



Office of the  
**Minister for Energy and Water Supply**

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28 March 2014

Energy White Paper Taskforce  
c/o Margaret Sewell  
Department of Industry  
GPO Box 1564  
Canberra ACT 2601

Dear Ms Sewell

Please find attached the Queensland Government response to the Commonwealth's Energy White Paper Issues Paper for your consideration. We appreciate the opportunity to highlight issues raised by Queensland stakeholders. We also see this process as an opportunity to begin refocussing the national reform agenda to improve electricity market outcomes and achieve Queensland's strategic vision of a sector which is resilient, cost-effective and customer-focussed.

We look forward to further opportunities to assist in shaping the vision for Australia's energy future.

No section of our response is confidential.

Yours sincerely

A handwritten signature in blue ink, appearing to be 'Mark McArdle', written in a cursive style.

Mark McArdle MP  
**Minister for Energy and Water Supply**

Att: Queensland Government response

## **Energy White Paper – Issues paper Queensland whole of government response**

The Queensland Government welcomes the opportunity to contribute to the development of the Commonwealth Government's Energy White Paper. Queensland shares many of the Commonwealth Government's priorities around putting downward pressure on electricity prices, supporting economic development and reducing regulatory burden.

The Queensland Government will finalise a 30-year strategy for the state's electricity sector in 2014. The vision for this strategy is to ensure Queensland's electricity sector is resilient, cost-effective and customer-focussed while transitioning through a period of major change driven by new technology, changing patterns of energy production and use and major market reform.

The value of a national approach to many of the emerging issues and the need for more effective national collaboration has been a recurring theme in consultation on Queensland's 30 Year Electricity Strategy. Stakeholders are seeking genuine collaboration between the regulatory and government bodies across the national energy markets to bring about coordinated, timely reforms which deliver on our strategic goals.

Industry feedback to Queensland's 30 Year Electricity Strategy process suggests an opportunity to improve outcomes across the sector through a renewed focus on strategic national collaboration and prioritisation. The responsibility for this is clearly shared, and the Queensland Government would support the Australian Government in giving the topic of effective, strategic, national collaboration and prioritisation further consideration as part of its Green Paper.

In the short term, the Queensland Government is delivering a significant package of reform for the electricity sector in Queensland. This three year program will transform the sector through:

- improved regulatory and operational efficiencies for the network businesses that will balance reliability with lowest cost infrastructure solutions;
- the removal of price regulation in South East Queensland once consumer protection and engagement are adequate, to enable greater competition, increasing customer choice by encouraging new products and retailers into the market, and reducing regulatory risk for industry;
- the provision of increased support and protection to vulnerable consumers through the adoption of the National Energy Customer Framework (NECF), subject to the adoption of state-specific variations to support customers outside south-east Queensland;
- the delivery of a tariff reform strategy to drive system efficiencies and better price outcomes by structuring tariffs to be more cost-reflective and providing customers with price signals that reflect the way they use the network; and
- developing more effective subsidy arrangements for regional Queensland and consideration of barriers to the improvement of competition in regional Queensland.

## Security of Energy Supplies

*The Government seeks comment on ways community expectations can be better understood and reflected in reliability standards.*

The Queensland Government supports the approach to electricity network reliability in the Energy White Paper, which is consistent with the outcomes of Queensland's 2012 independent review of the electricity sector that has informed our reform agenda.

In the Queensland Government's view, community expectations can be better understood and reflected through a more economic approach to reliability. This means focussing on network business performance against customer outcomes (length/number of supply interruptions) and the value customers place on continuous supply, or Value of Customer Reliability (VCR). However, as the Australian Energy Market Operator's current experience demonstrates, VCR work is complex, costly and time-consuming. Efficient processes need to be established for the update of this work, once concluded. Also, while VCR assists key stakeholders to understand customer expectations better, customers themselves have little understanding of reliability standards. Their main reliability-related concerns are the cost of electricity and enjoying continuity of supply. Significant effort will need to be made to inform and educate customers in the shift to the more economic approach to reliability. Queensland is still considering whether to adopt the emerging national reliability framework, which would include VCR.

*The Government seeks comment on ways to increase new gas sources to meet demand and measures to enhance transparency in market conditions.*

The eastern Australian gas market is undergoing a period of transition as the market becomes increasingly influenced by export markets and restrictive gas market policies (i.e. moratoriums placed on CSG developments). The Queensland Government agrees that increasing supply and supply competition in the market is critical to supporting a more efficient gas market. General actions to promote new gas supply include:

- reducing regulatory uncertainty;
- reducing administrative and approval delays;
- promoting Australia's gas resources globally to encourage greater market participation;
- reduction or removal of unnecessary regulation to attract investment; and
- ensuring regulatory reform agendas do not disadvantage small gas explorers and producers.

In Queensland, Geological Survey Queensland provides advice on the release of land for exploration and development. Governments could undertake a process to develop a baseline understanding of all potential new projects or expansions and prioritise their release according to the promise of each project. This process should identify opportunities to bring new gas supply to market in commercially-viable order and allow limited resources (both government and industry) to be focussed in order of priority.

Longer term opportunities to improve the domestic gas supply include:

- supporting the development of a pipeline capacity trading scheme to promote the efficient operation of our pipeline network. This is a matter being pursued by the new Council on Energy (formerly the Standing Council on Energy and Resources). Such a scheme would allow new entrants or existing market participants to access contracted but unused capacity in the pipeline network, unlocking further opportunities for growth in our gas industry.

- Ensuring the regulatory framework supports the efficient delivery of pipeline infrastructure which may help unlock our abundant gas reserves. Pipeline capacity is necessary to provide market access (for example the existence of an interconnected pipeline system enabled strong growth in the US shale gas industry).
- encouraging pipeline investment through timely approvals under the *Environment Protection and Biodiversity Conservation Act*.
- Exploring, as the basis for a national model, mechanisms such as those in place in Queensland for access to pipeline corridors or designation of State Development Areas through powers under the *State Development and Public Works Organisation Act 1971*.
- Adopting mechanisms to facilitate landowner and gas company cooperation in the development of new gas supply. For example, in Queensland the Gasfields Commission is an independent statutory body, operational since July 2012, which is working to manage and improve co-existence between landholders, regional communities and the gas industry.

## Regulatory Reform and Role of Government

*The Government seeks comment on priority issues, barriers or gaps within the COAG energy market reform agenda.*

The COAG energy market reform package agreed in 2012 – Putting Consumers First - needs to be delivered as a priority. Changes to the economic regulatory framework also need time to take effect. The focus in these areas should shift to monitoring and assessment of the reforms' performance. Governments should target any proposed future areas of reform at key market failures, and be evidence-based.

Emerging demand-side challenges for the national market and regulatory frameworks are a clear target for future reform to ensure regulation enables energy businesses to adapt and respond to the challenges facing the sector (such as new technology and uncertain demand growth). Consideration should also be given to ensuring the regulatory framework rewards market participants who adopt planning approaches that are flexible and responsive to factors such as demand. This could include, for example, adequate incentives for promoting demand response.

The Queensland Government supports the Australian Government's commitment to improved tariff structures in response to changes in the way electricity is used and produced. Recent reviews, including Queensland's, have highlighted the shortcomings of current tariff structures that are not cost-reflective and send inefficient price signals. Cost-reflective and flexible tariffs will help drive efficiencies throughout the supply chain and stimulate the take up of advanced metering as an enabler for demand side response.

The Queensland Government is currently investigating how it can help facilitate tariff reforms in Queensland that:

- drive more efficient use of the electricity supply system;
- provide greater choice to customers and enable them to make decisions about products and services that best meet their needs; and
- result in tariff solutions that accommodate existing technologies (such as load control) and are flexible enough to adapt to changing conditions and future technologies.

The Queensland Government also recognises that metering reforms are necessary to maximise the benefits of any tariff reform measures. The Queensland Government is supportive of national

metering reform measures that are shown to provide clear benefits to Queensland and protect the interests of customers.

Consumers will require education and access to information to better understand what changes mean for them, and how they may best take advantage of them. A coordinated and national approach may be warranted to educate customers on the rationale for reforming tariffs and the vision for the future.

For any new market reforms to be considered there must be a clear definition of benefits and costs to consumers.

***The Government is seeking comment on possible measures to promote greater price transparency in gas markets.***

The Queensland Government notes the importance of developing trading markets such as the Short Term Trading Market and the Gas Supply Hub to support price discovery and market development. The Queensland Government is also supportive of measures to be implemented under the pipeline capacity trading policy initiative which are focussed on improving transportation availability and price transparency and which will ultimately provide visibility of the value of the commodity to the end user, as the value of the gas to the end user is reflected in the strength or price of capacity trading. For example if purchasing a short term increase in capacity was undertaken to receive a short term increase in gas, then this indicates that the gas is sufficiently important to that end user and therefore going to the user that values it the most. The value placed on capacity in either the primary or the secondary market (i.e. long term contracts or trading market) determines the worth of the service provided.

***The Government seeks comment on areas where further privatisation of government-owned assets would contribute to more effective regulatory frameworks and better outcomes for consumers.***

Queensland's 30-Year Electricity Strategy Discussion Paper canvassed the structure of the Queensland electricity industry, including the balance between government and private ownership. There was some support for privatisation on the grounds that it would be good for the market, would clarify the government's role in the market, and would be desirable considering the value of the assets.

The Queensland Government has however indicated in response to the State's Commission of Audit recommendations that, while it will further investigate the sale of generation assets, a clear mandate from the people of Queensland will be sought before taking this step. In relation to the network businesses, Queensland will not sell them in this term, and will not seek a mandate for their sale at the next election.

The Queensland Government is undertaking a market sounding to obtain the best advice on the potential for private sector investment in the electricity networks. The objective is to make the State-owned businesses operate in an efficient and effective manner to maintain downward pressure on electricity prices. In addition, the Queensland Government has commissioned a scoping study to investigate future options for the State-owned generators. The findings of these studies will form the basis for consultation with the community about the potential sale of any assets.

## Growth and Investment

*The Government seeks comment on commercial or market initiatives that could enhance growth and investment in the energy and resources sectors.*

Improvements in pre-competitive geoscience information would be an important contribution to raising awareness of eastern Australia as a petroleum exploration destination as well as facilitating exploration. Attracting exploration to eastern Australia is likely to become more challenging in the future with the exploration focus shifting to unconventional petroleum. The following information should be made available for well-explored basins (e.g. Cooper-Eromanga basins, Bowen-Surat basins):

- Open file company reports;
- Well data including standardised formation tops, analysis results and wireline-logs;
- Seismic data including field data, support data and processed data that can be readily loaded into a work station;
- Facies models for formations in basins; and
- Burial history model, highlighting the timing of petroleum generation and migration.

Proof-of-concept type assessments need to be undertaken to confirm that basins have petroleum potential. These assessments should be based on stratigraphic drilling programs to obtain a full sequence through the formations and fresh samples for analysis. This approach is advantageous in areas where land-use conflicts occur and the government can demonstrate that it is seeking information to make informed decisions. A basic data set for an under-explored basin could consist of:

- Stratigraphic holes enabling definition of stratigraphic units;
- Facies models for formations;
- Analytical programs targeting source potential, maturation and reservoir quality; and
- Regional seismic lines or infill coverage to provide a broad coverage.

Additionally, the opportunities offered by improved and more sophisticated gas trading markets should not be under-estimated. These are a feature of all international markets and the development of the Short-term Trading Markets and the Gas Supply Hub demonstrate movement to a more flexible gas market are under way. The Council on Energy's continued focus on trading, information transparency and removing market development impediments is crucial to supporting investment in the gas market.

The Queensland Government is supportive of commercially sound developments that meet the needs of the market.

*The Government seeks comment on areas where approvals processes could be further streamlined while maintaining proper environmental safeguards.*

Streamlining approvals and reducing red tape are key priorities for the Queensland Government. Queensland has a dedicated Resources Cabinet Committee (RCC), focused on reducing regulation and stimulating investment in the resource sector. Queensland is actively working to implement more efficient assessment and approval processes that reduce the numbers of decision points and maintain proper consideration of the impacts of major projects.

Key activities include:

- updating the Department of Natural Resources and Mines (DNRM) business system to an online environment;
- aligning and improving legislation to remove ambiguity;
- reviewing and updating the DNRM service delivery model, so the department can more flexibly respond to the needs of industry;
- reforming the Environmental Impact Statement (EIS) process by reducing the Terms of Reference from 100 pages to 25 pages; and
- developing a standardised approval process for environmental authorities for petroleum exploration.

The standardised approval process reduces the number of conditions from 300 to 65 with timeframes for issuing approvals cut from up to 18 months to just 30 days. This will help industry get on the ground faster and focus on business operations rather than cumbersome processes.

In October 2013, the Commonwealth and Queensland Governments signed a Memorandum of Understanding (MOU) to pursue a 'one stop shop' for environmental approvals under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC). From September 2014, the parties will operate under a bilateral agreement to accredit Queensland to undertake approvals under the EPBC. In December 2013, Queensland signed a refreshed assessment bilateral agreement with the Commonwealth to support EIS streamlining initiatives.

### ***The Government seeks comment on the impacts of variable land access policy and ways the community could be better informed and engaged on development in the energy sector.***

In Queensland, the community information and advice function for land access does not rest solely with government. The GasFields Commission, an independent statutory body operational since July 2012, is working to manage and improve co-existence between landholders, regional communities and the gas industry. This work includes cooperatively developing best practice with landholders and industry and ensuring best practice information is communicated widely. The GasFields Commission's Portfolio Plan lists the following key actions for 2013–14:

- facilitating the establishment of a confidential database of Conduct and Compensation Agreements (CCAs) reached between landholders and gas companies and extraction of relevant information to provide a more factual baseline and case studies on the nature of CCAs across a range of gas production areas and land use types;
- developing a simple land access checklist and providing guidance for landholders who are newly exposed to the negotiation of CCAs with gas companies;
- promoting detailed forward planning of proposed infrastructure development at the property level to ensure that landholders have the level of detail required to properly assess the level of impact upon their business and property; and
- providing oversight and guidance to the government in its implementation of a six point action plan for land access improvement.

Additionally, the Regional Planning Interests Bill introduced into the Queensland Parliament on 20 November 2013 would, if enacted, manage the impact of resource activities and other regulated activities on areas of the state that contribute, or are likely to contribute, to Queensland's economic,

social and environmental prosperity. Areas that are defined and considered under the Bill include priority agricultural areas, priority living areas, strategic cropping areas and strategic environmental areas.

A detailed paper on community engagement and social acceptability of energy from waste technologies has also been prepared by the Queensland Government to inform Alternative Waste Treatment and Energy from Waste policy development. Key findings on best practice community engagement were that project proponents should:

- maintain a social licence to operate via direct engagement with affected and interested community members throughout all stages of a project, including operation; and
- minimise silences by continually making information available, even if that information is that there is no new information.

### **Driving Energy Productivity**

*The Government seeks comment on the 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.*

Queensland recognises the important role energy efficiency improvements have in improving energy affordability for households and businesses and is strongly supportive of this approach to improving energy productivity.

Queensland is a signatory to the National Strategy on Energy Efficiency and supports energy efficiency measures that have demonstrable net benefits to energy consumers. Examples include the specification of minimum standards for appliance and equipment energy efficiency and improving the energy efficiency of buildings. It is important that any regulatory proposals are subject to benefit cost analysis and only implemented if a clear benefit is demonstrated.

Consultation responses received on Queensland's 30 Year Electricity Strategy Discussion Paper provided support for cost-reflective pricing; incentives or subsidies; education and consumer engagement; as well as solutions that are region-specific to promote energy efficiency. There was also support for continued development of standards for housing and appliances. A consistent and transparent approach, such as industry-government agreement on benchmarking methodologies for industrial equipment, vehicles and driving behaviour would be also beneficial.

*The Government seeks comment on the use of demand-side participation measures to encourage energy productivity and reduce peak energy use.*

The Queensland Government considers that an efficient energy market should be flexible and responsive on both the demand and the supply side, and is supportive of cost-effective actions to promote demand-side participation. Such participation covers a broad spectrum of activities and can deliver a range of benefits to energy consumers directly and indirectly (through reduced infrastructure costs). Measures range from passive participation (such as the purchase of efficient appliances, or acceptance of off-peak load control tariffs) to customer response to time of use prices and direct participation in the wholesale markets. The Queensland Government supports in principle those measures that promote the efficient development and use of energy supply systems, with a net benefit to energy users.

The Queensland Government notes recent changes to the national regulatory environment, in line with the Queensland's independent review recommendations, to focus on cost-effective demand side options for ensuring efficient networks. The recent Distribution Network Planning and Expansion Rule change will promote demand side responses – in particular, through the new Regulatory Investment Test for Distribution requirements that distributors consider non-network alternatives to infrastructure investment. The Queensland Government considers it important that electricity distributors are transparent in their network planning so that the integration of demand management into their planning processes can be scrutinised by stakeholders and the Australian Energy Regulator. This will be critical in ensuring distributors are adhering to a least-cost approach to network service delivery.

Queensland's electricity distributors have over the last several years piloted a number of energy conservation and demand reduction initiatives targeting the commercial, industrial and residential market segments. These initiatives have proven extremely successful in reducing peak demand (or limiting its growth) and the processes developed have largely now been incorporated as business as usual for the distributors. For example:

- Commercial and industrial customers in network constrained areas are offered incentives to undertake energy efficiency upgrades to heating, ventilation and air-conditioning, improvements to building management systems, lighting upgrades and power factor correction. Other customers in constrained areas are contracted for use of their existing back up generation or to curtail load at peak demand event times in exchange for network support payments.
- Ergon Energy is also now publishing Demand Reduction Incentive Maps on its website, giving details of particular network-constrained areas along with details of demand reduction targets, timing and incentive payment value. This will facilitate participation by customers, commercial entities and demand aggregators in these areas to provide alternatives to network augmentation.
- In the residential sector, the distributors have built upon the success of the existing load control infrastructure to offer customers off-peak tariffs for high demand appliances such as swimming pool pumps and air conditioners, to manage their impact on the network. With the introduction of AS4755 compliant "PeakSmart" air-conditioners, Energex and Ergon Energy have introduced incentive programs that encourage customers to purchase these particular models and make them demand response active. A dedicated "PeakSmart" time-of-use tariff has been introduced in Queensland for participating customers to enable on-going customer savings.

The Queensland Government has also supported the development of rule changes following endorsement by the Standing Council on Energy and Resources of the AEMC's *Power of Choice* review. Changes to the Demand Management and Embedded Generation Incentive Scheme and Distribution Pricing Principles in the National Electricity Rules, for example, seek respectively to improve the incentives for demand management and accelerate the transition to flexible tariffs.

The *Power of Choice* review also recommended the development of a Demand Response Mechanism in the National Electricity Market. While in principle this would be expected to improve the liquidity and responsiveness of the spot market, it could be costly to introduce and operate. The Queensland Government supports further work being undertaken on the costs and benefits of this proposal.

### *The Government seeks comment on measures to increase energy use efficiency in the transport sector.*

The Issues Paper recognises the opportunity for improved logistics and driver training to improve energy use efficiency in the transport sector, and encourages the changes in behaviour and uptake of technology to improve transport energy efficiency. Subject to detailed policy analysis of their relative cost-effectiveness, other possible measures may include:

- engaging industry to deliver driver training to improve energy use efficiency for small to medium size organisations with vehicle fleets (e.g. CleanRun program in Western Australia). Many larger organisations such as Linfox, Toll and Australia Post have already established such programs.
- fiscal measures, such as incentives:
  - for vehicles using alternative fuels or propulsion systems
  - to encourage consumers to purchase low emission vehicles
  - for investment in land use and transport planning for infrastructure that supports low energy intensity transport modes and more energy efficient transport services;
- introduction of mandatory fuel efficiency standards;
- exploration of options to accelerate development and uptake of intelligent transport systems such as logistics and fleet management services that optimise vehicle maintenance, telematics, and driver, speed, and fuel management;
- energy efficiency standards and labelling of all road vehicles, vehicle air conditioners and aftermarket components, particularly tyres;
- trials of user-pays registration for light duty vehicles;
- greater electrification and hybridisation of light duty vehicles; and
- driver awareness campaigns targeted at reducing unnecessary idling (losses due to idling are estimated to account for up to 17% of fuel use in the US).

### **Alternative and Emerging Energy Sources and Technology**

#### *What measures could encourage a lower emissions energy supply that avoids market distortion or causes increased energy prices?*

Should governments pursue a lower emissions energy supply, it is important that there continue to be research and development into alternative technologies and a regulatory environment which supports the future commercial and cost effective operation of these technologies. Any government support should be technology-agnostic and not result in increased costs to consumers.

To overcome initial cost hurdles, there may be a case for government investment in R&D in emerging technologies. The support should not create market distortions. One such example is the Australian Government's Innovation Investment Fund which has an overarching aim of growing early-stage companies to commercialise the outcomes of Australia's strong research sector.

The benefits of supporting such R&D can be immense and global examples are readily available in the energy sector. One such example is the Shale Gas industry in the United States whose success is largely due to an emphasis on R&D. Major technological breakthroughs such as horizontal drilling and hydraulic fracturing have allowed the Shale Gas industry to boom.

***The Government seeks comment on the need to review existing network tariff structures in the face of rapidly growing deployment of grid-backed-up distributed energy systems, to ensure proper distribution of costs.***

As noted earlier (p.6 under 'Driving Energy Productivity'), Queensland supports improved tariff structures that better respond to changes in the way electricity is used and produced. The Tariff Reform Strategy currently being developed by the Queensland Government will consider how technological developments are changing the way consumers interact with the electricity network. The Queensland Government agrees that consumption-based tariffs may no longer reflect the value consumers receive from networks, nor the costs they may impose on a shared grid.

However, the transition to cost-reflective network tariffs needs to be both fair and efficient. Tariff structures could be reformed to more clearly signal the costs of network services at different times and so address timing of demand and encourage improved demand management by consumers. , Tariff reform is necessarily paired with consumer engagement and information provision and the appropriate use of advanced metering which provides consumers with the information necessary to respond.

***What additional cost-effective means, beyond current mandatory targets and grants, could encourage further development of renewable and other alternative energy sources and their effective integration within the wider energy market?***

In October 2013, the Queensland Government released its Science and Innovation Framework listing science research priorities. Relevant priorities include:

- developing and delivering enhanced production technologies, tools and practices to help grow productivity, reduce waste and add value to our economy; and
- exploit our natural advantage with cleaner – and renewable – energy technologies development (e.g. gas, solar and biofuels).

Queensland has committed to developing an energy from waste policy stemming from priorities outlined in this framework. Measures being considered to cost-effectively encourage further development of renewable and other alternative energy sources include:

- Resolution of regulatory inconsistency and favourable treatment afforded to domestically produced ethanol over domestically produced biodiesel and renewable diesel. Domestically produced biodiesel and renewable diesel should be provided the same protection and economic benefit in terms of accessing the cleaner fuels grant. Funds should not be used to subsidise non-Australian fuel product.
- Improved labelling and consumer awareness of alternative fuels, including working with Original Engine Manufacturers to resolve conflicting advice on biofuel use and impact on warranties.
- Clarifying the meaning of 'cleaner fuels' to include liquid fuels from non-organic waste streams eg. tyres and plastics, and gas fuels (e.g. biogas and syngas).
- Consideration of expanding cleaner fuels grant availability for liquid fuels produced using new technologies and non-organic feedstocks such as plastics and tyres, gas fuels such as biogas, and marine and aviation fuels (aviation fuels are not covered by the definitions for renewable diesel or biodiesel).

### *What are the barriers to increased uptake of LPG in private and commercial vehicles and CNG and LNG in the heavy vehicle fleet?*

While these areas of emerging technologies hold promise for the future, the Queensland Government notes a range of barriers have been identified for uptake of LPG in private and commercial vehicles including:

- negative consumer perceptions – the alternative fuel and vehicle industry does not sufficiently communicate the benefits of these technologies to consumers;
- OEM natural gas vehicle offerings to the Australian vehicle market are limited;
- users are concerned about whether alternative drop-in fuels will affect engine operability or void manufacturer warranties;
- consumers are unlikely to adopt new technologies unless they have been demonstrated to be easy to use, have access to convenient refuelling infrastructure, and meet the consumer's transport needs;
- early adopters and green consumers are likely to also be concerned about the environmental sustainability of the fuels; and
- fragmented policy development and program implementation has created regulatory inconsistencies between Australian jurisdictions in relation to the gas vehicle industry.

Despite these barriers, there is commercial recognition of the opportunities for the LNG and CNG heavy vehicle sector. For example, the BOC-Linde Group proposes developing a LNG refuelling station network for heavy vehicles along the east coast of Australia.

The Queensland Government also notes a range of barriers have been identified for CNG and LNG in the heavy vehicle fleet including:

- uncertainty about the impact that alternative fuels or engine modifications to accommodate alternative fuel use have on manufacturer warranties;
- costs to convert heavy vehicles to operate on LNG are on the order of \$110,000 per vehicle, depending on the fuel delivery system employed;
- OEM LNG options are emerging but at higher costs compared to current diesel options;
- limited LNG refuelling infrastructure and networks;
- heavy vehicles attract a payload penalty when switching to gas fuels due to the gas tank size. Larger tanks are required to achieve a similar range to diesel counterparts which reduces the carrying capacity of the vehicle;
- between jurisdictions, differing regulation, policy and standards for biofuels create an uncertain environment for alternative fuel investment;
- end-user uncertainty on the utility, operability and other benefits of alternative fuels due to a lack of reliable, independent and trusted information to inform purchasing decisions; and
- high cost of engines in Australia compared to international markets.

Further, there is uncertainty about operational and maintenance costs and after-market support associated with alternative fuel use more generally.

Possible measures to overcome barriers to increased uptake of LPG in private and commercial vehicles and CNG and LNG in the heavy vehicle fleet could include (subject to detailed policy analysis of their relative cost-effectiveness):

- investment in research and development of alternative fuel sources for transport to improve accessibility and reduce cost;
- development of an information program in partnership with the key stakeholders to communicate the options available and the benefits that gas (CNG and LNG) powered heavy vehicles can offer transport industries;
- implementation of end user incentives that enable shorter periods for payback on fleet investment; and
- development of an indigenous transport fuel industry, supported by pricing policies and regulations, to help mitigate the impacts of international pressures on domestic fuel prices. The current and planned future development of Australia's abundant natural gas reserves together with recent advances in heavy vehicle technology places LNG and CNG at the forefront of potential alternative transport fuels and provides an excellent opportunity to develop an indigenous transport fuel industry.

*The Government seeks comment on any barriers to the increased uptake of electric vehicles and advanced biofuels.*

EVs have the potential to deliver significant benefits to both EV owners and the electricity network. EVs can also offer energy security benefits, reduced operation costs and greater domestic energy self-reliance if customers and distributors are engaged in their introduction.

However, much like has been demonstrated by air conditioners, they also have the potential to adversely affect peak demand in areas where they are concentrated without the necessary policy settings. Government and electricity distributors need to plan for the introduction of EVs, to create an environment where there are financial incentives for customers to charge their vehicles at off-peak times and potentially to use EVs' stored energy at times that deliver the greatest network benefits.

Barriers to the increased uptake of EVs currently include:

- lack of standards for electric vehicle recharging components;
- range anxiety – the limited driving range for fully electric vehicles, while adequate for most individual trips, is not perceived as adequate for most people's needs over the asset life of the vehicle;
- purchase price is not currently competitive with comparable petrol/diesel vehicles; and
- Australia is a comparatively small market by world standards.

Possible measures to overcome barriers to the increased uptake of EVs (subject to detailed policy analysis of their relative cost-effectiveness) could include:

- establish the legislative and technical environments that support load control for EVs;
- information programs on the relative cost-effectiveness of EVs; and
- electricity supply issues could be addressed through:
  - advice to electricity distributors at EV point-of-purchase or registration on primary recharging location, to monitor local network impacts; and
  - controlled charging of EVs at periods outside the residential peak period (akin to off-peak hot water systems).

Governments could review possible regulatory obstacles to increased uptake of EVs including planning restrictions surrounding installation of charging points, responsibility for payment for electricity supplied to charging points and the use of private EVs as part of the distributed generation system. The Commonwealth Government could examine regulation in relation to the operation of vehicle fleets and leased vehicles to identify any barriers to the use of EVs.

Both conventional and advanced biofuels offer a range of energy, economic and environmental benefits. For advanced biofuels, there are a range of barriers to increased uptake, which also apply to existing conventional biofuels, including:

- the need for greater investment and funding to translate Australian advanced biofuel research and development into practical and commercial outcomes.
- limited end user markets for biofuels generally due to lack of consumer awareness, fuel purchasing arrangements, concerns about impact on engine warranties, concerns about sustainability (eg. food vs fuels, impact on biodiversity).
- a need for greater facilitation by government to support non-traditional sectors working together to form new supply chains.
- high capital costs for infrastructure.
- high cost for feedstock assessments and feasibility studies.