

Attachment 1

The security of energy supplies

The ways community expectations can be better understood and reflected in reliability standards

The Issues Paper correctly frames current wholesale conditions as being 'declining energy consumption and growth in new sources'. However, it appears as though the Issues Paper draws a connection between the wholesale market and network reliability standards. It is important to note that in the wholesale market, reliability standards are delivered by the Market Price Cap and Market Floor Price – which provide a signal to market participants as to the need, or otherwise, to invest in new generation capacity. Additionally, reliability standards are also informed by the Value of Customer reliability – which is aimed at physically interpreting the value electricity customers ascribe to reliability. These standards are distinct from network reliability settings.

The NEM's history of reliability overall should be taken into consideration when contemplating any changes to specific reliability standards within the electricity supply chain, including the implementation of a national reliability standard. However, network costs form a substantial component of retail electricity prices. Accordingly, in an environment of increased retail electricity prices, there may be scope to improve the efficiency of electricity network capital expenditure, and to reform the regulatory arrangements which underpin their operation, perhaps by way of re-assessing the reliability standards to which electricity networks are built. It may be the case that if a cost benefit analysis was conducted into amending current standards, a reduced level of reliability could be identified that still meets public expectations but which results in reduced network expenditure and therefore reduced electricity prices. AGL supports such an analysis taking place, and agrees with the importance that the Government places upon ensuring that reliability requirements reflect the value attributed to those services by customers and society. Importantly, this would need to be done on the basis of rigorous public consultation. Any changes to network reliability standards would require strong support from electricity customers, particularly if changes to settings could potentially negatively impact supply reliability.

The value of developing fuel reserves to meet Australia's international oil security obligations, and augment domestic security

AGL fully supports the development of a fuel security policy that maximises our domestic resource capability and avoids undue reliance upon external sources. We particularly support the Government's focus on alternative fuels in the transport sector, and consider that there is considerable scope for these policy areas to interact cohesively and efficiently. We set out in detail our position on alternative fuels and electric vehicles later in this submission.

Ways to increase new gas sources to meet demand and measures to enhance transparency in market conditions

We are currently witnessing a significant transformation in the dynamics of Australia's east coast gas market, arising from a profound increase in demand as a result of LNG export facilities being constructed in Queensland. This may, on the basis of existing production levels and policy settings, exceed the current pace of supply. Furthermore, it is combined with stringent restrictions being placed upon upstream supply opportunities. The clear policy response that needs to be implemented in this situation is one that encourages further supply, and removes existing obstacles to supply development.

This is of particular importance in New South Wales, given its significant reliance upon gas imported from other States to meet its demand requirements. Confirming recent findings of AEMO in late 2013 that New South Wales may experience peak demand gas shortages in 2018, forthcoming AGL research demonstrates that New South Wales may be required to curtail customers unless new gas supply options are developed and implemented.

AGL strongly supports the recommendations recently made by the Department of Industry's Eastern Australian Gas Market Study which relate to promoting gas supply competition as a way to address the emerging disequilibrium in the east coast gas market. The most fundamental barrier to bringing on new gas reserves currently is government policy. To the great detriment of the industry in New South Wales and Victoria in particular, this policy has been made arbitrarily and without empirical evidence or a scientific rationale, and fails to take into account the large segment of the community neutral or supportive towards coal seam gas development. This is occurring at various levels of government, with the recent implementation by the New South Wales Government of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) Amendment (Coal Seam Gas Exclusion Zones 2013)* (**Mining SEPP Amendment**), and the Commonwealth Government's "water trigger" amendments to the *Environment Protection and Biodiversity Conservation Act 1999*.

The Mining SEPP Amendment recently implemented by the New South Wales Government significantly compromises the gas industry's ability to deliver a future indigenous supply of gas for New South Wales, and exacerbates the gas supply crisis that will commence in New South Wales in the near future. AGL acknowledges that the implementation of the Mining SEPP Amendment represented an attempt by the New South Wales Government to respond to community concerns about CSG projects. AGL absolutely supports community consultation and engagement on issues that have the potential to impact upon local community issues, health, services or amenities. Accordingly, AGL ensures that appropriate community consultation occurs as a standard part of its development processes, and community concerns are addressed to the greatest extent possible.

As outlined elsewhere in this submission, such restrictive policies are unfortunately not unique to the gas industry with similar unscientific restrictions having been placed on the development of wind farms in Victoria. Avoiding such reactive policy development is particularly important where such policy changes would have significant repercussions upon crucial issues such as energy security and supply, and the levels of investment in and economic prosperity of the State.

If the CSG industry is permitted to safely develop the proven gas resources in New South Wales, then it is likely there will be enough natural gas in New South Wales to supply current levels of consumption for many decades. It would appear that there are significant new national gas resources that are yet to be developed. AGL notes comments by BREE which reference EnergyQuest estimates of around 90,000 PJ of gas supplies available, which is the equivalent of around 45 years of gas demand (including current LNG loads) from 2017.

Accordingly, it is imperative that the following strategies be prioritised:

- Governments at all levels must adopt a long-term approach to policy setting, and make changes only on the basis of robust, verifiable, scientific or other evidence-based information emerging that justifies the change.
- New gas supplies need to be developed within a supportive regulatory framework, which does not currently exist. The New South Wales and Commonwealth Governments must take immediate steps to remove all ad-hoc, non-scientific, planning and regulatory barriers to the exploration and production of gas in New South Wales and other States.
- The New South Wales Government must set a clear and achievable coal seam gas framework which would facilitate safe and orderly development to continue in order to satisfy New South Wales gas demand.

Generally speaking, dynamics in the downstream gas market permit sufficient price and volume discovery to take place between market participants. However, we would support the close monitoring of the gas trading exchange to be introduced at Wallumbilla in March 2014 as a possible template for extension to other locations. While downstream facilitated markets will always be required where retail competition exists in order to achieve

balancing, there may be scope for some aspects of the Wallumbilla trading exchange model (i.e. voluntary, bilateral contractual arrangements for the sale and purchase of gas) to be extended to other jurisdictions and to replace some of the undue complexities of downstream facilitated markets. This could in turn have the additional benefit of simplifying pricing structures in downstream markets.

Regulation of energy infrastructure

Many aspects of energy infrastructure regulation appear to be working as intended. In particular, features such as the National Electricity Market (**NEM**)-wide approach to energy sector reform enabled through the Australian Energy Market Agreement; long term planning and forecasting by the Australian Energy Market Operator (**AEMO**); and NEM-wide economic regulation of the energy sector by the Australian Energy Regulator under a framework which strives to achieve economic efficiency in the long term interests of consumers, all contribute towards creating an economically sound platform from which an essential service is provided to consumers.

However, as in any situation in which commercial entities are subject to extensive economic regulation, there is a potential for flaws to exist in the methodology by which the regulatory intervention is framed. This can lead to economically perverse outcomes in the form of distortions in pricing and resource allocation which in the case of the electricity industry has led to a tendency towards over-investment in electricity networks in some jurisdictions. There is in fact significant potential for greater efficiency in investment in electricity networks, particularly in States in which such networks are publicly owned, and for greater empowerment of customers to be able to manage their electricity consumption and expenditure. The fact that electricity networks are built to cater for (and accordingly, electricity is priced on the basis of) peak levels of demand that occur very rarely, lends itself to inefficient outcomes as a result of existing non-cost reflective tariff structures.

Accordingly, there is scope to improve the efficiency of electricity network capital expenditure, and to reform the regulatory arrangements which underpin their operation. As discussed earlier, this may involve a reassessment of the current reliability standards to which electricity networks are built. A necessary and complementary mechanism to manage peak load, enhance competition, and maximise the efficiency of generation investments in the NEM, is retail price deregulation where markets are competitive, along with the introduction of cost reflective retail tariffs (e.g. critical peak pricing and time-of-use tariffs). Simshauser and Downer (2011)¹ demonstrated that the introduction of relatively simple peak, off-peak and critical peak pricing, combined with smart meters, could significantly improve the utilisation of existing infrastructure, which would manifest itself in significant reductions in unit pricing. The Australian Energy Market Commission (**AEMC**), through its Power of Choice review, has spent considerable time considering various options for demand side management as a way of reducing peak demand and thereby improving the efficiency of network investment and expenditure. The energy industry has worked closely with the AEMC and AEMO to progress various reforms in this context.

Regulatory Reform and Role of Government

Priority issues, barriers and gaps within the COAG energy market reform agenda

We are supportive of the overall objective of the COAG energy market reform agenda: to ensure that energy customers do not pay more than necessary for a reliable and secure supply of electricity in the NEM. AGL broadly agrees with the four key areas that the reform agenda is based on, with some qualifications. AGL supports the key areas of empowering customers, enhancing competition and innovation, and ensuring balanced network investment. However, the focus on strengthening regulation should be qualified.

¹ Simshauser, P. and Downer, D., (2011) "Limited-form dynamic pricing and peak demand growth", Australian Economic Review, Volume 45, Issue 3, pp. 305-324.

Regulation should be specific and well-targeted in its focus, and its main purpose should be to prevent or rectify sustained market failure. We see the role of government and regulation as being to create the economic conditions in which efficient market outcomes are best incentivised through competition, minimal government intervention, and the operation of genuine market forces. COAG's energy reform agenda should aim to create an environment which promotes efficient investment in generation, the existence of energy security, optimal utilisation of infrastructure with customers being in a position to respond to cost reflective pricing signals, and a competitive retail market with minimal unnecessary administrative burden. Priority should then be placed upon ensuring the existence of policy settings which maintain this economic and regulatory environment, and in which optimal use is made of the infrastructure and technology available.

Possible approaches and impacts of review of tariff structures including fixed network costs, further time-of-use based electricity tariffs and the use of smart meters

The main problem that tariff reform should attempt to resolve is the current mismatch that exists between the price consumers pay for electricity and its true cost of supply. AGL supports long-term tariff reform that is aimed at efficiency pricing peak demand and optimising network utilisation. This should be done by making tariffs more cost-reflective.

Currently, the costs of electricity supply, including the true network costs associated with providing and supporting particular products, are not reflected in the prices that customers pay. This leads to cross subsidisations occurring between customer segments, as some customers pay a greater proportion of network costs than their electricity usage requires, due to other customers paying less. This has been exacerbated by the inability of current charging structures to appropriately respond to changes in electricity consumption driven by transformations in technology (such as large residential uptake of solar panels) and expected future market changes (such a battery storage and electric vehicles).

It is necessary to revisit the economic and policy settings behind existing tariff structures to enable appropriate variations to be made which ultimately lead to tariffs optimising network utilisation and driving economically efficient outcomes. Effective tariff reform would involve the removal of impediments to the delivery of economically efficient outcomes through cost-reflective tariffs. This includes replacing retail price regulation with price monitoring in the short term; devising and implementing a complementary smart meter roll out model on a contestable, market-led basis; and ensuring that a level playing field exists between retail energy service providers. This would need to be accompanied by a requirement for distributors to offer retailers network tariffs that align with the retail tariffs that retailers offer their customers. The objective would be for as many customers as possible to move to cost-reflective, time-of-use or other dynamic pricing tariffs (which incorporate a complementary network tariff component), allowing for appropriate protections to be available for customers facing financial hardship.

It is vital that governments ensure that a state of regulatory stability and policy certainty exists with respect to long term tariff policy, so as to encourage retailers to make the investments necessary to develop innovative products and services, and to grow markets which can provide a range of new offerings to customers.

Areas where further privatisation of government-owned assets would contribute to more effective regulatory frameworks and better outcomes for consumers

We consider it to be a sound and reasonable element of the energy reform agenda for governments to transition out of the competitive retail and generation components of the energy supply chain. Such a departure would enable governments to direct their capacity and resources towards non-competitive, public functions that, by their nature, require direct government involvement.

Growth and investment

Commercial and market initiatives that could enhance growth and investment in the energy and resources sectors

Future levels of growth and investment in the energy sector will be influenced heavily by the outlook for gas and electricity demand, and on the levels of market efficiency generally in the retail and wholesale sections of the market, which would impact the likely return on investment. There is a great deal of variation in the likely outlook for growth and investment in the various parts of the energy supply chain.

The current wholesale electricity pool clearing price is sub-economic, in that market participants are unable to recover their long run marginal costs (LRMC). An important reason for this is the decline in demand that has occurred, resulting from slowing economic conditions; increased take up by consumers of energy efficiency measures; and significant take up of distributed generation, particularly residential solar panels. Importantly, the retail price paid by customers has increased significantly, due to factors outside the control of generators (such as the absence of cost-reflective retail tariffs). It is therefore important that governments consider policies which address the gap between LRMC and current wholesale prices. Such consideration is necessary to ensure incumbent generators are appropriately incentivised to maintain plant for the purposes of system security.

The decline in demand has also contributed to the existence of surplus generation capacity, particularly a surplus of baseload capacity². The Renewable Energy Target was designed with a view that new renewable investment would be required to meet increased electricity demand. As demand declined but supply continued to be added, this led to the market becoming oversupplied, with the consequence that current wholesale electricity prices (and a declining real penalty price for LGCs) are unlikely to support new investment in renewable generation.

Accordingly, the Government's energy reform agenda should incorporate policy measures that create a more sustainable wholesale market that facilitates new investment in an economically optimal generation mix while ensuring appropriate incentives are in place for older, less efficient plant to be withdrawn. A long-term and sustainable climate change policy framework is critical for facilitating efficient investment decisions in long-lived electricity infrastructure. An optimal generation mix will inevitably require current ageing plant to be retired. Such an outcome can only occur if the ongoing uncertainty around long-term climate change policy is resolved. In this context, it should be noted that there are many possible mechanisms for incentivising older plants to retire permanently (as opposed to mothballing) including direct regulation and market-based mechanisms.

Central to encouraging growth and investment in any sector, particularly the energy sector in which investments can result in projects with long operating lives, is having an environment of policy and regulatory certainty. A stable regulatory framework which is established with a long term outlook is critical to the achievement of rates of return that ensure economic efficiency throughout the industry and the economy more broadly. Eliminating unnecessary government and regulatory intervention in competitive, commercial processes is also very important for stimulating investment in the energy sector. Retail energy tariff reform, including the removal of retail price caps, is an essential pre-condition for growth in this sector.

Areas where approvals processes could be further streamlined while maintaining proper environmental safeguards

There is much scope for the streamlining of approvals processes while maintaining proper environmental and other community safeguards in various areas in which AGL has development and projects experience. These include electricity generation facilities

² For further information, see <http://www.aglblog.com.au/2013/07/presentation-to-cec-annual-conference-3/>

(specifically, wind farms), and extractive process projects, such as coal seam gas production and exploration developments.

AGL is very supportive of the Productivity Commission's recommendations in its Major Project Development Assessment (**DAA**) Processes report, on ways to improve the efficiency of such processes. We are also very supportive of the direction that the Government is taking in the Issues Paper, such as by seeking to streamline regulation through cross-accreditation processes.

As we highlighted in our submission to the Productivity Commission, DAA processes associated with coal seam gas and wind farm approvals can be improved and streamlined in the following ways:

- Changes to significant policies underpinning the DAA process, or major changes to the processes themselves, should only be made on the basis of robust, verifiable, scientific or other evidence-based information emerging that justifies the change. To the greatest extent possible there should be public consultations about such changes prior to their implementation. In addition, the impact of the change on project proponents and the broader economy and society needs to be considered in determining whether the change is justified, as well as the long term impact of the changes on the likely number of projects being established and obtaining approval.

For example, 2 km set back requirements in respect of wind farms in Victoria, and coal seams gas exploration and development projects in New South Wales appear to be unsupported by any particular empirical data. AGL opposes the application of arbitrary setbacks for any major infrastructure projects. An objective, merits-based approach should be used for all major industries and infrastructure projects, based on a rigorous quantitative and qualitative assessment of impacts.

- Duplication in State and Federal DAA processes in respect of the same approvals or assessment criteria should be avoided, while still maintaining environmental integrity. For example, a project should not be required to obtain both State and Federal environmental approvals which assess the same environmental impacts. For example, the 'water trigger' amendment to the EPBC Act constitutes duplication in environmental assessment processes between State and Federal Governments.

Ways that regulatory burdens could be reduced while maintaining appropriate levels of disclosure and transparency in energy markets

The fundamental role of regulation is to address identified cases of market failure, and it is appropriate only where it is supported by robust cost/benefit analysis. The Australian energy industry is subject to extensive regulation both at a State-wide and national level. While some of this regulation is appropriate in order to deliver a well-functioning and co-ordinated industry, unnecessary regulation leads to inefficient outcomes, and can be demonstrated at various stages of the energy supply chain.

Significant sources of inefficient and unnecessary regulatory intervention in the retail energy sector are retail price regulation and duplication in regulatory obligations across State and national jurisdictions. Retail price regulation where competition is effective is the main factor restricting retailers from competing vigorously and delivering more diverse and innovative energy products and services. Its replacement with price monitoring will be an important factor in incentivising retailers to demonstrate product and service innovation through dynamic pricing structures and enhanced product offerings. Such an outcome would lead to customers benefiting, as we would expect the increased product differentiation and innovation by retailers to be accompanied by a greater proportion of customers moving to innovative market contracts, as they are encouraged to take advantage of greater service offerings available in the market.

AGL favours a national approach to energy regulation rather than separate State-based regimes which currently exist. The current system in which energy retailers that operate nationally are required to comply with separate State-based obligations as well as various national obligations in jurisdictions that have implemented the National Energy Customer

Framework is inefficient and expensive, and leads to increased administrative and compliance costs. We draw the Government's attention to regulatory reporting obligations that energy retailers have in each jurisdiction, as well as the different energy efficiency and environmental schemes that operate across each State, as specific examples of areas in which national consistency would deliver significant efficiency benefits.

We reiterate the points made earlier about the prevalence of unnecessary and duplicative regulation in the context of planning, development and land use approvals processes. In this context we support the Government's stated intention in the Issues Paper to deliver a one-stop-shop to help businesses navigate licensing and other regulatory processes. The removal of regulatory intervention in the areas we have suggested would not in any way reduce market disclosure or transparency. In fact, given that it would encourage stronger competition, it would be likely to improve the efficiency and operation of the market and information flows within it.

Impacts of variable land access policy and ways the community could be better informed and engaged on development in the energy sector

AGL is a long-term owner/operator of electricity generation, mining and CSG assets and is committed to being a valued member of the local community. While some of AGL's projects have been operational in the community for a relatively long period of time (for example, AGL Torrens and AGL Hydro assets), AGL recognises that new projects require sustained community engagement activities to ensure community acceptance. In particular AGL is committed to ensuring that CSG exploration and production activities minimise impacts on the environment and the community and can co-exist with other land uses.

While recognising that land access policy development lies predominately within the jurisdiction of State Governments, AGL supports basing these policies on science. Objective land access policy, based on empirical evidence, is essential to increase levels of transparency, accountability and certainty in assessment and approvals processes. In Australia, arbitrary policies have discouraged investment and competition in major infrastructure and have also failed to reassure the community that the appropriate regulation is in place.

AGL believes that Government and industry have dual roles to play in educating and informing local communities about how infrastructure activities may interact with their way of life, their livelihoods and their local environment. AGL is committed to listening and providing comprehensive and accurate information to communities, as well as facilitating adequate opportunities for communities to give feedback and raise concerns. To engage the community and effectively respond to community concerns, AGL consults with landowners, neighbours, residents, local councils and relevant government agencies during all stages of the project life-cycle.

In order to engender community confidence in infrastructure development, AGL encourages the Federal Government to facilitate the development of community engagement principles that can be directly incorporated as part of infrastructure development processes. AGL believes that structured participation is central to the enfranchisement of local community members. Accordingly AGL urges Government to place an emphasis on the development of active and robust use of Community Consultative Communities models which continue over the life of particular projects, in order to represent and provide feedback to broader community stakeholders. AGL believes that such principles should be flexible in not prescribing specific ways to engage in order to accommodate the different type, scale and location of individual operations.

Driving energy productivity

Current suite of energy efficiency measures, ways these could be enhanced to provide greater energy efficiency or possible new measures that would enhance energy productivity

AGL supports the prioritisation of rolling out enabling technologies such as smart meters to provide customers with access to enhanced information about their consumption patterns in real time in order to facilitate behavioural changes. This needs to be accompanied by tariff reform with the objective of developing cost reflective pricing, which is essential to encourage efficient investment decisions.

Importantly, the barriers that prevent low-income households from being able to access energy efficiency measures should be addressed, such as reduced access to capital and financial barriers, which can prevent even cost effective measures from being implemented because of upfront capital requirements. In addition, public housing should be prioritised for energy efficiency upgrades. Policy settings should aim to remove split incentive barriers in the residential market, especially for rental properties, where the person who most benefits from the investment is not the decision-maker.

Having national consistency in energy efficiency policies and schemes maximises administrative and regulatory efficiencies. Schemes that differ across the States can lead to operational inefficiencies and higher energy costs.

Use of demand-side participation measures to encourage energy productivity and reduce peak energy use

AGL considers that the benefits of an effective demand side response are clear. It promotes efficient investment in capital and infrastructure by encouraging energy productivity and reducing peak energy use; it allows customers to be directly incentivised to adjust their consumption patterns; and it allows market participants, retailers and generators an effective mechanism by which to manage their exposure to high pool prices.

Currently a number of retailers make demand side arrangements directly with their customers, including allowing them direct access to the pool price. These arrangements are usually made with larger customers where the amount of the demand side response is valuable and manageable. There is a view, however, that more demand side response could and should be traded in the NEM. The perceived lack of a demand side response in the NEM has been commonly attributed to a range of factors including:

- weak incentives to change behaviour, due to the lack of a financial reward for doing so or direct exposure to higher electricity prices;
- end-use demand inelasticity, due to issues associated with replacing installed capital and infrastructure; and
- inflexible consumption patterns due to cost impediments, for example, costs incurred by manufacturing firms as a result of having staff sit idle during periods of high electricity prices exceeding the benefits of lower energy costs associated with having done so.

The most effective means by which these factors can be effectively addressed are through the following:

- Education - in order for the maximum benefit to be derived from any regulatory, structural or technological changes aimed at increasing demand side participation, it is imperative that changes are underpinned by an education program. This will ensure that customers are engaged and feel confident in exercising choices with respect to the opportunities presented them.

- Price signals - one of the problems associated with the continued regulation of retail pricing is the lack of appropriate user-pays pricing signals being developed. Regulated retail prices are generally based on average cost pricing models, which results in low energy consumption households subsidising high energy consumption households.
- Technology deployment - technology such as smart meters and in-home communication devices provide customers with greater visibility of their energy use and allow real-time communication to customers of cost reflective price signals. These technologies provide a platform, and a technological means, by which demand side participation can be effectively harnessed.

Importantly, new entrants and/or existing participants that seek to provide demand side participation offerings directly to customers must be subject to the same regulatory obligations that currently exist for NEM retailers. This approach will ensure the appropriate standards and protections for consumers remain, as well as ensure a level playing field for all participants in the market.

In December 2014, the Standing Council on Energy and Resources (SCER) agreed to delay consideration of the Demand Response Mechanism (DRM) rule change until the completion of a cost benefit analysis. This rule change was prepared by the Australian Energy Market Operator at SCER's request – which originated from the Australian Energy Market Commission's Power of Choice Review. AGL considers that this pause in the lodgement of the rule change with the AEMC is appropriate as it allows full consideration of the potential impacts of the DRM. Further, AGL considers it appropriate to allow for the completion of this process prior to the recommendation or implementation of any additional regulatory measures – aside from those identified above – to stimulate a demand response in the NEM. The delay will also allow the examination of alternative mechanisms for demand side response that may be more compatible with the NEM design.

Alternative and emerging energy sources and technology

Ways to encourage a lower emissions energy supply that avoids market distortions or causes increased energy prices

Additional cost effective means, beyond current mandatory targets and grants, to encourage further development of renewable and other alternative energy sources and their effective integration within the wider energy market

How the uptake of high efficiency low emissions intensity electricity generation can be progressed

A long-term and sustainable climate change policy framework is critical for facilitating investment decisions in long lived infrastructure such as electricity supply. The heightened state of policy uncertainty that arises from frequently changing policy settings and objectives leads to financing 'premium penalties' being applied to both renewable and new gas-fired generation projects³. This amounts to increased costs being applied by financiers of power generation as additional risks need to be factored into financing costs, which then manifests as electricity prices that are higher than an efficient level.

Importantly, in the current environment of constant or declining demand, it is necessary for policy settings aimed at encouraging lower emissions generation to be transformational as opposed to additional, so as to enable the currently oversupplied wholesale electricity market to support the mandated new investment. Such policies need to be long term in their outlook, be stable and certain in their application, and should efficiently incentivise an optimal generation mix which involves the retirement of ageing, high emissions generation

³ See Simshauser, P. and Nelson, T. (2012), "Carbon taxes, toxic debt and second-round effects of zero compensation: the power generation meltdown scenario", *Journal of Financial Economic Policy*, Vol. 4, Issue 2, pp.104 – 127 and Nelson, T., Nelson, J., Ariyaratnam, J. and Camroux, S. (2013), "An analysis of Australia's Large Scale Renewable Energy Target: restoring market confidence", *Energy Policy*, Vol. 62, pp. 386-400 for more information

as lower emissions generation is introduced due to government policy requirements. Any changes to the market structure that are driven by new policy settings should be managed in an orderly and sustained manner, in order to avoid market distortions which are more likely to occur in the event of short lived policies or those that are perpetually under review or subject to change.

Any barriers to increased take up of LPG in private and commercial vehicles and CNG and LNG in the heavy vehicle fleet

AGL welcomes the Government's focus in the Issues Paper and encouragement of the use of alternative fuels in road transport. The efficient level of uptake of alternative fuels and vehicles in Australia is currently being hindered by a range of barriers across the supply chain. The supply chain can be divided into the following core segments: vehicle supply; fuel supply; infrastructure; and end customers. The policy incentives within these segments must work end-to-end to deliver the vehicles, fuels, and services to market.

Investments made by fleet operators are going to be based on the economics of projects over the lifetime of the investment, having consideration of upfront capital cost, ongoing operating costs (fuel costs/subsidies/taxes, servicing, road user charges and other taxes) and resale values. AGL supports the Government as part of the development of its White Paper undertaking a full assessment of barriers to the uptake of alternative fuels across these key parts of the supply chain. We briefly discuss barriers to each of these areas in turn below: vehicle availability; alternative fuel supply; supporting infrastructure; and other barriers facing end users/customers.

At present the Issues Paper refers only to heavy fleet use of LNG and CNG. AGL is of the view this specification is too narrow and supports the Government undertaking a full review of policies targeted at transitioning *both* heavy fleet and commercial fleets to LNG and CNG. It is unclear how the Government will consider fuel security within the context of the White Paper and the assessment of future policies impacting the transport sector. AGL notes the work undertaken in 2011 for the Strategic Framework for Alternative Transport Fuels and the potential need for reinvigoration of this work, especially within the context of an increasing reliance on imported oil, with diesel imports increasing in volume by almost 800% over the past 10 years (DRET, 2011⁴).

Natural gas vehicle availability

The number of natural gas vehicles in Australia is still limited, due to a range of factors including upfront costs and policy barriers. According to National Gas Vehicles Australia, in 2011 there were around 2900 natural gas vehicles in Australia, the majority of which were buses. According to NGV Global⁵, in the same year there were more than 15 million natural gas vehicles in operation globally, with the market growing at around 20% on the previous year. The growth of this market presents Australia with an opportunity to develop a more productive and efficient transport sector domestically.

While support for vehicle conversion to date has been focused solely in conversion to LPG, no similar policy support has been delivered for LNG or CNG fleets. This has left these fuels at a competitive disadvantage despite having less CO₂ emissions per GJ of energy than LPG⁶. AGL does not endorse policies which 'pick winners' in relation to preferential treatment of one alternative fuel type over another and advocates for support to be commensurate with the impact of the fuel type on the broader economy and environment.

A range of policies to support the uptake of natural gas vehicles have been implemented internationally. The ClimateWorks Foundation, after undertaking review of global policies, recommends two policies which have been the most effective at reducing emissions in the transport sector: (1) vehicle performance standards to establish minimum requirements based on fuel consumption or emissions per unit of distance travelled and, (2) economic

⁴ DRET, 2011, Primary oil production, imports and total primary energy consumption to 2035

⁵ <http://www.iangv.org/current-ngv-stats/>

⁶ DCCEE, 2013 National Greenhouse Accounts (NGA) Factors

signals to consumers and vehicle makers. AGL is of the view these policies should be considered within the White Paper development process.

Alternative fuel supply

Fuel costs for end users are heavily influenced by fuel tax excise and credits programs. On 1 July 2015, the fuel excise will be increased for LPG to 12.5 c/L, and for LNG and CNG to 26.13 c/kg.

Fuel type	From 1 Dec 2011	From 1 Jul 2012	From 1 Jul 2013	From 1 Jul 2014	From 1 Jul 2015 (final rate)
LPG cents per litre (cpl)	2.5	5.0	7.5	10.0	12.5
LNG cents per kilogram (cpk)	5.22	10.45	15.67	20.9	26.13
CNG (cpk)	5.22	10.45	15.67	20.9	26.13
Ethanol (cpl) ⁷	38.143	38.143	38.143	38.143	38.143
Biodiesel (cpl) ⁸	38.143	38.143	38.143	38.143	38.143

DRET indicated in 2011 that a review of taxation and grant arrangements for CNG and LNG would occur after 12 months of operation. AGL is concerned that the current payment structures that LNG, LPG and CNG are subject to, comprising both royalty payments (payable due to their domestic production) and excise taxes, constitutes a form of double taxation, which exacerbates the reduction in cost competitiveness that these alternative fuels face as compared with traditional petroleum-based fuels that are imported and not subject to domestic production royalty payments. Accordingly, we would support a full review and re-alignment in the application of the excise, in a manner commensurate with the true costs of the fuel, incorporating environmental and any other externalities, and ensuring equitable taxation treatment across different fuel types.

Supportive infrastructure and fuel delivery

To support the growth of an efficient and productive natural gas transport sector, the infrastructure to transport the gas from source to the bowser is a critical component. Certainty and stability of network infrastructure access must be delivered in order to support a critical mass of customers. AGL supports the Government reviewing the surrounding infrastructure relating to the CNG and LNG supply chain.

Barriers facing the end user

End users of alternative transport vehicles face a range of costs when it comes to getting the vehicle on road, which can result in perverse incentives and unintended outcomes in terms of the preferential treatment of one fuel class over another. One example of this is the cost differential between conventional fuels and natural gas vehicles being further exacerbated by weight-based vehicle taxes. CNG and LNG vehicles require large, heavy storage cylinders and face additional weight-based vehicle taxes, making them less cost competitive as compared with conventional fuel vehicles, despite their efficiency and environmental benefits.

Barriers to the increased uptake of electric vehicles and advanced biofuels

Electric vehicles (EVs) have several advantages in relation to economic, health, environment and electricity grid outcomes:

⁷ Domestic ethanol producers receive grants of 38.143c/L under the Ethanol Production Grants program. These grants are subject to compatibility with the relevant program's eligibility criteria and will continue until at least 30 June 2021.

⁸ Domestic producers and importers of biodiesel receive grants of 38.143c/L under the Energy Grants (Cleaner Fuels) Scheme. These grants are subject to compatibility with the relevant program's eligibility criteria.

- EVs are able to reduce the Australian economy's reliance on imported liquid fuels by substituting domestically-generated electricity. This represents a significant opportunity to improve Australia's structural trade position and energy security. Further, EVs have zero tailpipe emissions, and therefore do not contribute to air pollution or "smog." Over time, high EV uptake could significantly improve air quality in urban areas.
- Charging EVs using Australia's 2010 average generation mix produced around 18 kg CO₂e per 100 km of driving, about 35 percent lower than an average petrol car. This is roughly equivalent to a new midsize petrol sedan or hatch. Furthermore, over the very long run, electricity may decarbonise at a faster rate than the petrol fleet. Beyond 2020 it is difficult to project the greenhouse intensity of grid electricity; however it is reasonable to expect generation intensity to continue to decline over the very long run. EVs that are charged using accredited GreenPower (as at 2010) would produce 2 kg CO₂e per 100 km due to losses from electricity transmission and distribution, a saving of over 90 percent compared to the average vehicle.
- If accompanied by the introduction of appropriate price signals (such as time of use electricity pricing), electric vehicles could enhance the utilisation rate of existing electricity grid infrastructure, thereby reducing unit pricing for all consumers (a positive production externality).

There is a role for broader education and information around battery EVs, in particular, consumer concerns remain in relation to the potential impact of reduced range. These concerns will likely ease as charging infrastructure is rolled out and battery performance improves. In addition, so-called "range anxiety" is not an issue for plug-in hybrid vehicles with an additional fuel source.

A lack of consistency between vehicle manufacturers in the use of EV and charging technology is also a concern. Many manufactures utilise different plug types, preventing consumers from using any available charge point. The review should have regard to the impact of policies on technologies, ensuring there are no additional inhibitors to the expansion of the EV market in Australia.

AGL notes that Australia does not have any government targets or mandates for electric vehicle uptake. Such targets exist internationally and if applied domestically may help to promote the uptake of electric vehicles and could be considered as part of the policy review.