



Government of South Australia

Department of Energy & Mining

Submitted by email: DEMenergytransition@sa.gov.au

17 August 2023

South Australia's Green Paper on the Energy Transition

AGL Energy (AGL) welcomes the opportunity to make a submission in response to South Australia's Green Paper on the energy transition (Green 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 billions over two decades in renewable and firming generation.

By 2050, we believe that Australia can be both carbon neutral and an energy superpower. 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. We believe this will underpin the competitiveness of the Australian economy.

As the global community responds to the risks of climate change, AGL Energy recognises the large part that we must play in the transition to a low carbon economy. In September 2022, AGL released its inaugural Climate Transition Action Plan (CTAP) which states AGL's updated ambition for decarbonisation.

Our plan recognises that a balance needs to be struck between responsible transition and rapid decarbonisation to keep Australia's electricity supply secure, reliable, and affordable. We are committed to working constructively with our stakeholders, including government, our people, and the communities in which we operate, to lead a responsible and orderly transition.

AGL is very supportive of South Australia (SA) taking a holistic view of the energy transition needs through a consultative Green Paper and White Paper process that looks at the necessary long-term enduring market settings to deliver meaningful change. 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. With the task of emissions reductions requiring acceleration and the possibility of technological advancements resulting in significant changes in 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.

South Australia's energy transition

An ideal energy transition would involve all parts of the South Australian economy contributing towards an accelerated ambition to net zero emissions, in a way that provides opportunities to reduce energy input



costs for South Australian customers and leverages new industries to create value and opportunities for all South Australians.

The energy transition should be propelled by a clear long-term vision, and supported by detail underpinning how the region will identify, acknowledge, and overcome transitional challenges along its journey to net zero. 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.

Accordingly, it is critical that the government's aspiration for SA's potential ongoing role in leading the energy transition is not only focused on lowering the carbon emissions in its energy sector and supporting emissions reductions in other sectors, but also grounded in maintaining system reliability and security and keeping energy affordable for all South Australians.

SA has been the Australian leader regarding renewable uptake and is therefore the state with the most experience in managing the challenges of the energy transition. However, this also means that SA will need to continue to be prepared for technical and socio-economic issues that comes with this leadership. Given this, AGL encourages the government to be aspirational about the state's potential ongoing role in leading the energy transition and showing Australia (and the rest of the world) how to lower the carbon emissions in its energy sector, while maintaining reliability and keeping energy affordable for customers.

A broader national context

To support the best outcomes for customers, especially with regard to the security and reliability of the electricity system, it will be important for the government to consider the role of SA within a broader national context, and to what extent the state can both support and be supported by its connection to the rest of Australia through interconnected energy networks and markets.

Leveraging national action to support the energy transition can have significant advantages including de-risking operational challenges within energy markets undergoing structural change, realising efficiencies and opportunities through the development of scaled national supply chains and trade, and avoiding carbon leakage.

Equity and fairness for customers

The actions taken today by the government will determine whether all South Australians will have an equal opportunity to participate in and benefit from the energy transition. At AGL, we strongly believe that people, equity, and fairness must be at the heart of the energy transformation. It is incumbent that the actions we take now ensure the energy markets of the future will achieve these objectives.

In our vision of the future energy system, all consumers should have the opportunity to share in the benefits of the energy transition. This will require solutions that not only overcome challenges relating to the gas and electricity sectors, but also a reassessment of transition in other sectors (transport, industrial, and stationary energy), and reorientation of SA's social, economic, and environmental policies more broadly.

Energy services are transforming rapidly due to new technologies and to meet the imperative to act on climate change. As part of this 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, including an orderly and coordinated exit from the use of fossil fuels for energy.

We commend the South Australian government for its commitment to thoroughly considering these issues and look forward to working together to deliver the best outcomes for all South Australians. Further responses to the issues raised in the Green Paper are included in Appendix A to this submission.

Should you have any questions in relation to this submission, please contact Leilani Kuhn (Policy Manager) on 03 8633 6934 or myself on 0409 533 584.

Yours sincerely,

Chris Streets

GM Policy & Markets Regulation, AGL Energy



Appendix A – AGL’s Responses to issues raised in the Green Paper

Opportunities presented by the energy transition

While SA has made great headway in incorporating renewable energy into its grid, the energy transition presents a once-in-a-lifetime opportunity to pivot the entire SA economy onto a cleaner, healthier and more productive pathway going forward. One that will be underpinned by affordable and renewable sources of energy.

A key opportunity for SA presented by a successful energy transition is that it has the potential to highlight the ability for GW-scale grids to move to 100% operational demand in a sustainable way. This could attract investment to the State for businesses that are looking at affordable low-emissions intensity electricity and build significant capabilities (skills, technologies) that could be applied to other grids going through this process.

Furthermore, SA is well placed to demonstrate a key element of modern grids – namely how to integrate distributed energy well and highlight the role that well-orchestrated CER, electric vehicles, and electrified homes can have in managing energy needs and the broader grid.

Challenges presented by the energy transition

A key objective to be met through SA’s 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 could result in poor short-term outcomes for consumers and the SA energy system generally, which could undermine the ongoing momentum of the transition.

Although the bulk of energy will be provided by wind and solar generation, a range of firming technologies will also be needed to complement renewable generation in the future, to meet net zero emissions objectives. However, ensuring that firming generation is available when it is required may be challenging – current generation sources providing this service are approaching end of life, and replacement technologies¹ still somewhat lack the appropriate revenue streams under the current market design to make them commercially viable for private developers, particularly given currently increasing supply costs and connection delays.

As natural gas will be important in SA’s energy mix for a period of time, more clarity is required on the SA Government’s plans around transitioning away from natural gas for residential, commercial, industrial, and gas-powered generation applications.

Clarity is also required on how SA will rely on interconnection to meet electricity system requirements, including essential system services. In addition, SA may experience world-first technical issues relating to grid operations as it increasingly relies heavily on renewables and inverter-based resources.

Transitioning customers to zero-emissions energy will require major capital investment. It is also a complex journey to undertake, both for residential, small and large business customers. As such, there are material risks with skills, labour, and available resources to meet the pace of the energy transition.

¹ Renewable or hydrogen powered generation, concentrated solar thermal, longer duration flow batteries.



Finally, social licence will be key for the energy transition and it is important that the SA Government ensures all South Australian customers are brought along on the energy transition journey.

The energy needs of South Australia

Energy system reliability and security

Throughout SA's energy transition, system reliability and security must be maintained at all times. These basic parameters are critical to define to set the technical constraints under which the transition must be delivered, while also ensuring the ongoing delivery of essential energy needs.

The quality of delivered electricity should meet all mandatory technical specifications with relation to frequency and voltage, and the grid should be operated with appropriate levels of system and network strength, inertia, and system restart capability as defined in the National Electricity Law and corresponding Rules and Procedures.

System reliability must also be maintained to within defined parameters. Network infrastructure should perform within outage targets, and sufficient capacity should be available to meet the defined NEM Reliability Standard (0.002% USE), with a specified amount of reserves availability to manage any contingencies.

As the generation mix changes and existing dispatchable generation is under increasing pressure to close, meeting these security and reliability targets may be increasingly challenging. Market design must stay ahead of these changes, with price signals and incentives for system services and capacity providing sufficient certainty to ensure these services are available in real time. Where market signals are failing to incentivise timely investment in essential services, policymakers need to consider what steps can be taken to overcome any barriers to investment.

Energy markets must also incentivise sufficient capacity to meet operational demand, not just in a short-term timeframe, but under more challenging emergent scenarios where the grid is relying on higher proportions of variable generation.

Managing demand

With the increasing amount of low-cost intermittent renewables being connected to the SA grid, markets will experience prolonged periods of surplus (and therefore low-cost) generation. SA has already seen this trend emerge, especially during the day when rooftop PV is at times meeting almost all of SA's operational demand requirements.

However, energy demand will remain very volatile, with peak demand requirements remaining a critical concern that is challenging to forecast, especially over a longer-term horizon. Although renewables can meet the bulk of energy needs for much of the time, there will also need to be sufficient dispatchable generation available to ensure customer demand can also be met during periods of low renewable output and high operational demand (e.g. evening peaks, seasonal peaks, and 1-in-10 year maximum peaks).

Generally, it is expected that batteries will eventually make up a significant portion of this need, but longer-duration storage and additional firming generation will also be needed, as well as demand-side responses. The extent to which SA relies on interconnection with other regions will also need to be taken into account.



As well as meeting periods of peak demand, an additional challenge will be how the ramping requirements caused by large and possibly rapid fluctuations between minimum and maximum system demand will be managed. Very flexible and responsive technologies will be required to meet the system needs, from negative MW when renewable energy sources, including rooftop solar, are at maximum output and SA is exporting electricity, to many thousands of MW of firm generation to meet peak demand in certain periods of low renewable generation or when imports from other states are unable to assist.

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.

The sustained uptake of CER will also continue to shape energy needs, including the growth of rooftop solar and batteries but also the decarbonisation of transport and industrial sectors, which could potentially significantly increase system demand. Given that AGL considers that residential electrification is the most likely decarbonisation pathway, considering how impacts on system load can be mitigated through better demand management will be critical (i.e., by improving energy efficiency and productivity).

The value of scenario planning

The Green Paper discusses at length the Integrated System Plan (ISP) Step Change scenario, as well as the more aspirational Hydrogen Superpower scenario that is premised on the development of a significant hydrogen economy. The aim of the ISP is to provide a roadmap for the efficient development of transmission for the NEM over the next 20+ years, with the primary output of the ISP being the identification of actionable ISP projects (network or non-network related) that are required to deliver the most cost-efficient investment pathway under a range of scenarios.

AGL strongly supports the need to consider policy in the context of aspirational scenarios, which consider potential pathways towards reducing emissions in a more ambitious timeframe than Australia's current climate commitments. However, some caution should be exercised over the ability for the more ambitious ISP scenarios to be delivered under current market and policy settings. In practice, the gap between what is likely to emerge under present market settings and what is required to accelerate the transition is useful for government to consider what is required to deliver the significant change that is being sought.

Competitive markets and technology neutrality

AGL supports 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 be the case for all applications, especially for some industrial processes where different decarbonisation pathways may be necessary.

Any approach taken by the government should focus on technology neutrality, private co-investment, and unlocking the benefits of competitive markets. Effective funding frameworks are critical to supporting a multi-stage technology ecosystem, while maintaining both reliability and security of supply.

The current and future role of natural gas

Gas has a role for residential, business, and commercial customers while they transition to renewable sources – and it will need to remain affordable during this period. AGL is a strong supporter of policies to



support household electrification and supports government action to stop new gas connections going forward.

Future uses of natural gas

We see gas predominantly being used for electricity generation and commercial and industrial applications in the medium term where faster electrification maybe more challenging. Gas-fired generators provide the firm capacity the power system needs to support high penetration of grid-scale wind and solar.

Until such time as batteries, pumped hydro, and perhaps even new technologies (particularly long-duration storage) grow to support the grid, some amount of gas generation will be needed to ensure reliability. Continuing to have gas generation available also ensures that essential system services are still available to the power system, providing valuable insurance to the grid operation while we accelerate our decarbonisation efforts.

AGL's Barker Inlet Power Station (BIPS) at Torrens Island in SA, commissioned in 2019 and the newest gas-fired generator in the NEM, is evidence of AGL's confidence in the role gas-peaking generation will continue to play in the energy transition.

As a highly efficient, fast-start 210 MW plant, BIPS can operate at full capacity within five minutes, meaning it provides a rapid response to changes in renewable generation supply. In addition to BIPS, AGL is developing its 250MW/250MWh grid-scale battery at Torrens Island, which will be fully commissioned and operational shortly.

As SA's proportion of renewable energy generation continues to increase, the role of BIPS and the Torrens Battery, and similar technologies in the energy mix will become even more critically important.

Appropriate market mechanisms for gas

However, there is a question as to whether sufficient market signals exist to incentivise investment in further gas-peaking generation that may be required in the system as the transition accelerates. Ensuring that there are appropriate mechanisms to value capacity and particularly essential system services (frequency control, voltage control, inertia, and system strength) will be critical.

The current and future role of hydrogen

AGL broadly supports the SA Government's hydrogen ambitions as outlined in the SA Green Paper, and especially the initial steps to scale production of hydrogen economy and seek to gain a foothold as an early mover in this sector.

Future uses of hydrogen

While the best uses of hydrogen are yet to be determined, we expect its most valuable role will be for export and for industries using hydrogen for its chemical properties such as ammonia production and chemical synthesis or high heat processes where electrification is not an option.

We consider it much more likely that electrification will remain a more compelling decarbonisation pathway for residential and most small business customers; however, we recognise that at this stage the key is to scale up the technology to reduce costs and build capability. With this in mind, exploring the various use-cases in Australia through pilots, trial and demonstrations is worthwhile.



With government support, AGL considers that early projects should be large to help drive costs down. Foreign investment and trade agreements with our international trade partners will also play a role in supporting the industry to reach scale. Lower costs will then drive local demand for additional projects, enabling heavy industry to utilise hydrogen to decarbonise and move away from natural gas (to the extent possible). For further details, please see our submission to the [Australian Government's Hydrogen Headstart Consultation Paper](#).

Potential barriers

Government will also need to consider ways that industry development can benefit local communities through the local economy including local jobs. Equally, where hydrogen industry development impacts consumer bills over the long term, government may consider how profits can be redirected back to benefit consumers or how an allocation of hydrogen production can be used for domestic purposes.

Some barriers that we see to SA developing a hydrogen industry at scale include the current lack of export facilities, distance from key trading partners, and lack of local demand. Social licence will also need to be built for hydrogen industry development to avoid the issues facing transmission and large-scale wind and solar projects at present.

Torrens Island

With these challenges in mind, AGL's Torrens Island site is a compelling proposition as a potential location for green hydrogen production in the future.

Social licence already exists for energy projects Torrens Island and the site has good proximity to local demand, including from heavy industry in the Port Adelaide area and via the natural gas distribution network. AGL's Barker Inlet Power Station is also a potential source of demand, given it could operate on a blend of up to 15 per cent hydrogen with minimal modifications.

Torrens Island also has existing connection points to the transmission network for the supply of power to electrolyzers, a skilled local workforce, and access to water.

AGL has already conducted a feasibility study into green hydrogen production at Torrens Island and continues to explore opportunities with potential partners.

Consumer Energy Resources

Customers are increasingly connecting Consumer Energy Resources (CER) to their homes and businesses such as rooftop solar, batteries and electric vehicle chargers. SA has been at the forefront of this evolution and has one of the highest per capita levels of rooftop solar PV anywhere in the world.

This high penetration of rooftop solar PV and the pioneering role SA has played in demonstrating the critical value of batteries puts SA in a unique position to help Australia navigate the opportunities and challenges associated with bi-directional flow on Australia's electricity grid.

Effective market and technical integration of CER

As the uptake of CER continues, there is a growing need to achieve effective market and technical integration of CER in the NEM.



AEMO forecasts that CER coordinated through Virtual Power Plants could have a material impact on reducing maximum demand in the NEM over the next decade and prevent the need for significant amounts of new firming generation to be developed.

Better integration of CER can unlock additional value for households and businesses who own CER and enable the electricity system and markets to operate more efficiently, reliably, and securely in a manner that benefits all customers.

Support for the development of competitive markets for CER

There is a key role for governments to guide the development of competitive markets for CER and support innovative solutions that help customers navigate the complexity of the new energy landscape by providing trusted technological solutions that lower costs and improve user experience.

In looking at what reforms the SA Government can implement to further support CER, AGL recommends that the following principles be used as a guide to ensure any reforms undertaken are done so at the lowest cost to the consumer and produce the maximum benefit:

- **Leverage national processes** where possible rather than developing jurisdictional changes. Where SA specific solutions are required, develop 'no-regrets' solutions that complement the national framework.
- **Sequence reform**, prioritising foundational elements to enable the market's development and support positive customer outcomes. Other measures can then complement and build upon that foundation.
- **Ensure that the impact on customers is front and centre** of all decision-making. Customers should be rewarded for their ability to support flexibility in the energy market system. They should also be empowered through transparency, simplicity and a consistent consumer protection framework.

Importance of a customer-centric approach, trials, and research

'Flexibility' is a new concept that is not well understood by consumers at either a product or service level, or how it fits into the broader changes underway in the energy system. However, we do know that trust around benefits sharing and in relation to delegating and/or retaining control of CER is an important barrier to address. Another issue being faced by consumers is that several key stakeholders are seeking to impose limitations on the types of CER that can be installed by consumers and how it can be used, which has the effect of locking consumers out of particular choices or maximising the revenue of their choices.

A criticism that continues to be relayed to the sector is that the energy market is overly complex for customers to navigate. As such, to unlock the benefits of flexible CER and energy use and achieve the ambitions of the reforms for markets for CER, we need to meet consumers 'where they are'.

It has been explicitly acknowledged that the uncertain nature of the transformation also means we do not yet have the answers to many questions.

Given this, research and learning by doing through trials will need to be at the core of the reform effort. Many energy market participants are developing, trialling, and delivering innovative products and services for



customers. Indeed, this is one of the key benefits of a competitive market as it allows businesses to innovate to provide the best products and services to customers at the lowest price.

Dynamic operating envelopes and flexible export limits

In the near future, dynamic operating envelopes (DOE) - and flexible export limits as they relate to CER - will be one of the leading solutions to network constraints and managing available capacity.

The key challenge for the SA Government in looking at how it can support the continued growth in CER will be to develop a policy direction that maintains consumer access to the value in CER assets and supports the continued uptake of distributed solar PV, battery storage, and emerging energy products and technologies. It is also crucial at this formative stage of the market that the SA Government helps sustain a thriving market for aggregation services that will see more value flowing back to customers, and a more flexible and lower cost system.

AGL's work in the CER space

At AGL, we are a market leader in the development of innovative energy products and services, including our leading-edge Virtual Power Plant through which we orchestrate thousands of behind-the-meter battery systems installed in homes and businesses to provide energy and market services to the grid while rewarding customers for their participation.

We also have several trials including our and our recently announced South Australia Demand Flexibility trial to test dynamic management of 20,000 hot water systems in SA. AGL is also a partner in the Market Active Solar trial led by SA Power Networks (SAPN) which aims to demonstrate how DOEs can act in concert with retailer-initiated schemes to manage customers' solar exports.

Our work with our customers in trialling these ideas allows us to meet customers 'where they are' and design flexibility in such a way that meets diverse expectations and needs.

Rooftop solar PV

SA has been at the forefront of the rooftop solar revolution with one of the highest per capita levels of rooftop solar PV anywhere in the world. Given this, maximising consumers' return on investment whilst maintaining system security should be the overarching objective of any policy and market development arrangements in this space.

Subsidies and tariff design

Many households benefitted from grants and generous feed-in-tariffs when the rooftop solar industry was at an early stage of development and rooftop solar required additional subsidy to make it cost competitive.

Now that it is at an advanced stage, it's important to consider how other consumers can access similar benefits and the optimal forms of financial support that will ensure all consumers can participate and benefit from new technologies.

Tariffs need to be designed simply so that customers can feel empowered to make sound decisions about how they live. Retailers are well-placed to design retail tariffs that best benefit their different customer segments and to communicate the benefits, ensuring the most efficient outcomes for their customers. At the



same time, consumers need adequate protections so they can confidently engage with and adopt new energy products and services.

Flexible import limits

AGL also supports an approach where principles of network efficiency, consumer access and freedom to choose to participate form the foundation of any policy in this space. However, we believe that this should be underpinned by the strategic priority of developing a nationally consistent and standardised flexible export limits framework across the NEM. For further information, see AGL's submission to the [Australian Energy Regulator's \(AER\) Flexible Export Limits Issues Paper](#).

We acknowledge that Distribution Network Service Providers (DNSPs) may be well positioned to decide how and when it is necessary to manage congestion in their network. However, fragmentation of approaches to congestion management at this early implementation phase risks harming the long-term interests of consumers if the emergence of compatible devices, new energy products, services, and participants is stifled by varied and inconsistent flexible export limits requirements and processes across DNSPs.

Market Active Solar trial

As mentioned above, AGL is currently a partner, along with another retailer partner Simply Energy, in the [Market Active Solar trial](#) being led by SAPN. The trial seeks to test, study, and observe the practical outcomes of different technical models to the integration of retailer solar management products with DNSPs DOEs.

The 12-month field trial involves two cohorts of 50 customers participating in two separate retail solar management offers whereby their solar export is limited at times of low or negative wholesale market energy price, and the customer is rewarded in excess of their missed feed-in-tariff opportunity. The project will focus on outcomes from the perspective of technical complexity, industry readiness, costs to participants, broader market design implications, customer experience, and extensibility to other use-cases. The first of its kind, the solar management trial will be key to facilitating the development of a competitive market for similar innovative retail products in the future, and we hope it will help to shift the focus of implementation of the CSIP-Aus standard from being a mechanism primarily for network management of solar, to needing to be supportive of competitive CER services offers for customers (rather than to detract from them).

The above example highlights how important trials are in supporting innovation in the rooftop solar PV space and in CER generally. AGL strongly encourages the SA Government to continue to support these types of trials going forward.

Battery storage

AGL is very supportive of the important role that energy storage will play in the energy system going forward, and the establishment of appropriate market frameworks that will support the delivery of innovative products and services that can leverage new technologies for the benefit of customers and the broader electricity and transport networks.

Future uses and integration of batteries

However, it is not yet clear how storage will interact with the grid, as the range of products and services that leverage battery technologies remains emergent.



In our view, it is likely that a combination of grid-scale, distribution level, electric vehicle, and household energy storage will be utilised, for several purposes including system services, network management, and energy management. Furthermore, frameworks for the delivery, operation, and orchestration of batteries are likely to be different at each of these levels.

Importance of trials

The SA Government will need to continue to consider the important role that batteries will have in the energy market going forward. One of the best ways to continue to do this is through trials to understand the best value that be derived from batteries and what (if any) the appropriate subsidies and/or regulatory steps may need to be introduced to unlock any capital barriers.

Importance of a competitive market

Given the current uncertainties with how storage will most efficiently integrate within energy markets, it is extremely likely that regulated or public ownership of storage assets will not provide the best long-term outcomes for customers.

In our view, the ownership and operation of CER should be within a competitive market, where businesses can innovate to provide the best products and services to customers at the lowest price. These competitive businesses should be regulated closely, and steps should be taken to ensure that all customers can access the benefits of energy storage, but over the long term, this will deliver many more benefits for customers arising from competition to deliver on customer needs.

It is important that the SA Government recognise the extent to which monopoly, regulated electricity businesses have an inherent advantage over competitive market players with respect to access to their network, data, technical expertise, and capital to develop and deploy community battery projects.

These advantages are becoming particularly pronounced in the context of information asymmetry between DNSPs and prospective organisations seeking to undertake community battery projects.

Due to the nature of DNSP functions in the energy system, they are privy to and can access data that other participants may not be, relating to network conditions and optimal locations for the installation of community batteries. The barriers of this information asymmetry can manifest subtly in the form of slow responses to data requests, delays, and poor communication with third parties seeking to undertake these projects.

We anticipate that further incentivising DNSPs by providing an additional revenue stream without having to undertake an open and transparent tender process to procure network services from the market will exacerbate these less-than-optimal consumer outcomes.

Further details on this are provided in AGL's submission to the [AER's Ring-fencing class waiver - Batteries funded under the Commonwealth Government's Community Batteries for Household Solar Program](#).

Network tariff reform

AGL believes that to incentivise storage, further reform is needed with respect to network tariffs to both:

- Introduce new specific network tariffs for storage that reward the benefits of importing at times of high solar penetration and exporting at peak times; and



- Allow for storage tariffs to support additional potential services, such as FCAS, by providing for retailers/aggregators to lease the spare battery capacity.

Electric vehicles

Accelerating the uptake of electric vehicles (EVs) will be an integral technology pathway for decarbonising Australia's economy.

As we previously observed in our submissions to the [2021 Senate Economics Legislative Committee's Inquiry](#) and the [National Electric Vehicle Strategy Consultation Paper](#), 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 significant emissions reductions.

AGL recognises that all industries have a critical role to play in achieving Australia's emissions reduction targets.

As noted in the Green Paper, a 2021 report by the Australian Road Research Board for the SA Government found that transport was SA's largest emitting sector, contributing 29 per cent of SA's net greenhouse gas emissions, with 87 per cent of those emissions being generated by road. As such, there are substantial emission reduction benefits to be realised for SA (along with additional health and amenity benefits) through the increased uptake of EVs.

AGL's support for EVs

AGL is very supportive of EVs and has a [competitive retail offer for EV owners](#) along with an [EV subscription service](#).

Importance of trials

Through our [EV Orchestration Trial](#), we are seeking to understand how EVs could help the wider energy system by orchestrating vehicle charging through smart chargers and API technology.

Some findings from the trial so far have shown that the peaks that will be caused by EV charging are not as significant as have been previously asserted.

As the above case study shows, one of the best ways to determine how to best integrate EVs into the SA grid is through trials. Given this, we encourage the SA Government to continue to support trials by competitive businesses in this space.

National Electric Vehicle Strategy

We also strongly encourage the SA Government to continue to work closely and collaboratively with the Commonwealth Government on the development of a National Electric Vehicle Strategy, particularly with respect to the development of a strong vehicle fuel efficiency standard as this would play an important role in accelerating the uptake of EVs. For further details, please see [AGL's submission to the National Electric Vehicle Strategy Consultation Paper](#).

Mining, manufacturing, and recycling

Key energy sector investment opportunities



AGL considers that materials recovery and recycling will be key going forward, as the cost (both financial and ESG) of mining new resources will continue to increase.

With respect to recycling in particular, governments need to make sure that the right Australian standards and legislation exist to ensure that recovered materials can be reused consistently across the country. Our understanding is that this has been market-led to date (i.e., the technology developer/licensee has had to lobby regulators for change), which has led to inconsistency and inefficiencies.

As noted in the Green Paper, there is also an emerging opportunity for SA to develop resources of critical minerals and the potential to process them. Particularly as SA is seen as a trusted and reliable supplier and does not have the same risks around modern slavery that have been shown in other jurisdictions.

Indeed, a report by the Clean Energy Council on Addressing Modern Slavery in the Clean Energy Sector showed that there is strong evidence linking modern slavery to clean energy supply chains, covering solar, wind and battery technologies. Given this, there has been a growing interest in looking to manufacture the renewable energy technologies required for the energy transition locally, with some of the other benefits associated with this including minimising the carbon emissions in the supply chain and supporting the Australian manufacturing industry.

Green Manufacturing Strategy

Many of the opportunities in manufacturing will come from emerging technologies and start-up businesses. These businesses will need access to mentorship and funding in order to progress through the development stages into operation and beyond. These services should be made available and reasonably easy to access.

Incentivising investment in manufacturing and mining sectors

Investment in manufacturing requires some confidence in downstream market demand. The Government should support investment by providing/supporting offtake commitments for products, or at a minimum, having a strong incentive/requirement for local content, with the former being preferable as it would provide a degree of certainty of future demand.

Energy Transition Recycling Strategy

AGL is supportive of the development of an Energy Transition Recycling Strategy. In our view, some of the things that should be included in this strategy include incentives to relocate to development precincts where circular economy principles are active and/or facilitated along with mechanics to incentivise the availability of 'feedstock' (i.e., a strong and steady supply of the relevant end of life product).

Energy Hubs

As part of AGL's broader strategy and ambitious goal to deliver a responsible, accelerated low-carbon future, we have announced the closure of the Torrens Island B Power Station in June 2026 and an intent to repurpose the broader Torrens Island site to an integrated Low Carbon Energy Hub ('Torrens Hub').

The Torrens Hub will leverage existing site infrastructure to provide low-carbon energy plus land, water, and logistics to industrial companies looking to decarbonise their operations, that co-locate at the site.

Importantly, the establishment of industrial activity on the site will provide ongoing employment for the existing power station workforce and stimulate economic activity more broadly.



The co-location of energy, storage and complimentary industry clusters will facilitate the creation of a circular economy to deliver an efficient and sustainable use of resources.

AGL is already in the final stages of commissioning the Torrens battery and has a number of other early stage projects and studies underway, as well as active discussions with potential commercial partners interested in locating projects on Torrens Island.

AGL is looking to remain a valuable member of the South Australian economy and community and will continue its efforts to attract partners interested in establishing new, non-power generation operations at the Torrens Hub site, as well as engaging with First Nations communities to identify opportunities to build capacity and employment opportunities and reconnection with their traditional lands.

Energy efficiency and the built environment

As a general principle, all consumers should have the opportunity to share in the benefits of the energy transition. As such, it is important to consider how the costs of energy performance improvements should be shared, to benefit all consumers, including those on low incomes, both now and in the future.

Emissions from the electricity sector have reduced significantly over the past decade, as aging emissions-intensive generation has exited the market, replaced by new large and small-scale renewable generation that has been supported by subsidies from government policies and programs.

At the same time, several energy efficiency policies and programs have resulted in reduced electricity use through replacement of appliances and equipment.

However, as more renewable generation enters the market, and as opportunities for appliance and equipment improvements become scarcer and more capital-intensive, it is important to consider how decarbonisation and energy efficiency objectives can be complemented by improvements in energy productivity.

Energy performance will have a critical role in the decarbonisation of Australia's energy system to support meeting our national emissions reductions targets – by reducing, shaping, and shifting energy demand to maximise the utilisation of renewable energy resources and minimise energy costs for industrial, commercial, and residential customers.

National Energy Performance Strategy

AGL strongly recommends that the SA Government consider the work being done at a federal level on the National Energy Performance Scheme (NEPS) when considering what further policy or actions are required in this space to ensure that there is minimal inconsistency or overlap and to ensure that the greatest efficiencies are realised.

Defining “energy performance”

Achieving the optimised, highest performing, lowest-cost form of our future decarbonised energy grid is going to require fine-tuning of a range of solutions, some in opposition to others. Government programs should therefore be designed with clear goals in mind to incentivise the individual solutions available. Both supply-side and demand-side solutions will be required.

On the supply side, generation assets (either individually or in aggregate) will require the ability to ramp up or down on required time scales at lowest cost. On the demand side – demand will need to be flexible, both



turning up when supply is in excess, preventing minimum demand issues, and turning down as required, through load shedding, shaping, shifting at times where supply is insufficient.

Energy efficiency and energy productivity should both feature, to ensure that reductions in energy use do not come at the expense of reduced economic productivity or household comfort. Finally, in managing peak demand, capacity overbuild should be balanced by more cost-effective demand reduction where appropriate.

Ensuring all consumers benefit

As a general principle, all consumers should have the opportunity to share in the benefits of the energy transition. As such, it is important to consider how the costs of energy performance improvements should be shared, to benefit all consumers including those on low incomes, both now and in the future.

With the advent of CER, customers should receive a commensurate benefit where they cede control of their assets to provide services to the grid such as demand response. However, benefits should not be restricted to those who can afford to buy CER assets. The SA government should consider how all consumers can benefit from the energy transition.

In 2022, the AGL Customer Council wrote an [open letter](#) urging governments, energy ministers, regulators, department heads, policymakers and market bodies to work together to ensure all Australians have an opportunity to participate in, and reap the benefits of, the energy transition.

Affordability and equity

As stated above, many households benefitted from grants and generous feed-in-tariffs when the rooftop solar industry was at an early stage of development and rooftop solar required additional subsidy to make it cost competitive.

Now that it is at an advanced stage, we should be thinking about how other consumers can access similar benefits and the optimal forms of financial support that will ensure all consumers can participate and benefit from new technologies.

Tariffs need to be designed simply so that customers can feel empowered to make sound decisions about how they live. Retailers are well-placed to design retail tariffs that best benefit their different customer segments and to communicate the benefits, ensuring the most efficient outcomes for their customers.

At the same time, consumers need adequate protections so they can confidently engage with and adopt new energy products and services.

Choice and agency

New technologies should strengthen consumer agency, allowing them control of their own energy use, costs, and energy transition journey.

The introduction of consumer data rights (CDR) in the energy sector can strengthen this agency, providing consumers with easier and standardised access to data from smart meters, allowing consumers to understand how they use energy so they can make informed decisions.

Evidence-based programs



The SA Government can continue to drive innovation in the energy performance area by continuing to support pilots, trials and demonstrations and ensuring data insights are captured and shared with residential and C&I consumers and used to inform program design (e.g., continued co-funding for further ARENA trials).

Cooperation and the role of government

Governments, policymakers, regulators, industry, consumer advocates and peak bodies must work together to ensure that the energy transition provides just outcomes for all consumers. We also have a role in ensuring we bring consumers along on the journey providing guiding materials so consumers can make the best choices for their individual circumstances.

Retailer Energy Productivity Scheme

One of the key constraints of the Retailer Energy Productivity Scheme (REPS) for both residential customers and activity providers is financial barriers. Whilst REPS Transitional Factor (TF) has proven that energy efficiency activities will be taken up by customers if the incentives are appropriate, the decrease in the TF year on year has resulted in a decrease in customer uptake.

Costs associated in the generation of Gigajoules under REPS has also resulted in increased cost to acquire customers in SA, has limited the range of activities that can be offered to customers and had a significant impact on the priority group demographic. Customers who fall within the priority group are generally financially constrained and therefore not able to take on REPS activities unless appropriately incentivised.

As such, we recommend that the SA Government:

- Freeze the TF on key residential & priority group retrofit activities at 2022 levels (X4) to avoid REPS cost increases to assist in REPS accessibility.
- Introduce a higher TF for Priority Group households than other groups to help overcome the financial barrier to participate in REPS.
- Have a greater multiplier for key transition activities like batteries and EV charges which are critical to energy transition. The home battery subsidy removal has made such activities further out of reach for many SA residential customers.

Rental accommodation

We recommend that the SA Government investigates the various approaches that could be taken to overcome the split incentive problem, where owners of investment properties do not have the right incentives to make rental housing more energy efficient.

This could be through:

- exploring, with the support of the Commonwealth Government, ways to provide an instant asset writeoff for new electric appliances that replace gas ones.
- Offering low-interest loans to private landlords who are looking to upgrade their housing stock to all-electric.
- Implementing a plan to upgrade all social housing to be all-electric by a set date. The timing should be aligned with refurbishment cycles and appliance end-of-life, to minimise disruption to tenants and costs. The SA Government should also consider covering the cost gap for community housing and Indigenous housing that it does not own. These houses are owned by not-for-profit organisations,



and every dollar those organisations spend on upgrading from gas to electricity is one they can't spend on new housing for vulnerable people who need it.

Education and workforce

Future workforce requirements

Demand for new skills and trades will only increase as we move further down the path of the energy transition, especially for electricians and/or tradespeople with electrical licences.

As highlighted in the [Grattan Report on Getting off gas: why, how and who should pay?](#), electrifying Australian homes will mean a surge in demand for electricians and/or tradespeople with electrical licences. It will also mean a decline in demand for plumbers, who currently install and maintain gas appliances. Thus, the challenge and/or opportunity is two-fold: meet the growing demand for electrical workers while also managing the displacement of workers in the plumbing industry.

To ensure that the energy transition is not slowed down by a lack of a skilled workforce, the SA Government should invest in up-skilling workers to take advantage of the expected surge in demand for electricians and/or tradespeople with electrical licences. Plumbers could help fill the trades gap, as restricted electrical licence could be added to the Certificate III in plumbing. This would allow plumbers to install appliances such as reverse-cycle air-conditioning units and heat pumps for hot water and should only add an extra eight days to an apprenticeship according to the Plumbing and Pipe Trades Employees Union Vic and WA. And existing plumbers – who have a four-year apprenticeship under their belt – should be helped to extend their skills to include electrical work.

Energy literacy

AGL strongly encourages the SA Government to continue to invest in and support programs that assist SA energy consumers to understand and engage in the changing energy market. This will help ensure all energy consumers have an equal opportunity to participate in and benefit from the energy transition. It will also help ensure that there is social licence for the energy transition.

We also understand that improving customers' energy literacy is a shared responsibility between government and energy retailers. At AGL, we are committed to supporting customers every step of the way to help ensure that they are getting the best from us as their energy retailer and from the energy transition more broadly.

In 2021, AGL concluded its \$6 million Energy Literacy Fund which saw us deliver initiatives to support customers under three key pillars: energy education, energy efficiency management, and access to solar and renewables. Over the three-year program, 63,000 participants were engaged through 32 targeted initiatives including: energy efficiency upgrades and home energy audits for customers on low incomes; installing solar on community housing; helping concession card-holders complete paperwork to access grants and rebates; and continuing a program of work to provide more accessible communications for customers.