1 February 2016

Productivity Commission
Level 12, 530 Collins Street
Melbourne VIC 3000, Australia
Via email: disruption@pc.gov.au

PRODUCTIVITY COMMISSION REQUEST FOR INPUT: DISRUPTIVE TECHNOLOGIES: WHAT DO GOVERMNENTS NEED TO DO?

Dear Productivity Commission

Gas Energy Australia is pleased to provide input on the Disruptive Technologies research project by the Productivity Commission. We consider this project to be a positive step for informing the Government about its role in preparing Australians for the impacts of new innovations and technology on markets.

By way of introduction, Gas Energy Australia is the national peak body which represents the bulk of the downstream alternative gaseous fuels industry which covers Liquefied Petroleum Gas (LPG), Liquefied Natural Gas (LNG) and Compressed Natural Gas (CNG). The industry comprises major companies and small to medium businesses in the alternative gaseous fuels supply chain; refiners, fuel marketers, equipment manufacturers, vehicle converters, consultants and other providers of services to the industry.

Innovative and technological developments in the energy sector need to be encouraged because:

- the energy industry is a key focus for households, industry and governments at all levels;
- greater demand for energy together with growing environmental concerns is driving technological advancement;
- energy related innovations and technology that are emerging could have dramatic impacts on market outcomes;
- energy costs strongly influence household living standards and business competitiveness and the production and consumption of energy generates significant environmental costs such as climate change and harmful poor air quality; and
- the ability for Australia's economy to benefit from these developments are highly dependent on government policies and actions.

New innovations and technology can have disruptive impacts on both the stationary energy and transportation sectors of the energy market. In the stationary energy sector, the dominant existing model of electricity market involves generation from a large scale centralised facility and supply through transmission and distribution infrastructure. Issues with this current system relate to emissions from the high levels of coal used for fuel, energy losses from transport of electricity over long distances and the recovery of the fixed costs of transmission and distribution infrastructure for small remote communities. In

addition, limited access to detailed usage data for consumers and pricing arrangements which do not reflect generation and distribution costs distort consumption, production and investment decisions.

In the transport sector, oil based fuels such as petrol and diesel are currently the dominant fuels for vehicles supplied through a wide network of refuelling stations. While many alternative fuels such as LPG and natural gas have lower emissions, there are barriers to uptake including unnecessary and burdensome regulations.

Innovations and technological advancements in stationary and transport energy areas could cause disruptions in the energy market. There is potential for new technologies to address issues with the current systems and business models in this sector. However, there is a role for government to ensure that the benefits are realised through developing appropriate regulatory and policy settings. An overview of potential disruptive technologies in the energy market, their impacts and the areas for policy action by the Government is presented below.

Distributed Generation

Distributed generation refers to the production of electricity close to the source of consumption, usually with smaller scale generators which can be powered by a variety of alternative fuels such as gaseous fuels, renewables and fuel cells. New power generation technology including gas powered fuel cells and microturbines can facilitate the entry of distributed generators into the market and change the traditional centralised system of electricity supply.

While there are benefits from economies of scale achievable with a centralised model, higher transmission and distribution costs from the long distances in Australia reduces this especially at lower demands in remote locations. The development of highly efficient small scale generation facilities is making distributed generation the most suitable option for certain consumers, but its use needs to be accompanied by reforms to current regulations to facilitate cost reflective pricing.

For example, access to accurate and real time production and consumption data could facilitate new pricing arrangements which account for the costs of generation and supply. Emerging technology such as smart metering could perform this task and enable consumers to respond to prices that reflect the costs of their energy use at particular times and locations. This would reduce consumption during peak periods that generate a significant portion of infrastructure costs and incentivise investment in distributed generation where this was economically efficient. In the future, smart meters could have a role in coordinating clusters of power sources to efficiently allocate electricity supply through real time pricing, bidding and dispatching.

Distributed generation technology could lead to the entry of additional providers which would compete with the few large existing electricity suppliers. Combined with technologies such as smart meters which provide all market participants with knowledge of prices, products and demand, market forces could efficiently allocate supply from a large number of electricity producers to demand. This could delay or postpone indefinitely the significant costs of expanding or upgrading electricity grids to meet peak demands which have been the main driver of the large increases in electricity prices over recent years.

The use of Australia's gaseous fuels including LPG, LNG and CNG is suited to supporting this innovation due to their ability to be delivered to remote locations with trucks using existing road infrastructure. Reducing the share of coal and diesel used for electricity generation would also improve environmental outcomes due to the lower emissions of CO_2 and other pollutants associated with gaseous fuels.

The Australian Government's Energy White Paper has also identified distributed generation as a potential disruptive technology in the energy market. The Government has a role in reforming regulations and policies to capture the benefits of this new technology. For example, regulations that enable city consumers to cross subsidise the expansion of the electricity network to remote and regional areas deter beneficial investment and uptake of distributed generation. An alternative approach to achieve equity objectives for consumers in remote areas would be to provide community service obligation (CSO) payments to consumers and allow them to choose the most suitable energy solution.

Government bodies such as the Australian Renewable Energy Agency have identified the development of distributed generation projects in remote areas as a high priority but its remit arbitrarily restricts support to renewable energy technology. This gives this technology an artificial competitive advantage over other distributed generation technologies such as highly efficient gas powered microgenerators which can also achieve low emissions. The Government needs to allow all technologies to compete objectively on the basis of abatement performance and cost effectiveness to ensure that resources are allocated efficiently in the distributed generation sector.

Alternative Transport Fuels

Growing environmental concerns are driving research and development activities to increase the use of cleaner fuels for transport. In the US, there is ongoing research on low cost, fast-fill natural gas refuelling systems to increase the uptake of natural gas powered vehicles. These systems aim to enable vehicles to be refuelled directly from existing natural gas distribution infrastructure at residential and industrial properties.

Greater energy diversification in the transport sector has also been highlighted as an issue in the "*Transport Fuels from Australia's Gas Resources – Advancing the Nation's Energy Security"* report based on research from a team comprising Australian universities, research institutes and government organisations. This research found that innovations in refuelling technology for gas powered vehicles could improve the security of Australia's fuel supply which is heavily dependent on foreign oil.

Lack of refuelling infrastructure has often been identified as a barrier to uptake of vehicles powered by alternative fuels. Home based refuelling technology could allow this barrier to be overcome and alter the existing practice of travelling to service stations to refuel. The impacts on existing practices in the traditional fuels market could include fewer unproductive trips in the transport system and less need for service stations. The higher utilisation of existing gas distribution infrastructure may also lower costs and prices for households and industries.

Government has a significant role in developing policies to allow the benefits of innovations in alternative transport fuels to be realised. Regulatory reform to allow international standards for gas vehicles and equipment to be recognised in Australia would remove another significant barrier to their uptake. Policies

which internalised the negative externalities from use of different fuels in the transport sector are required to incentivise the appropriate investment, adoption and use of alternative fuels and their infrastructure. A possible example could include higher mass limits and larger fuel tanks for LNG and CNG vehicles to enable them to achieve similar ranges to conventional vehicles and account for their lower emissions.

Summary

Gas Energy Australia is encouraged by the initiative taken to study the impacts of new disruptive technologies. The pace of technological advancement is increasing and this could lead to significant changes in in the stationary and transport energy markets. There is significant potential for Australian gaseous fuels to facilitate beneficial developments in both the stationary and transport energy sector. This submission has discussed the possibility of Australian gaseous fuels being used in distributed generation facilities to reduce energy costs and improve environmental outcomes. In the transport sector, greater use of Australian gaseous fuels would additionally improve fuel security outcomes.

Gas Energy Australia considers the Government has a role in ensuring that appropriate policy and regulatory settings are in place for the benefits of disruptive technologies to be realised. A summary of the potential actions required by government to capture these benefits are outlined below.

Distributed Generation

- Regulatory reform to remove cross subsidies in the electricity market and allow retailers to charge prices which reflect supply and demand conditions.
- Standardisation of equipment and appliances to facilitate integration with smart metering technology.
- Implementing new regulatory arrangements to govern the interaction between distributed generators and electricity network operators.
- Ensuring competitive neutrality between distributed generation technologies and government support for any project to be based on the environmental benefits and cost effectiveness.
- Empowering consumer choice for energy solutions in remote locations by replacing subsidies for electricity grid infrastructure with CSO payments.

Alternative Transport Fuels

- Implementing regulations to streamline international gas powered vehicles and equipment for use in Australia.
- Government and industry to monitor technological developments in other countries to assess their suitability for adoption in Australia.
- policies which ensure environmental costs from the use of different fuels in the transport are accounted for in market decisions.

Gas Energy Australia considers that the energy sector should be a key focus of this study because of the developments occurring in this industry and the significant social, economic and environmental benefits that regulatory reform could deliver. We would welcome the opportunity to discuss or provide assistance to this project.

For your consideration.

Yours sincerely

John Griffiths
Chief Executive Officer