



## Energy White Paper 2014 – Issues Paper submission template

### Details of person making the submission

<b>First Name</b>	Cheryl
<b>Surname</b>	Thomas
<b>Country</b> (if not Australia)	
<b>State</b>	ACT
<b>Company or Organisation</b> (if relevant)	Council of Capital City Lord Mayors
<b>Position in Organisation</b> (if relevant)	Executiive Director
<b>Type of Organisation.</b> Please choose from the dropdown list right	Government Department -Local,State or Commonwealth
<b>Sector.</b> Please choose from the dropdown list right	Other Services
<b>Email.</b> Please provide an email address if you would like to receive updates from the Energy White Paper Taskforce	cheryl.thomas@lordmayors.org

### Confidentiality

<input type="checkbox"/>	<b>Submissions may be published on the Department of Industry website. If you do not wish to have your submission made public, please tick the box.</b>
--------------------------	---

Issues for comment are listed against each of the Chapter Headings. In making your submission, you are welcome to make comment against some or all of issues in the fields provided. A field for general comments is provided at the end of the template.

## 1. The Security of Energy Supplies

The Government seeks comment on:

- ways community expectations can be better understood and reflected in reliability standards;
- the value of developing fuel reserves to meet Australia's international oil security obligations, and augment domestic security;
- ways to increase new gas sources to meet demand and measures to enhance transparency in market conditions; and
- issues relating to the regulation of energy infrastructure.

**Please provide any comments on The Security of Energy Supplies below:**

### **Community expectations**

**Consumers want security of energy supplies at an affordable and/or convenient cost (ie, interruptible/time of day tariffs, load shedding, etc).**

**In NSW, electricity networks are undertaking capital expenditure of \$17.4 billion over the 5 years to 2013/14. This represents \$2,400 per person and an 80% increase on the previous 5 year period. Average electricity prices in the Sydney electricity distribution network area are expected to increase by 83% during this period with the proportion of electricity bills that goes to pay network charges to rise from 40% to 60%.**

**A key part of the reason for surging electricity prices is the need to build electricity assets for peak power demand, primarily electric air conditioning, to meet high demand on hot days. In NSW, \$11 billion of network assets is built to meet demand for just 100 hours a year and as much as 25% of electricity costs result from peak demand which occurs over a period of less than 40 hours a year. These network costs are significantly amplified for Australia's CBDs.**

**Capital city councils are examining and implementing alternative approaches to deliver affordable and reliable energy to meet their needs and potentially households and businesses.**

**The City of Sydney - plans to supply 70% of the Local Government Area's electricity needs from a 360MWe trigeneration network by 2030. Research by the Institute of Sustainable Futures estimates that this could achieve savings in deferred electricity network costs and avoided costs of new power station capacity to serve the city's growing demand in the order of \$1.5 billion by 2030.**

### **New gas sources**

**New renewable gas sources are available to Australia by taking advantage of innovative alternative and emerging energy resources and technology. For example, renewable gas derived from waste, converted into substitute natural gas and injected into the gas grid for domestic gas supplies and renewable energy mining and exports via 'power to gas' for the international export market.**

### **Regulation of energy infrastructure**

**Regulatory reform of energy and energy infrastructure is key for an integrated and coherent energy policy. Regulation of energy infrastructure needs to support and encourage the use of renewable and low emissions distributed energy systems by households, businesses and government. Currently the regulation and approval process for implementing certain technologies such as cogeneration or trigeneration is onerous, and time consuming.**

**In the last 5 years residential renewable energy has been booming. Over 2 million small-scale renewable energy systems have been installed in Australia, with capacity to displace approximately 6,882 GWh of electricity annually (equivalent to the electricity supply to over 1 million homes for a year - enough electricity to power Perth, Hobart, Darwin and Canberra combined).**

In the next 5 years household solar batteries and other technologies will become affordable providing prosumers with the choice to go off grid in the face of 'business as usual' energy markets.

There is also a disconnect between urban and infrastructure planning, resulting in limited coordination of long term urban planning and utility infrastructure planning. Improved integration would enable opportunities to plan development taking into account network constraints, streamline local infrastructure planning to reduce duplication and disruption, and provide opportunities to incorporate innovative local solutions such as distributed energy generation, storage and energy efficiency measures.

## 2. Regulatory Reform and Role of Government

The Government seeks comment on:

- priority issues, barriers or gaps within the COAG energy market reform agenda;
- 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;
- possible measures to promote greater price transparency in gas markets; and
- areas where further privatisation of government-owned assets would contribute to more effective regulatory frameworks and better outcomes for consumers.

**Please provide any comments on Regulatory Reform and Role of Government below:**

### **Priority issues, barriers or gaps within COAG energy market reform agenda**

**Reforms to tariff structures must ensure equitable access to energy for the entire community and protect the most vulnerable from exposure to higher prices.**

**Key regulatory reforms required can be summarised as follows. These reforms are primarily based on the experience and legislation within NSW, however, the reforms are applicable on a national level.**

#### **Electricity Regulatory Framework**

- (i) Introduce a benefit-reflective network tariff for decentralised electricity generators to reflect their role in avoiding/deferring future capital investment by electricity networks.**
- (ii) Ensure the regulatory framework established under the national Electricity Rules facilitates connection of decentralised generators and sale of decentralised electricity.**
- (iii) Introduce a feed-in tariff for cogeneration/trigeneration (as a precursor to implementation of Reforms (i) and (ii) to promote the transition to decentralised energy.**
- (iv) Provide similar powers for thermal network operators to carry out their core business activities as are provided to electricity operators under Part 5 of the Electricity Act 1995 (NSW).**

#### **Building Energy Efficiency Standards**

- (v) Reverse the October 2012 NABERS ruling that disadvantages decentralised electricity produced via precinct trigeneration.**
- (vi) Reform the Building Energy Efficiency Disclosure Act 2010 so that it recognises both electricity and thermal energy outputs of precinct cogeneration/trigeneration.**
- (vii) Fully recognise the benefits of thermal energy from cogeneration/ trigeneration under the NSW Energy Savings Scheme.**
- (viii) Fully recognise the benefits of decentralised energy in the Building Code of Australia.**
- (ix) Remove regulatory impediments under competition law to supply of thermal energy from precinct cogeneration/trigeneration.**

#### **Sustainable New Building Development**

- (x) Amend the Strata Schemes management Act to exclude supply of thermal energy as part of sustainable new development from the provisions of section 13 of the Act.
- (xi) To promote new sustainable development, provide new development with access to similar provisions as now apply under Environmental Upgrade Agreements.
- (xii) Increase the threshold for precinct trigeneration to be state significant development under SEPP (State and Regional Development) 2011 and streamline application of this SEPP to precinct trigeneration.

#### **Gas Production and Distribution**

- (xiii) Remove the application of higher hot water tariff gas distribution charges from cogeneration/trigeneration schemes displacing gas fired heating and hot water boiler systems.
- (xiv) Reform the Gas Act and Regulations to enable renewable gas to be supplied to consumers via the gas network.
- (xv) Amend the draft Energy from Waste Policy Statement to facilitate production of renewable gases from waste.

**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**

It is important to assess the potential of smart grid technology (and smart meters as a component of this) in conjunction with a range of associated energy policy and programs. In isolation, and without adequate support from other measures, smart meters can be costly and ineffective. Support for smart meters is contingent on the role of smart grids within a much broader range of policy measures, such as distributed energy, storage, engagement, and education. Smart metering is expensive and consumers should not face these without a proper business case supporting consumer savings being available.

The City of Adelaide is pursuing increased use of 'smart grid' technologies and approaches, and the associated regulatory and policy reform required to expand the integration of smart grids. Smart grids could:

- reduce the need for network investment (and therefore energy costs),
- improve consumer awareness of energy use
- enable greater integration of energy efficient, renewable and low emissions technologies.

Households and businesses access to information about energy use and costs is critical to reducing energy use and costs. Smart meters and associated information systems can contribute by improving consumer awareness of energy use and costs and energy efficiency. The City of Adelaide operates a program to install smart meters in conjunction with a comprehensive energy monitoring system, providing benefits in terms of monitoring and implementation of energy efficiency measures.

#### **Measures to promote greater price transparency in gas markets**

Regulatory reform is required to enable Australian consumers to purchase renewable gas from a renewable gas generator. Consumers can purchase renewable electricity directly from renewable electricity generators via a power purchase agreement so consumers should be able to purchase renewable gas from a renewable gas generator via a gas purchase agreement.

Regulatory gas reform is also important for industry. Major gas consumers could insulate themselves from international oil and gas price rises by building gasification plants to convert their waste into renewable gas or by purchasing renewable gas from renewable gas generators over the gas grid on a long term gas purchase agreement and the gas regulatory regime should not inhibit this.

#### **Privatisation of government-owned assets**

The further privatisation of government-owned assets could contribute to more effective regulatory frameworks and better outcomes for consumers if there was better policed regulation and transparency. However, experience of electricity network infrastructure privatisation in Europe and the USA is mixed.

In Germany, privatisation of energy grids has proved to be expensive and unpopular with consumers to the point that municipalities, under pressure from voters, are setting up their own local energy companies and buying back electricity, gas and district heating grids. Prior to 1997, the grids were

owned by municipalities but between 1997 and 2002 the grids were privatised by most municipalities and sold to major European energy companies. However, since 2007 more than 170 municipalities have set up their own energy companies and bought back more than 200 local grid concessions.

Hamburg with a population of 5 million established their energy company – Hamburg Energie, in 2009 and by the end of 2012 had become the second largest energy supplier in Hamburg. Hamburg Energie has so far purchased 25% of the local grids and the City of Hamburg has recently won a referendum to buy back the remaining 75% of the grids. It should be noted that City analysts had worked out that they could reduce the profits of the grids by 50% and use the remaining 50% of profits to recycle into local renewable energy, reducing energy bills and accelerating the installation of local renewable energy. In this instance, the City of Hamburg believes that the energy grids should be non-profit making and using the balance of profits to deliver its renewable energy targets (33% by 2020, 50% by 2030 and 80% by 2050).

This is a model that could be adopted by publicly owned energy infrastructure companies, reducing consumer's energy bills as well as providing a revolving fund for the accelerated delivery of renewable energy which in the long run will insulate Australian consumers from increasing fossil fuel prices and minimising energy infrastructure costs. Following the Hamburg example, the \$1 billion a year profit that NSW Government makes out of the electricity networks that it owns could reduce NSW consumer's electricity bills by \$500 million a year and invest \$500 million a year in NSW renewable energy.

### 3. Growth and Investment

The Government seeks comment on:

- commercial or market initiatives that could enhance growth and investment in the energy and resources sectors;
- areas where approvals processes could be further streamlined while maintaining proper environmental and social safeguards;
- further ways that regulatory burdens could be reduced while maintaining appropriate levels of disclosure and transparency in energy markets; and
- the impacts of variable land access policy and ways the community could be better informed and engaged on development in the energy sector.

**Please provide any comments on Growth and Investment below:**

#### **Rooftop Solar**

Growth in the Australian Solar sector has been focused on residential rooftops where systems are owned by households. The rooftop solar sector has experienced repeated growth and decline – the so-called 'solarcoaster' resulting from policy uncertainty.

There is significant potential to shift the focus on the rooftop solar sector to commercial rooftop market (focusing on large low-rise roofs). Increased investment in solar assets by institutional and corporate entities will deliver even greater benefits than the residential solar market by reducing business operational expenditure, improving supply reliability during extreme heat, improving asset values, and better matching renewable generation to local demand.

Building the capabilities and capacity of the solar industry is critical to tapping into this commercial rooftop market. Specifically, improving business development, marketing and sales skills more targeted to commercial customers, and technical knowledge required to deliver installations on commercial roofs. Transparent and efficient approvals processes from network operators is also critical to unlocking this investment.

### Large Scale renewables

The White Paper Issues paper lacks focus on the significant renewable energy potential present in Australia, notable sun, wind and wave. Overseas experience has demonstrated huge investment growth potential in these sectors. Large-scale renewable products are reliable long-term infrastructure assets that could attract international investment into the industry in Australia.

Input costs fall with increasing scale. Development costs in these sectors are still relatively high in Australia as there has not been the large-scale uptake of these technologies, compared with markets such as California. Continued Government support for the large-scale renewable energy sector will result in falling development and input costs, leading to further investment and potential for jobs growth.

## 4. Trade and International Relations

The Government seeks comment on:

- how to grow the export of value-added energy products and services;
- ways to remove unnecessary barriers to continued foreign investment in Australia's energy sector;
- ways to strengthen support for access to export markets; and
- ways to support business to maximise export opportunities for Australia's energy commodities, products, technologies and services, including the value of Australia's participation in the variety of international forums.

Please provide any comments on Trade and International Relations below:

### Ways to grow the export of value-added energy products and services

Australia's renewable energy resources exceed its annual energy needs. Solar radiation falling on Australia is approximately 58 million petajoules (PJ) annually, about 10,000 times Australia's annual energy consumption. This compares with the 8,053PJ of black coal and the 1,086PJ of natural gas that Australia exported in 2010/11 at an economic value of \$31 billion.

Australia also has some of the best wind resources in the world. Good wind energy resources extend hundreds of kilometres inland from the coast and offshore. Australia has the 2nd largest offshore wind energy resource in the world after the Russian Federation. Australia's marine or ocean renewable energy resources are also immense. For example, the wave energy resource from Geraldton to Tasmania alone would supply five times Australia's total energy requirements. However, most of this renewable energy resource is in remote locations and likely to remain untapped without reform and innovation.

Utilising emerging 'power to gas' and liquefied renewable gas (LRG) technologies could enable access to vast renewable energy resources in the remotest parts of Australia for domestic use and export, including solar, wind and marine energy resources that do not have to be located anywhere near an electricity or gas grid. The liquefied natural gas (LNG) infrastructure already exists in Australia and is currently being expanded for LNG exports so LRG can take advantage of this.

Australia is well endowed with mining expertise using complex engineering methods to extract fossil fuels for domestic use and export so is well placed to use its mining expertise to take advantage of a new renewable energy mining market that is safer and cleaner than fossil fuel mining and provide continuous economic development and employment for the mining industry. Many of these potential renewable energy mining locations are in the same place as fossil fuel mining locations so mining licence swaps would be possible making it easier for the mining industry to move from fossil fuel mining and exports to renewable energy mining and exports.

**Ways to support business to maximise export opportunities for Australia's energy commodities, products, technologies and services including the value of Australia's participation in the variety of increasing of international forums**

**Australia should participate in international forums, particularly for alternative and emerging energy sources and technology that could replace Australia's fossil fuel exports with a sustainable higher value and in demand energy commodity exports.**

**For example, the North Sea Power to Gas Platform could be of interest to Australia. Eleven leading companies in Europe have established the North Sea Power to Gas Platform to further develop the concept of 'Power to Gas' or the conversion of renewable electricity into renewable gas. Power to gas will play an increasingly important role in Europe's future energy system, as it reduces the intermittency of renewable electricity such as solar and wind by converting surplus renewable electricity into renewable gases which can be stored in Europe's existing gas network. These gases have a wide range of uses such as transportation, domestic heating, as feedstock for the chemical industry, and power generation such as cogeneration and trigeneration. They also have a role in renewable energy mining and export.**

**The consortium comprises Europe's electricity and gas transmission network companies such as Fluxys Belgium, Energinet.dk, Alliander, Gasunie, TenneT, the National Grid in the UK and Open Grid Europe.**

**Transporting renewable electricity as a renewable gas in the existing gas grid is more economic than transporting renewable electricity in the electricity grid. The Technical Association of the European Natural Gas Industry, Marcogaz, says that transporting electricity is 20 times more expensive than transporting the same amount of energy via a gas pipeline.**

## 5. Workforce Productivity

The Government seeks comment on:

- the nature of any current skills shortages being experienced and how these could be addressed by and with industry;
- the capacity of industry and education sector-led programs to meet long-term training and skills development needs of the energy and resources sectors; and
- specific long-term training and skills development needs for alternative transport fuel, renewable energy, energy management and other clean energy industries.

**Please provide any comments on Workforce Productivity below:**

**Recent growth of solar uptake in the residential sector can be replicated in the commercial sector (focusing on low rise large roofed buildings) with improved skills and industry capabilities suited to these markets. Specifically, the solar installation sector requires business development, marketing and sales skills and complex project management adapted to the more sophisticated commercial sector in order to take advantage for this potential for growth.**

**Development costs for large scale renewable energy programs in Australia are high relative to other markets (such as California and Europe) due to a relative lack of experience in developing these projects in the local context. Some of these costs will come down as more projects are developed. Improved training and skills development would also benefit these sectors and reduce project development costs**

## 6. 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;
- the use of demand-side participation measures to encourage energy productivity and reduce peak energy use; and
- measures to increase energy use efficiency in the transport sector.

**Please provide any comments on Driving Energy Productivity below:**

**Ways existing energy efficiency measures could be enhanced, or new measures**

Despite the enormous potential of energy efficiency it remains a largely untapped opportunity. Investment in energy efficiency has not been as prominent as investment in energy supply side measures.

Capital cities deliver a range of programs to assist businesses and households to reduce energy use and to reduce its corporate energy consumption and carbon emissions. A key national program is the CitySwitch Green Office aimed at assisting major CBD commercial tenancies to reduce their energy consumption and carbon emissions. Additionally, local governments in Melbourne and Sydney, and shortly Adelaide (pending passage of SA legislation) provide building owners with access to capital to finance energy efficiency upgrade through environmental upgrade agreements.

As a result of council activities, local government has firsthand knowledge of the barriers faced by businesses and residents in implementing energy efficiency measures. These barriers are widely documented (e.g. Productivity Commission: The Private Cost Effectiveness of Improving Energy Efficiency, Prime Minister Task Group on Energy Efficiency: Issues Paper) such as information asymmetries, split incentives, access to capital, technological risks etc. Reform of energy policy, markets and regulations should be designed to assist in removing these barriers.

Innovative reform of energy markets should be encouraged, seeking alternatives to the traditional infrastructure investment driven model and encouraging investment in energy efficiency and renewable and low emissions distributed generation.

A range of regulated energy efficiency measures, such as building energy ratings and minimum energy performance standards, are now recognised to have positively contributed to reductions in total energy use and peak demand and should be continued and where possible expanded. In particular, the expansion of the mandatory disclosure of building energy performance at the point of sale or lease beyond the current focus on commercial office sector to the residential building sector would support market development and assist consumers to make informed choices about energy efficiency.

**Measures to increase energy use efficiency in the transport sector**

The most efficient path to energy efficient transport and more liveable Cities is via increased investment in public transport, cycling and pedestrian infrastructure. This is reflected in the City of Adelaide's Smart Move strategy which outlines Council's vision for a move to more sustainable transport choices. Investment in public transport improves energy efficiency (e.g. reduced fuel use per capita) and also provides parallel economic and socially beneficial outcomes (e.g. reduced traffic congestion and cleaner Cities). The benefits of reducing road congestion will bring significant productivity improvements; with the 2010 Henry Tax Review stating that road congestion costs at the time were approximately \$9 billion per year and expected to rise to \$20 billion by 2020.

## 7. Alternative and Emerging Energy Sources and Technology

The Government seeks comment on:

- ways to encourage a lower emissions energy supply that avoids market distortion or causes increased energy prices;
- 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;
- 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;
- any barriers to increased uptake of LPG in private and commercial vehicles and CNG and LNG in the heavy vehicle fleet; and
- any barriers to the increased uptake of electric vehicles and advanced biofuels.

**Please provide any comments on Alternative and Emerging Energy Sources and Technology below:**

**Ways to encourage a lower emissions energy supply that avoids market distortion or increased energy prices**

**Solar PV - City of Adelaide**

Household solar PV systems now contribute significantly to the energy supply mix and the City of Adelaide is involved in measures that increase adoption of renewable and low emissions distributed generation, providing incentives to residents to encourage installation of solar PV systems and by installing 150kW of solar PV capacity on Council buildings.

Pricing and tariff structures should be designed to continue to encourage the uptake of renewable and low emissions distributed generation and need to reflect a balanced assessment of the benefits and costs of distributed generation to the community, environment and electricity network (e.g. reduced energy costs, carbon emissions reduction and network investment requirements).

Solar PV is contributing to the reduction in total electricity demand and peak demand. Combined with emerging approaches such as energy storage technologies, solar will continue to contribute to reducing energy costs, peak demand and carbon emissions if appropriate supporting policies are in place such as the Renewable Energy Target and Small-scale Renewable Energy Scheme.

**Electric vehicles- City of Darwin**

The City of Darwin is considering the introduction of electric vehicles into its fleet. Servicing and infrastructure barriers so far restrict greater uptake of these vehicles, however as vehicles become more popular in both the domestic and commercial market it is envisaged that supporting services and infrastructure will improve rapidly. Infrastructure such as solar powered charging stations is seen as a critical step in delivering significant cost and emissions savings through the use of electric vehicles.

**Waste to renewable gas - City of Sydney**

The City of Sydney's Renewable Energy Master Plan identifies the potential of renewable gases that can be recovered from virtually all forms of waste that are not otherwise recycled, such as residential, commercial and industrial waste, sewage and landfill. Beyond the city, renewable gases can be sourced from livestock manure, agricultural stubble and husks from crops or non-native forestry off-cut waste or environmentally beneficial energy crops such as oil Mallee crops contributing to both Australian Government direct action and carbon farming initiatives.

Thermal gasification of dry and semi-dry wastes such residential, commercial, industrial and biomass waste produces a synthesis gas or syngas, anaerobic digestion of wet wastes such as livestock manure and sewage produces a biogas and landfill produces a biogas directly. The gases from these wastes can be converted into a substitute natural gas (SNG) and injected into the gas grid to supply to end consumers.

Utilising renewable gas from waste or bioenergy for injection into the gas grid recovers typically 80% of primary renewable energy resource at end use whereas generating electricity only from waste or bioenergy resources recovers typically 20-35% of primary renewable energy resource for on-site or grid electricity export uses. Therefore, renewable gas grid injection can deliver up to four times as much primary renewable energy resource at end use than electricity generation only. Government should encourage this emerging renewable gas market by removing the regulatory barriers to renewable gas grid injection and undertaking research and demonstration projects, possibly with funding from the Australian Renewable Energy Agency.

In addition to the clean fertiliser and biochar the by-products of renewable gas generation can also be used as carbon sinks. Buried in the ground or blended with topsoil, it may hold carbon for hundreds or thousands of years, locking away carbon dioxide rather than allowing it to escape into the atmosphere as methane where it would act as a greenhouse gas 21 times more powerful as a greenhouse gas than carbon dioxide over 100 years. Due to its negative carbon attributes by-products of renewable gas generation should be eligible for carbon credits as it is on the Carbon Farming Initiative positive list.

As regards avoiding market distortion or triggering energy price increases it should be noted that state governments earning significant profits out of state owned monopoly electricity networks currently creates market distortions and triggers price increases. Better use can be made of state owned monopoly assets such as the City of Hamburg example provided above.

Need to review existing network tariff structures in the face of rapidly growing deployment of grid-backed distributed energy systems, to ensure proper distribution of costs

A benefit-reflective network tariff should be introduced for decentralised electricity generators to reflect their role in avoiding/deferring future capital investment by electricity networks. For example, non-intermittent generators (e.g. precinct trigeneration) that feed directly into the 400V or 11 kV networks and make no call on higher voltage systems would be expected to receive a higher credit tariff. Large-scale intermittent generators (e.g. wind farms) would receive less, because they make feed in at higher voltage (33 kV, 66 kV or even 132 kV) and make more use of the network.

This is the approach adopted in the United Kingdom by the Office of Gas and Electricity Markets (Ofgem). It is transparent and equitable. Each distribution network publishes the applicable credit tariff to be paid to decentralised generators as part of their annual schedule of distribution tariffs. Decentralised generator tariffs are calculated annually based on a standard methodology provided by the national energy regulator. They vary for different classes of generator depending on the size of the generator, the level of intermittency and the time of operation.

The benefits of local electricity are evident in the credit tariffs offered to decentralised generators in the UK. The value of the credit for each class of decentralised generator in each of the UK network is on the public record and is disclosed at the following Energy Networks Association Common Distribution Charging Methodology website:  
<http://www.energynetworks.org/electricity/regulation/duos-charges/common-distribution-charging-methodology.html>

Barriers to increased uptake of LPG in private and commercial vehicles and CNG and LNG in the heavy vehicle fleet

In Stockholm, Sweden, 40% of buses are supplied with renewable gas via the gas grid from renewable gas derived from waste and injected into the gas grid.

Barriers to the increased uptake of electric vehicles and advanced fuels

In the UK, regulatory reform enabled renewable energy generator and supplier Ecotricity to launch Electric Highways with Welcome Break motorway service stations providing free top up electricity to

electric vehicles travelling along motorways. Since then Ecotricity has installed electric vehicle charging points at Roadchef and Moto Services service stations. Ecotricity now has 89 electric vehicle charging stations along the M1, M4, M5, M6, M25, M40 and M42 as well as at IKEA stores throughout the UK and at various other locations powered by Ecotricity's own renewable electricity. Electric vehicle owners register for a free swipe card. There are more than 5,700 electric vehicles in the UK with sales increasing rapidly (up 25% in Q3, 2013). The electric car industry has set a target of selling 1.5 million electric cars by 2020.

## General Comments

### Any further comments?

The Energy Issues paper makes minimal mention of climate change and the challenges the world faces to limit greenhouse gas emissions to avoid dangerous levels of climate change. The national 2020 emissions target is not mentioned, but should be a driver of energy policy.

Without reference to climate change mitigation as a key driver associated with reform of energy policy in Australia, the responses are at risk of failing to deliver the necessary reform required to meet the challenges associated with climate change and the reality of a future carbon constrained energy environment.

Any reforms should address the impact on climate change as well as cost of living pressures, business competitiveness and encouraging investment.

If Australia's energy policy does not address the relationship between energy consumption and climate change, costs savings for the community from energy reform are likely to be transferred to increased costs associated with climate change adaptation responses.