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Department of Environment and Energy

Submitted by email: climatechangereview@environment.gov.au

11 May 2017

Dear Committee,

AGL Energy Limited (**AGL**) welcomes the opportunity to make a submission to the Department of the Environment and Energy (the **Department**) Review of climate change policies (the **Review**).

AGL is one of Australia's leading integrated energy companies. It is taking action to responsibly reduce its greenhouse gas emissions while providing secure and affordable energy to its customers. Drawing on 180 years of experience, AGL serves its customers throughout eastern Australia to meet their energy requirements, including gas, electricity, solar PV and related products and services. AGL has a diverse power generation portfolio including base, peaking and intermediate generation plants, spread across traditional thermal generation as well as renewable sources including hydro, wind, solar, landfill gas and biomass.

AGL is committed to the decarbonisation of its electricity generation fleet by 2050. We recognise that the electricity generation sector plays a material role in the process of decarbonisation, and as such is an important participant and contributor to this overarching objective.

Meeting Australia's emission reduction commitments consistent with a '2 degree' future will require a transition over several decades. Policy should reflect the transitional nature of the problem and specifically for the energy sector recognise the essential service nature of electricity. The electricity sector has an important role to play in meeting Australia's GHG targets and its longer term commitments under the Paris agreement.

For the electricity sector, with long investment horizons and large upfront costs, well telegraphed and consistent policy that provides insight into the investment environment over the long term is a pre requisite to minimise the impact of emission reductions on energy consumers and the future economy. This would be best supported by:

- Articulation of a long term target beyond 2030 supported by well telegraphed and consistent policy that provides insight into the investment environment over the long term;
- A long term, national carbon budget for Australia that extends to 2050 to underpin climate policy. Such a budget would allow businesses some insight into the suitability of investments with long lifespans; and
- A plan for the orderly decarbonisation and modernisation of the electricity generation system, including:
 - policy facilitating the progressive, orderly closure of older, emissions-intensive power stations;
 - introduction of an emissions intensity trading scheme as a cost-effective way to support low-cost abatement at all operating fossil fuel plants; and
 - ensuring additional renewable generation beyond the current Renewable Energy Target includes a requirement for dispatchability to support new intermittent generation.

We have provided responses to the specific questions posed by the Department in the body following this letter.

Please contact Cameron Reid, creid@agl.com.au or 03 8633 7201 to discuss any aspect of this submission.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Tim Nelson'.

Tim Nelson

Chief Economist, AGL Energy



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Australia's Paris target

- Australia has committed to considering a potential long-term emissions reduction goal for Australia beyond 2030. What factors should be considered in this process?
- What process could Australia use to implement its Paris commitment to review targets every five years?
- What are the issues in the transition to a lower emissions economy with respect to jobs, investment, trade competitiveness, households (including low income and vulnerable households) and regional Australia?

Climate change outcomes are determined by the total level of emissions released over time rather than emissions in any particular year. Avoiding or delaying certain mitigating strategies in the near term will likely necessitate more drastic action in the medium to long term. Alternatively, significant mitigation in the short-term, may result in unnecessary economic costs being imposed on the Australian economy.

Long-term emissions targets can provide guidance for strategic policy decisions, build confidence in the general direction of policy development, and thus remove barriers to important investment decisions. They provide a transparent and direct guide to long term outcomes. By contrast, shorter term targets not referenced to a long term target are often disconnected from the longer term trajectories necessary to meet probabilistic outcomes.

The prevailing uncertainties that exist in relation to long term policy setting are well known. However, this uncertainty should not preclude the setting of a long term target. A long term target is, by definition, aspirational. It should therefore be ambitious but achievable, with in built flexibility to deal with uncertainties and changed circumstances. However, to enable robust forward planning, it must have a clear and consistent focus to provide meaningful policy and investment signals on the likely nature and rate of required emissions reductions.

AGL has co-authored a policy brief *Reducing the horizons of uncertainty: Setting Australia's post-2030 emission goal* that provides a detailed analysis of the rationale for a long term goal and associated processes. A copy of this brief is provided and forms part of this submission.

In summary, AGL supports the recommendations of the brief:

- Set a 2050 target: As an outcome of the 2017 climate change policy review, defining a 2050 emissions target (or target range) for Australia will provide guidance for business, government and regulatory decisions.
- Define a process for mid-century strategy: The review outcomes should establish a process to define detailed sectoral strategies to achieve this target.
- Submit a mid-century strategy in 2018: In line with the processes under the Paris Agreement, this mid-century strategy to achieve net zero emissions should be submitted to the UNFCCC before the end of 2018.
- Review target periodically from 2022: Develop a considered five yearly review process that aligns to the development of Australia's Nationally Determined Contribution under the Paris Agreement



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Electricity Generation

- What are the opportunities and challenges of reducing emissions from the electricity sector? Are there any implications for policy?
- How can energy and climate policy be better integrated, including the impact of state-based policies on achieving an effective national approach?
- Are there particular concerns or opportunities with respect to jobs, investment, trade competitiveness, households and regional Australia that should be considered when reducing emissions in the electricity sector?

Electricity generation accounts for approximately one third of Australia's Greenhouse Gas (GHG) emissions inventory and represents the single largest source of domestic emissions. The electricity sector has an important role to play in meeting Australia's emission reduction targets (and its longer term commitments under the Paris agreement) because technological substitutes to electricity generation from fossil fuels are currently available and relatively cost effective. Furthermore, the electricity generation sector can also be viewed as an enabler of emission reduction in other sectors, notably transport where electrification, powered by renewable energy, facilitates emission reduction beyond the initial sector.

The role of the electricity sector must give consideration to both the transitional nature of the challenge and the essential service nature of a reliable and affordable supply for electricity users. The generation mix in the NEM is old and emissions intensive by international standards, with around 75% of the installed thermal capacity already operating beyond its original design life. The decarbonisation and modernisation of the electricity sector will span several decades, and a long-term vision and trajectory for this transition is essential to ensuring continued investment in low/zero-emissions energy sources and the orderly phase out of existing emissions-intensive power stations.

1. Governance

Appropriate energy market governance is critical in delivering on these objectives and actions. AGL is keen to ensure that governance and regulatory frameworks continue to be positioned to deliver benefits to energy users into the future, within the context of evolving technology and community expectations. AGL believes that the COAG Energy Council has a primary role in driving energy policy in Australia. There are opportunities to improve the Council's strategic focus and prioritization of issues, and to build a common purpose amongst the different jurisdictions. Further, empowering different jurisdictions to take the lead on driving national reform through the Council on different issues may help to improve the implementation of agreed national reforms across all jurisdictions, and would reduce the duplication of work between States and ensure national consistency.

AGL recognises that the Review is specifically acknowledging and taking into account the work being performed through the *Independent Review into the Future Security of the NEM chaired by Dr Alan Finkel AO*. Detail of AGL's recommendations above are contained within our submission to that review, a copy of which is provided and forms part of this submission.

2. Supporting investment certainty in a carbon constrained future

Orderly closure - An expanded renewable energy future should be complemented with regulation which drives the progressive (and well telegraphed ahead of time) closure of older, emissions-intensive power stations or retrofitting with carbon capture and storage (CCS) technology (as has been implemented in Canada). For example, an age-based closure rule requiring that within 50 years of commencing operation, coal plants must either close, or invest in becoming carbon-neutral, would allow a transparent and orderly exit of the legacy coal generation fleet.

Emissions intensity trading scheme – The inclusion of carbon intensity into the wholesale price is a cost-effective way to support low-cost abatement at all operating fossil fuel plants. It will shift operational (short term) decisions to capture the most cost-effective abatement opportunities across the National Electricity Market (NEM). However, it is also clear that until a carbon price becomes very high it is unlikely to influence capital investment decisions. Hence the need to complement it with a closure rule and a third policy piece, stapling firm dispatchable capacity to new renewable generation (discussed below).

National Carbon Budget- A long term, national carbon budget for Australia that extends to 2050 is required to underpin climate policy. This would allow businesses some insight into the suitability of investments with long lifespans. A budget of emissions between today and 2050 would need to be derived from a global carbon budget.



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3. Supporting the integration of increasing levels of variable renewable generation

Making renewable energy beyond the RET dispatchable – To ensure additional renewable generation beyond the current Renewable Energy Target (RET) does not impact system security, policy makers may consider adding a requirement for dispatchability to new intermittent generation. Given an energy-only market, the total cost of renewables subsidies will be greater if they are constructed with no reference to their impact on system security. A system whereby renewable generators partner, through direct or indirect means, with complementary ‘firm’ capacity (such as open-cycle gas turbines, pumped hydro or advanced batteries) has the potential to address such concerns.

Gas fired generation mix – AGL considers that gas-fired generation may have a role to play as the sector transitions away from a supply mix dominated by baseload coal fired capacity. It is critical therefore to lift the gas moratoria, address gas market settings and reform access to gas pipeline capacity.

Ancillary services – Ancillary services markets must be redesigned and expanded to underpin reliability.

4. Customer participation in the transition

AGL has identified a number of Issues - including network tariffs, participation, technology and connection processes - that are key to ensuring customers can exercise choice and are able to efficiently invest in low-emissions distributed energy technologies and assist Australia to meet its carbon reduction goals.

Sustainable and efficient network tariffs – Care in the design of network cost-recovery and pricing frameworks is key to driving efficient network utilisation, efficient adoption of distributed energy technologies and mitigating potential equity issues that arise where those without the ability to adopt distributed energy technologies are left to bear a disproportionate share of remaining network costs. Distribution businesses are currently introducing more cost reflective network tariffs to support the achievement of these outcomes. However, with overall declining grid utilisation and spare capacity in many networks, there is a question as to whether the policy intent behind the introduction of cost reflective pricing can be achieved without a clear policy on the treatment of the existing regulated asset base.

Removing barriers to participation – The price, product and service benefits that flow to customers from competitive markets are predicated on the ability of customers to participate effectively in those markets. Thus attention should be paid to policy reforms that remove barriers to participation, including reviewing the impact of home tenure on access to products and services, tenancy law reform and improving community outreach to vulnerable parts of the community.

Technology standards – Where possible, technology standards applied in Australia should be based on international standards to avoid unnecessary overheads, promote customer choice and competition, and encourage economies of scale. There is an immediate need to place high priority on battery safety, specifically to adopt international safety standards and ban the import of products that do not comply with these standards (IEC62619) – establishing a clear liability regime on importers, vendors and installers for faulty or dangerous product.



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Households, small to medium-sized enterprises and the built environment

- What are the opportunities and challenges of reducing emissions for households, SMEs and the built environment? Are there any implications for policy?
- Are there particular concerns or opportunities with respect to jobs, investment, trade competitiveness and regional Australia that should be considered for households, SMEs and the built environment?

End-users are also playing an important role in the energy market transformation and decarbonisation.

Consumers are driving a shift away from the traditional linear electricity supply chain, to a more decentralised and bi-directional market. Since 2008, the cost of installing household solar PV has declined by around 80% and around one in four residential properties is now operating its own generation in many Australian jurisdictions. In addition to solar PV, a proliferation of more advanced 'distributed energy resources' or 'DER' (digital metering, smart inverters, energy storage, energy management systems, household appliances with smart controls etc.) are now entering the consumer market. Regulatory and market frameworks facilitate (rather than inhibit) the emergence of new products and service markets that build on new distributed technology capabilities in ways that respond to customer preferences.

In addition to distributed energy technologies facilitating more active participation in the energy market and the transition to a lower emissions future, consumers are exercising choice towards carbon reduction and renewable energy products in other ways. AGL mass market research demonstrated that consumers understand the need to play their role in the challenge of climate change but often find it difficult to understand how they can do this in the context of their choices.

In 2016, AGL launched the Future Forest program, which enables customers to offset the emissions associated with their electricity usage for a flat \$1 a week. Offsets are created through domestic forestry programs. The decision to utilise forestry offsets, like the '\$1 per week' framing, was a customer driven response. The offering meets two key customer preferences – it's easy to understand and its tangible. We will be providing customers with information on the projects they are supporting throughout the year to demonstrate where their money is going.

In addition, AGL continues to support the GreenPower program that provides for additional renewable energy. The "additional" status of GreenPower, where the electricity produced is additional to any legislative targets or requirements, provides the cornerstone of the product. An ability to demonstrate this and provide a product that responds primarily to consumer preference is paramount. It enables all participants and providers to identify the key differentiator from both a supply and demand side.

The current absence of a specific acknowledgement as to the additionality of GreenPower by the Department hampers penetration of the product and leaves it open to elements of uncertainty. The review represents an opportunity to address this issue and recalibrate GreenPower for the current circumstances.

Innovative business models creating value for customers and the system

As customers increasingly look to 'stack' multiple value streams (personal, network and wholesale), a successful framework will seek to maximise both customer choice and economic benefit across multiple realms. New entrants are seeking to develop products and services that make it easy for customers to decide how and when they produce, use, store and trade energy with each other, or offer energy or support services into wholesale or network markets. AGL considers it critical that in an environment with rapidly evolving technology and new business model innovations, there is sufficient opportunity to 'test and learn' without prematurely imposing rigid frameworks that might inadvertently stifle innovation.

Case study: AGL South Australian Virtual Power Plant

A recent example of AGL's effort in DER orchestration is the launch of the Virtual Power Plant Trial in South Australia. Over the next 3 years, AGL plans to have one thousand smart, connected energy storage devices installed behind the meter at homes and small businesses across Metropolitan Adelaide. When aggregated, the batteries will act like a 5 MW solar peaking plant that can be called upon at times of grid instability to provide support services to the grid. The project will demonstrate at a commercial scale the value that DER (solar and batteries in particular) can provide three groups: - Consumers can use the batteries to self-consume more of their solar power by storing energy produced during the day that might otherwise be exported to the grid; - Networks can benefit from peak load shaving and voltage management services that potentially avoids further infrastructure expenditure; and - Retailers can benefit from their reduced wholesale exposure during peak demand periods, and through the use of the battery to



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provide synthetic inertia and frequency balancing services. Importantly, all grid users stand to benefit from such an arrangement through the reduced spending on network infrastructure and improved grid stability.

Further detailed information is available in Section 4 of AGLs submission to the *Independent Review into the Future Security of the NEM* chaired by Dr Alan Finkel AO. a copy of which is provided and forms part of this submission.

Transport

- What are the opportunities and challenges of reducing emissions in the transport sector?
- Are there particular concerns or opportunities with respect to jobs, investment, trade competitiveness, households and regional Australia associated with policies to reduce emissions in the transport sector?

AGL recognises that the transport sector poses specific opportunity for emission reduction in the medium to long term. Ultimately the electrification of transport, supported by a decarbonisation of the generation sector, is likely to support deep reductions in transport emissions. However, in the shorter term, as appropriate policies are developed to promote electrification (or other low emission alternative) of transport, reduction in emissions through the introduction of emissions standards remains an implementable option.

Although manufacturing closures have severely impacted significant aspects of Australia's auto-manufacturing industry and associated component suppliers, there remains a solid base of networks, knowledge and understanding related to the motoring industry. This could prove an asset for the fostering and development of electric vehicles and associated products and policies. Government investment designed to increase the uptake and deployment of electric vehicles and associated infrastructure is advantaged by the presence of advanced metering.

The utilisation of Government procurement represents the primary opportunity for the Government to support greater introduction and penetration of electric vehicles at both at Federal and State level.

The government could consider not only direct areas to enhance the uptake but also the implementation of a range of non-financial incentives associated with road use, parking and alternative measures under the control or administration of the state government. We note many of these issues have been considered in research conducted on behalf of the AEC (formerly esaa) by Energeia.



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Research, development, innovation and technology

- What is the role of research, development, innovation and technology in reducing Australia's emissions? Are there any implications for policy?
- Are there particular concerns or opportunities with respect to jobs, investment, trade competitiveness, households and regional Australia that should be considered in relation to research, development, innovation and technology?

The adoption of a technology neutral approach should extend to the provision of research and development. An R&D strategy that supports a diverse range of technologies and processes across energy efficiency, emissions avoidance, reduction and abatement and adaptation to the impacts of climate change is required. Such an approach will best provide the opportunity for a greater mix of technologies, providing flexibility and optionality as challenges and changed circumstances emerge.

Innovation is a critical component to support technical and technological advances that will facilitate emission reductions or abatement into the future. AGL supports the contention that innovation plays a critical but complementary role in the policy suite.

As a significant exporter of fossil fuels, Australia also has a strategic interest in managing risks and opportunities associated with international climate change policy. Australia currently derives 26 per cent of its export goods revenues from coal and other mineral fuels. Therefore, consideration of new or improved near-zero emission technologies (e.g. CCS) should be included as part of domestic GHG reduction policy due to the value at risk of reduced Australian exports.

AGL supports research and development (particularly partnerships between industry and academic institutions) to inform and support uptake of technology development, trials, regulation, and market reform.

International units

- What is the potential role of credible international units in meeting Australia's emissions targets?
- Are there any implications for policy?
- How can the quality of international units be ensured?
- Are there particular concerns or opportunities with respect to jobs, investment, trade competitiveness, households and regional Australia that should be considered in relation to international units?

In light of the Paris Agreement, Australian policy must seek to strike the balance between the use of domestic and international sources of abatement.

Greater international participation and rigour on abatement and emission reduction through the Paris Agreement (the ratcheting provisions) has the potential to create a gradual convergence on the costs associated with these sources of abatement.

This is a long term process and policy makers will need to consider short term implications against longer term competitiveness considerations. This is particularly relevant in the case of emission intensive and trade exposed industries (EITEs) where transitional support will be required at the same time as preparing for competition in a carbon constrained future.



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Other information

AGL economists have published numerous articles specifically related to electricity generation, climate policy and the importance of integrating these policies more effectively. These form part of our submission and a table with appropriate links has been provided below.

Title	Location
AGL Greenhouse Policy	http://www.agl.com.au/~media/AGL/About%20AGL/Documents/Media%20Center/Corporate%20Governance%20Policies%20Charter/1704015_GHG_Policy_Final.pdf
The Changing Nature of the Australian Electricity Industry	http://onlinelibrary.wiley.com/doi/10.1111/1759-3441.12170/full
Climate Policy – Where to From Here?	http://onlinelibrary.wiley.com/doi/10.1111/1759-3441.12114/abstract
Energy-only markets and renewable energy targets: complementary policy or policy collision?	http://www.sciencedirect.com/science/article/pii/S0313592615000156
An analysis of Australia's Large Scale Renewable Energy Target: restoring market confidence	http://www.sciencedirect.com/science/article/pii/S0301421513007398
“Carbon taxes, toxic debt and second-round effects of zero compensation: the power generation meltdown scenario”	http://www.emeraldinsight.com/doi/abs/10.1108/17576381211228970/