence could be added to the Certificate III in plumbing.
- Distributing information about careers in schools and communities. For example, programs targeted at high school students would help raise awareness of various options available to students, providing multiple skill/education pathways to jobs within the industry and assisting in influencing their career choices.
- Providing students with internships, allowing them to work part-time in a related employment area prior to graduation to build their skills, while also providing the possibility of ongoing work opportunities. For example, AGL's Loy Yang A sponsors undergraduate students with part-time work opportunities whilst they undertake their studies as part of Federation University's Cooperative Education Model.
- Consideration of incentives such as HECS-style relief for relevant courses to encourage uptake in education and skilling in in-demand professions.
- A government-led national advertising campaign to help raise awareness and promote the need for the energy transition, as well as associated job opportunities. The campaign could focus on rebranding the industry as something to be proud of and the importance of being part of the energy transition.

Employers will have a large role to play in increasing awareness of energy workforce opportunities. As the CEC noted in their 2022 report,⁴⁰ employers should: ensure that they are meeting high ESG standards; show and promote diversity and inclusion; offer portable entitlements, present to school-aged children living near clean energy projects to drive interest in a career in clean energy; and look to understand and recognise international qualifications and experience.

In addition to the above, there is also a need to develop a new brand of electrical and plumbing trades people that have a better understanding of the new technology installation standards and communication requirements associated with CER. Apprenticeship programs need to include modules such as communications protocols, internet & WiFi, and use of devices and apps for smart device set-up to increase the digital literacy of trades people. This upskilling opportunity should also be available to trades people already qualified.

Attracting and retaining workers in regional and remote areas

To deliver on its renewable energy ambitions, Australia will need to attract and retain workers in the regions. AGL believes that it is particularly important to focus on retaining workers in the regions, given that people who grow up in regional communities may already have established relationships and prefer to stay local. Providing local training and education opportunities, as well as careers, will assist in retaining local talent. More locally grown skills will also result in less need to compete internationally and may be cheaper than trying to attract city-based workers.

³⁹ See: details of Careers for Net Zero [here](#).

⁴⁰ See: page 29 of [CEC Skilling the Energy Transition 2022 report](#).



It is also broadly accepted that there are a range of structural barriers to attracting and retaining workers in regional and remote areas. These include infrastructure shortages (transport, healthcare, schools etc) and scarcity of affordable housing. Lack of efficient public transport is a significant barrier, especially for apprentices and students who may not be old enough to hold a driver's licence.⁴¹

There are also barriers to attracting international workers. According to research by Engineers Australia, migrant engineers perceive a number of barriers to employment in Australia, including the importance that Australian businesses place on Australian experience, the lack of recognition of foreign qualifications and that international experience is not valued.⁴² Industry, government and education providers should work together to better understand and recognise prior international learning and experience.

Attracting workers from diverse and underrepresented backgrounds is also important and may require more targeted measures. For example, if people from underrepresented groups are given the opportunity to commence employment as part of a group to support one another and build a network, they may feel more confident to join the industry. Engaging indigenous groups early through school-based learning with a plan for longer-term sustained relationships, and collaborating on opportunities for employment and economic participation, will assist in attracting and retaining workers to the industry. Furthermore, provision of a workplace culture built on equality, diversity, and inclusion, offering flexible training and jobs (e.g., job sharing, part-time work, work-from-home), competitive compensation packages, and opportunities for growth and development, can help the sector compete for skilled workers.

Maximising outcomes for people and businesses

AGL strongly believes that people, equity, and fairness must be at the heart of the energy transition. It is incumbent on us to make sure the actions we take now ensure the energy markets of the future will achieve these objectives.

As highlighted in the Discussion Paper, the energy transition is changing the way Australian's interact with their energy retailers through new market operations, technological advancements, and decarbonisation objectives. These changes present significant opportunities for both customers and businesses to redefine how energy is produced, supplied, consumed, and shared. However, it is critical that energy consumers are empowered, guided, and protected as they undertake this exciting new journey into the energy market of the future.

As part of the energy transformation, many innovative solutions and framework designs are currently being explored across the energy industry. Changes of this scale are inherently complex and require collaboration across all governments, industry, and communities.

We must consider how the costs of these changes will be shared, both now and in the future. As part of this consideration, we must ensure that we have appropriate cost allocation frameworks in place so that all consumers pay their fair share towards the energy transition.

In November 2023, AGL's Customer Council published an [open letter](#) announcing its agreed priorities and considerations for policy makers, market bodies and the energy sector more broadly. In that letter, the Customer Council called on governments, energy ministers, regulators, policymakers, and market bodies to urgently address the following key structural elements for the energy transition through transparent, constructive, and effective dialogue and timely and meaningful reforms:

⁴¹ See: National Youth Commission article entitled [Addressing Transport Disadvantage could be the Great Job Enabler](#)

⁴² See: Engineers Australia's [Barriers to Employment for Migrant Engineers Research Report](#).



- **Co-responsibility:** Governments, the community, and the energy industry (including retailers, networks, generators, and other energy service providers) must continue to work together to support customers experiencing short-term, episodic, or entrenched vulnerability.
- **Amplifying consumer agency:** Innovative solutions, leveraging new technologies and modern approaches, should be used to strengthen agency in supporting consumers to control their energy use, costs, and transformation journey.
- **Equity:** Governments and policymakers must ensure the decisions we make today are sustainable and benefit current and future generations without transferring a major cost burden.

AGL considers this to be an appropriate framework for governments to consider when looking at maximising outcomes for energy consumers in the energy transition.

Some other recommendations contained in the Customer Council letter include:

- Harmonise state concessions schemes and energy relief grants programs to create a more targeted and unified concessions framework across Australia.
- Fast-track the roll out of smart meters across Australia to help unlock potential consumer benefits, with priority being given to those customers experiencing vulnerability. Smart meters provide customers with access to usage data, providing a greater understanding of energy usage and availability of alternative pricing options.
- Accelerate business energy upgrades including through durable, accessible bonus tax deductions to businesses for items that will improve energy performance permanently, and funding pilots demonstrating best practice in decarbonisation, energy efficiency, and energy cost reductions within different commercial sectors.

According to the AER's Consumer Vulnerability Strategy released in 2021, 44 per cent of Australians lack sufficient literacy skills to readily understand energy websites, bills and common contractual terms and conditions.⁴³

Given that energy retailers have the existing relationship with energy customers along with extensive experience communicating with customers, they may be best placed to help energy consumers navigate an increasingly complex energy market. This is especially true as the energy transition deepens and the role of CER continues to grow as consumers will not just be shopping around for price, they will also need to negotiate market contracts potentially involving multiple decision variables.

With this increasing complexity, energy consumers may benefit from simple and safe ways to interact with the new energy services being offered (potentially through education campaigns, increased use of standards etc) and may also need extra support to make good decisions about complex energy offerings.

This better protection against poor outcomes for consumers will hopefully minimise energy consumers having bad experiences due to cheap unreliable products, frauds, businesses closing down etc., which could affect their confidence in the energy transition.

Social licence

Social licence will be critical to achieving an orderly energy transition. Significant risks are apparent in the rollout of renewable energy infrastructure in regional areas, with social licence issues resulting in renewable project delays. We believe that both industry and governments have a critical role to play in building community awareness and acceptance of the need for the energy transition, and building trust in the energy industry through further engagement to ensure that communities feel heard and benefit from the transition.

⁴³ See: page 14 of [AER's Consumer Vulnerability Strategy](#)



Affordability and customer vulnerability need to be considered as part of the pathway for the energy transformation, to ensure that no one is left behind. Additional support mechanisms may also be required for vulnerable customers and to ensure public support.

Circular economy

Circular economy is a critical consideration in any industry and for society as a whole. We need to move away from a single use, throw-away mentality to one of avoid, reduce, reuse, and recycle. Consideration needs to be given to recycling and reuse of solar panels, batteries, and wind turbines, particularly as the energy transition accelerates. Increasingly, planning approvals are requiring end of life battery recycling, and this is likely to flow through to other products and industries.

It is expected that globally, demand for critical battery minerals such as lithium will increase 40 times on 2020 levels by 2040 as economies transition, with demand for cobalt and graphite expected to increase 20 times. It only makes sense that reducing our usage of critical materials, and reusing and recycling where possible, will assist with the transition, and may reduce costs in the long run.

Building a recycling industry in Australia for solar panels, batteries, among other materials, will provide numerous opportunities for the Australian economy. It may also be necessary to manage end of life domestically for certain products such as lithium-ion batteries, given the difficulty in shipping these materials internationally.

Domestic recycling facilities would also complement a domestic manufacturing industry. AGL supports the Australian Government's recent announcement of its intention develop and introduce a Future Made in Australia Act to drive local manufacturing. AGL has also announced a partnership with SunDrive to explore solar panel manufacturing at its Hunter Energy Hub.⁴⁴

⁴⁴ See: AGL's [media release on SunDrive partnership](#).