



29 August 2016

Department of Environment and Heritage Protection
Level 8, 400 George Street
Brisbane QLD 4000

By email: climatechange@ehp.qld.gov.au

ADVANCING CLIMATE ACTION IN QUEENSLAND DISCUSSION PAPER SUBMISSION

Dear Sir/Madam,

Gas Energy Australia is pleased to be able to make a submission to the *Advancing Climate Change Action in Queensland* discussion paper. As a state with vast supplies of Australian gaseous fuels, Queensland should be leading other states in adopting cleaner, cheaper, Australian gaseous fuels as part of its energy mix.

As the peak industry body for downstream gaseous fuels, Gas Energy Australia welcomes the opportunity to work with the Queensland Government to contribute to the development of a policy framework which will facilitate environmental and economic benefits into the future. Queensland, as a resource rich state, including lower emitting gas, has a good advantage in being able to progressively address emissions to protect the environment while also maintaining strong generating, off-grid power and, indeed, downstream fuel options.

Our submission is not about using gaseous fuels instead of renewables. Rather, it suggests that Queensland is in a unique position to take advantage of the benefits of cleaner, cheaper gaseous fuels that are in abundant supply in Queensland, evaporate on contact with water making them Great Barrier Reef friendly, are the cleanest source of energy able to power off-grid generators and are unique as a transport fuel that does not produce cancer causing particulates.

Gas Energy Australia encourages the Queensland Government to consider more technology neutral policy instruments, highlighted in research papers by organisations such as the Climate Change Authority, to achieve the best environmental outcome rather than support a particular product or technology. This would allow different products and technologies to compete objectively on the basis of carbon reduction and minimise the financial burden of meeting environmental targets.

We recently released our *2030 Vision for Natural Gas Fuels* and *Vision for LPG Stationary Energy*, both of which include a 10 Point Plan for industry and government to work together to take control of Australia's energy future by embracing cleaner, cheaper and local energy sources. These Vision documents are attached as part of our submission.

There are strong economic, environmental and health benefits to be gained from removing barriers to the use of Queensland's cleaner, cheaper and healthier gas supplies as an alternative fuel to imported, higher emitting and higher polluting diesel. In conjunction with other lower emitting energy sources, gaseous fuels can provide both a more independent and cleaner future for Queensland.

Gas Energy Australia provides more details in our responses to the questions in the *Advancing Climate Change Action* discussion paper.

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1. What should Queensland look like in 5, 10 or 30 years in a low carbon global economy?

As outlined in our Vision, we want a better, cleaner Queensland with a strong economy where:

- Ferries and ships coasting over the Great Barrier Reef are powered by cleaner, safer natural gas, avoiding disastrous oil spills and reducing pollution;
- People sitting in cafes or walking along busy roads or sitting on the back of a CityCat aren't greeted with unpleasant, polluting, toxic diesel fumes;
- Queensland enjoys the benefits of its natural advantage – abundant gas supplies – rather than exporting gas and importing diesel;
- Queensland's transportation costs are lower, leading to cheaper goods, more competitive exports and a stronger long-term economy;
- Queenslanders are employed to produce and distribute Australian gas for Queensland's needs – for our rail, heavy trucks, ferries, ships, mining equipment and power generation;
- Queensland is at the forefront of innovation and R&D in gas fuels, heavy-duty vehicles, ships and trains – leveraging our natural advantage to develop expertise that can be commercialised and exported to the world;
- People who live and drive in the vicinity of tunnels and inner city corridors are not exposed to toxic diesel vehicle fumes, while natural gas trucks are incentivised to use tunnels; and
- All islands in the Great Barrier Reef use generators that run on cleaner, cheaper gas/solar hybrids and not on dirty polluting diesel.

To achieve all of this the Queensland Government should adopt policies which focus on achieving specific outcomes, such as allowed levels of CO₂ emissions at lowest cost and allow competing technologies to use innovation and R&D to develop the cleanest and cheapest energy solutions. Queenslanders should be able to power their homes, industry and jobs across a range of capabilities – while also contributing to lower emissions and indeed, lower pollution.

Queensland should follow the approach to policy development proposed in the Climate Change Authority's (CCA) 2015 *Australia's Climate Policy Options* report which involves assessing environmental effectiveness, cost effectiveness and equity criteria.

However, this is not the approach suggested in the *Advancing Climate Change Action in Queensland* report which proposes imposing renewable energy targets in Queensland. The Productivity Commission's 2011 *Carbon Emission Policies in Key Economies* research report estimates that the cost per tonne of carbon abatement for the Commonwealth Government's Renewable Energy Target was \$42 to \$129 compared to \$18 for the Queensland Gas Scheme.

Based on these numbers alone, implementing more neutral policy environment in the future will allow specific environmental objectives to be achieved with the most efficient energy technology mix as well as saving money for the Queensland Government.

The optimal mix of energy sources and fuels in the long term for electricity generation and transport will depend on technological advances. However, the 2015 *Australian Power Generation Technology* (APGT) report indicates that gas powered electricity generation

technologies have the lowest lifecycle costs, low carbon emissions and the ability to quickly adapt output to meet demand. Hence, Gas Energy Australia considers that under technology neutral energy policy settings, Queensland would see a rise in the share of electricity generation from gaseous fuels in the near future.

As we have indicated, this is not about one fuel *OR* renewables. It is about a focus on getting the best and most cost effective overall outcome through technology neutral policies and ensuring the best technology for specific jobs can be harnessed.

NORA VALLEY FARM, Yandina

Nora Valley farm at Yandina, uses LPG as heating for the green houses where they grow tomatoes. Since switching to cleaner, cheaper LPG, they've been able to lower their production costs and expand into new markets, doubling the size of their greenhouse in the last twelve months.

Using LPG means they can control the heat in the greenhouse and produce better quality tomatoes for Australian families. It also means they no longer have black soot from their diesel generators which land on the greenhouse roof, and stop direct sunlight coming through.

Nora Valley employs 60 people directly and indirectly and is a great Queensland small business.

2. What do you think are the benefits and costs of taking action to address climate change in Queensland?

Queensland is very well placed to improve the environment while also supporting an energy intensive and job creating economy. Transitioning to a cleaner mix of energy sources is better for the environment, better for air quality and is crucial to maintaining the outdoor lifestyle that Queenslanders enjoy. However, it does not have to come at a cost to households or the government.

The Queensland Government should strive to be a leader in developing the cleanest technology and government policy should reflect this desire and not pre-emptively decide which technology will be best for the application.

It is curious for example that while in Queensland there is an abundance of lower emitting and polluting gas, sensitive environments like the Great Barrier Reef are exposed to vessels and offshore power generation using increasingly imported and higher polluting diesel – or worse, bunker oil. While renewables will make a contribution, there is no feasible alternative fuel available in abundance that has sufficient energy density and can reduce carbon and noxious emissions as significantly as gas can. Indeed, gas is a Great Barrier Reef friendly fuel because it does not slick or sediment if spilled. It would also have the benefit of supporting Queensland based jobs if, over time, it substituted increasingly imported oil based fuels.

3. What part should Queensland play in meeting global and national climate change commitments?

Gas Energy Australia supports the approach in the *Advancing Climate Change in Queensland* report to continue the export of metallurgical and thermal coal. Other countries will have their own methods to meet their climate change commitments and Queensland does not need to intervene in this by restricting coal exports.

In terms of meeting national climate change commitments, Queensland has a significant role as a major contributor to emissions and producer of fuels and energy. This state can serve as an example for other Australian states to follow by setting objective and technology neutral policies to achieve environmental outcomes at least cost.

Queensland has already taken significant steps with the introduction of CNG powered buses and should continue on this path for cleaner transport fuels by aiming to have all major ferry services in Queensland run on gaseous fuels, 50% of trains running on gaseous fuels, using gas to power remote Australian communities that aren't on the grid or a gas pipeline and provide incentives for logistics and freight companies to use cleaner cheaper gaseous fuels when transporting good through inner city corridors and tunnels.

4. How should Queensland work with the Commonwealth, state and territory governments and local governments to reduce greenhouse gas emissions?

Queensland should continue participating in national initiatives on climate change to minimise any duplication of effort and ensure that state policies are compatible. In addition, Queensland may consider providing advice about its successful emission reduction policies such as the Queensland Gas Scheme which achieved significant carbon abatement at low cost to other jurisdictions. NSW and Victoria have implemented energy efficiency schemes and the Queensland Government could consider learning from their experiences for establishing similar programs. Gas Energy Australia suggests that more open discussion and exchange of ideas between states and territories would lead to more effective carbon reduction efforts in Australia.

As a State with vast reserve of gaseous fuels, any additional uptake across the country of gaseous fuels, would serve to benefit the Queensland economy, particularly when selling to customers in states that don't have the same gas reserves. Urging other states to see the benefits and increase their uptake of gaseous fuels would benefit Queensland's economy and reduce greenhouse gas emissions.

A recent Bureau of Resource and Energy Economics (BREE) report noted that there is a lack of data publicly available regarding the size and composition of off-grid electricity demand and supply. There would also be merit in Commonwealth, State, Territory and Local Government's collaborating on improving the availability of data through 'open data' government release of information in order to facilitate better market responses than existing programs.

5. What kind of goals or targets should Queensland set in order to achieve this?

Queensland should set targets related to total allowed CO₂-e emission levels or CO₂-e concentration and allow market forces to encourage the most efficient means to achieve this. The

CCA's 2015 *Climate Change Policy Options* report discusses the use of an emissions trading scheme as one example of an instrument which could facilitate this.

Gas Energy Australia is not in favour of a renewable energy target set by the Government because this does not necessarily correspond with nor encourage the least costly and most efficient technology mix to achieve a given environmental target. Indeed, the significantly higher cost of carbon abatement from renewable energy targets compared to other policies reported in *Carbon Emission Policies in Key Economies* paper would suggest that they do lead to an inefficient technology mix in practice.

Gas Energy Australia notes that the Queensland Government is considering implementing a 50% renewable energy target by 2030 and a target for solar PV capacity. For the reasons stated above, we would encourage the Government to consider more neutral policy instruments discussed in the *Climate Change Policy Options* report which would reduce the burden for meeting climate change commitments.

6. What could the Queensland Government do to further stimulate innovation and commercialisation of low emissions and clean technologies?

The Queensland Government has a key role in providing an environment that supports research in and commercialisation of new clean energy technologies, particularly given Queensland has abundant supplies of lower emitting gas.

The Queensland Government should avoid programs, such as the Australian Renewable Energy Agency (ARENA) grants program, that distort markets by restricting support to chosen types of technologies. Rather, focusing objectively on the viability and the level of carbon emission reductions of new technologies would ensure that any government investment returns the highest financial and environmental benefits.

Gas Energy Australia welcomes the approach taken in the *Advance Queensland* program where all clean energy technologies are eligible for research support. The Queensland Government should adopt this approach for all climate change and energy policies to be consistent and set an example of a technology neutral and objective method of achieving a low carbon economy to other Australian states.

7. Should Queensland sign the 'Under 2 MOU'?

Gas Energy Australia acknowledges the important role for Australian governments in reducing climate change and consequently encourages Queensland to sign the 'Under 2 MOU'.

Given the energy intensive nature of industries in Queensland and the state's significant gas reserves, recognising gas as a lower emitting energy source in policies will help to achieve the objectives of agreements such as the Under 2 MOU.

8. What are the opportunities for Queensland in transitioning to a clean energy future?

Queensland is in a strong position to transition to a clean energy future with its abundant low emission energy resources allowing greater certainty for policy and investment decisions. Its

large reserves of natural gas can significantly reduce emissions from the electricity generation sector, which the *Advancing Climate Change Action in Queensland* report identifies as the largest source of emissions by sector.

This is supported by recent research from the US Department of Energy's *Life Cycle Assessment Harmonization* project which estimated life cycle greenhouse gas (GHG) emissions from electricity generation plants. The median estimate for natural gas plants was 470g CO₂-e/kWh compared with 1,001g CO₂-e/kWh for coal fired plants. Further, the APGT report highlights the advantage of natural gas technology in electricity costs, waste production and flexibility to quickly adjust output compared to other technologies. With natural gas electricity plants producing less than 50% of the GHG emissions from coal fired plants, Queensland has the opportunity to quickly achieve its environmental objectives by substituting fuels with existing technology and with minimal impact on its economy.

Transitioning to a clean energy future that includes taking advantage of cleaner, cheaper Queensland gas, will create jobs for Queenslanders, harness existing skill sets and make sure they don't disappear or move overseas. And by using vital skills in developing cleaner energy technologies, Queensland can position itself as a market leader and attract further investment.

A range of Queensland based companies like Buderim Ginger and Nestle at Gympie already use gaseous fuels because they are cleaner and cheaper and it is a source of pride that the gas is Queensland natural gas.

9. What are the major barriers in adopting clean energy technologies in Queensland?

While there are substantial opportunities for Queensland to adopt clean energy technology, there are barriers that will need to be overcome. The major barrier is the mismatch between the most efficient approach of achieving low carbon economy and the public perception of particular clean energy technologies. As noted in our answer to Question 2, Australia's Renewable Energy Target program had a carbon abatement cost 2-6 times higher than Queensland Gas Scheme.

In addition to being an inefficient way of reducing carbon emissions, the high costs of such programs are stretching household budgets and making businesses with high energy needs uncompetitive.

Adopting the approach proposed by the CCA to evaluate climate change policies based objectively on environmental effectiveness, cost effectiveness and equity criteria would lead to more efficient carbon abatement activities but may face other barriers. For example, this approach may result in increased use of commercially viable clean energy technologies which may receive a negative reception from the public if they are not renewables. Communicating the benefits of the approach proposed by the CCA may require some effort by the Queensland Government. However, in the long term, this is the optimal policy approach to achieving environmental and economic objectives.

As outlined in our Vision documents, which are attached as part of this submission, a range of barriers to entry exist for gaseous fuels. These barriers, which include the Federal Government's fuel tax burden on alternative energy sources, initial conversion costs, infrastructure limitations,

confusion regarding alternative fuels and technologies and regulatory barriers, limit Queensland gaining the full benefits of its abundant gas supplies such as downstream jobs.

These barriers are outlined in more detail in our 2030 Vision documents, as well as our 10 Point Action Plans to address these issues.

10. What programs would you like to see put in place to encourage greater uptake of energy efficiency and clean energy?

Gas Energy Australia notes that the NSW Energy Saving Scheme has been very successful in encouraging energy efficiency activities. With a competitive market for the sale of certificates representing energy savings, the Scheme reduced energy consumption by more than 11 million MWh between 2009 and 2014. There have been amendments to improve the Scheme involving broadening the eligibility of energy efficiency projects, including fuel switching in calculations of energy saving and streamlining its administration. The Queensland Government should adopt a similar scheme and learn from the experiences in NSW.

To encourage uptake of clean energy, Gas Energy Australia's main priority is for Queensland to adopt programs which are aligned with the approach proposed by the CCA. This involves adopting programs which best meet the criteria of environmental effectiveness, cost effectiveness and equity. Gas Energy Australia understands that the Queensland Government is proposing to introduce a 50% renewable energy target. As discussed in our answer to Question 5, this target does not necessarily correspond with nor encourage the optimal energy mix. The Productivity Commission's 2011 *Carbon Emission Policies in Key Economies* research report indicates that the emissions trading scheme operating in the European Union has resulted in significant uptake of low cost abatement activities including gas powered electricity generation.

From this, Gas Energy Australia suggests that where clean energy activities are permitted to compete on the basis of carbon abatement performance and cost, the level of renewable energy could be lower than the Government's target of 50%. However, a technology neutral approach would lead to the most efficient energy mix to meet a given environmental target.

Consistent with our Vision documents which provide more detail, Gas Energy Australia would welcome the opportunity to discuss with the Queensland Government how innovation in gaseous fuels can assist reducing emissions. This includes the transition away from diesel and bunker oil as a transport fuel for cruise ships, how Queensland's primary industries might be encouraged to use cleaner fuel like gas and the Queensland Government itself using more gaseous fuels.

11. What steps should Queensland take to improve energy efficiency in the built environment sector?

NA

12. What are the main challenges to achieving successful, sustainable communities in Queensland? What types of innovations might address these challenges?

There are thousands of households and businesses in Queensland that require off-grid electricity.

While a number have access to natural gas powered generation now, many are dependent on more expensive and in many cases dirtier liquid fuels. They deserve a cleaner, greener, cheaper replacement for diesel.

Only having access to dirty imported diesel for their energy needs isn't sustainable and isn't in line with the community's desire for access to cleaner energy sources.

It is costly for the individual communities, for local industries and for taxpayers (due to cross-subsidisation through various grant and community service obligation commitments).

Transitioning to natural gas fueled generation makes sense in terms of lowering the cost of electricity supplied to these remote communities. It is also better for air quality in those communities.

Innovation in natural gas fuels means waste and other gases can be used as fuel for off-grid generation, trucks and other vehicles that would otherwise be using higher emitting diesel.

The Queensland Government should take action to support innovation that reduces carbon emission in practical terms to achieve successful and sustainable communities in Queensland. For example, every truck that is converted from diesel to natural gas reduces emissions by almost 35 tonnes of CO₂ per year, equivalent to removing around 12 cars from the road. It's silly that currently 'clean' energy funding will support a diesel hybrid generator but not a cleaner natural gas generator.

REAL LIFE INNOVATION AND EMISSION REDUCTIONS

One of the United States biggest landfills located in California is capturing its waste gas and turning it into natural gas fuel. BOC's parent company, Linde Group, worked to design and build a plant which produces natural gas fuels, which in turn fuel local garbage trucks. It is the world's largest landfill gas to LNG plant and it reduced California's greenhouse gas emissions by up to 30,000 tonnes annually.

The Queensland Government should support real life innovation in clean energy to support practical outcomes like turning waste gas into transport fuel.

13. What would an efficient, affordable, low emission transport system look like in 10 or 20 years?

Already a range of countries across the world are adopting gaseous fuels for their transport systems to deliver a cleaner environment. In Australia, almost 4,000 vehicles currently run on natural gas fuels. In North America and Europe, many more trucks run on natural gas and numbers are growing. In Norway, the Government approved the construction and operation of natural gas passenger vessels. In Canada, three new natural gas ferries have been contracted and in the USA, British Columbia and Staten Island Ferries are studying options to retrofit their vessels from diesel to natural gas fuel.

Not only are natural gas fuels available now, but a recent report by the Bureau of Resource and Energy Economics noted that natural gas fuels are likely to have one of the lowest costs of production of any fuels in Australia to 2050.

An efficient, affordable and low emission transport system should include ferries running on gaseous fuels to avoid polluting our pristine waterways, buses running on CNG and heavy vehicles being incentivised to convert to cleaner gaseous fuels because it's better for the environment and ensures quieter engines that work better for longer.

We should aim to have at least 25% of on-road heavy duty trucks powered by cleaner, cheaper Australian gaseous fuels and at least 50% off-road heavy duty trucks and plant purchases from 2030 onwards gas powered.

The Queensland Government should invest in a network of gas refueling stations along the major highways and have trains running on cleaner, cheaper gas. Every 10% of diesel used on heavy on-road transport could reduce CO₂ emissions by 597,000 tonnes.

14. What are the major barriers in shifting to lower carbon transport options in Queensland?

The major barriers to shifting to lower carbon transport options in Queensland include those outlined in our answer to Question 9 and further outlined in our Vision documents.

In addition, there are significant technological barriers including the measurement and recording of emissions from vehicles operating under real driving conditions. This results in greater difficulty in evaluating the environmental impacts of different transport options. However, there are technologies such as the Portable Emissions Measurement Systems currently be used in Australia which could meet this need.

15. What strategies would you like to see put in place to encourage greater uptake of low emission transport options?

Gas Energy Australia encourages the Queensland Government to withhold introducing government support for any particular vehicle or fuel without this being justified under the criteria proposed in the CCA's *Climate Change Policy Options* paper for environmental policies. In other words, any government investment or support should demonstrably have the highest rate of return in terms of environmental and economic benefits. Australian governments do not always fully evaluate environmental effectiveness, cost effectiveness and equity impacts of climate change programs before implementing them and in fact as noted in our answers to Question and 5 and as outlined in our Vision documents, continue to run programs despite independent research concluding that they do not satisfy these criteria.

Consistent with the overall need to ensure technology neutrality between all low emission capabilities and energy sources, Gas Energy Australia encourages the Queensland Government to ensure all energy and/or climate change policies do not favour one particular technology over another.

The Queensland Government should investigate how to apply some technology neutral policy instruments such as mandatory carbon emission standards to the transport sector to achieve emission reductions at least cost.

Queensland Government initiatives such as Advance Queensland could provide an opportunity to further develop our niche R&D and innovation opportunities using the abundant gas supplies in Queensland.

16. What strategies would be effective in encouraging greater patronage on public transport and fewer private vehicles on the road?

NA

17. What could the Queensland Government do to support greater uptake of EVs?

Gas Energy Australia is not in favour of governments targeting any particular technology such as EVs for support. Rather, we would encourage the Queensland Government to consider how technology neutral instruments such as mandatory carbon emission standards could be used in the transport system to reduce emissions at lowest cost.

Notwithstanding that is important to understand the current state of technology, the Queensland Government should at what low emitting alternatives exist as fuel for heavy freight, besides oil based fuels.

Unlike other fuels, gaseous fuels do not require large scale land clearing and are the only feasible alternative for heavy transport. Gaseous fuel vehicle technology is mature, proven in real world applications and is the only other technology that has a commercially available product for cars, heavy-duty trucks, buses, forklifts, trains, marine vessels and stationary energy.

18. How could the Queensland Government maximise the carbon reduction potential of EVs?

If the Queensland Government's aim is to not only to minimise emissions, but also balance this against social and economic impacts, then it should adopt the approach proposed in the CCA's *Climate Change Policy Options* report to evaluate environmental policies for the transport system based on environmental effectiveness, cost effectiveness and equity criteria. Gas Energy Australia encourages the Queensland Government to also take a holistic approach to achieving these objectives for the whole transport system rather than focusing on one specific vehicle type.

As mentioned in our previous answer to Question 17, notwithstanding that it is important to understand the current state of technology, the Queensland Government should look towards what low emitting alternatives exist as fuel for heavy freight, besides oil based fuels.

19. What do you think the key waste priorities are in Queensland?

As mentioned previously, waste gas can be converted into a transport fuel as is already being done in the United States. Queensland can be a leader in Australia in this field, in line with the Government's Advance Queensland policy.

Not only would this reduce methane emissions from dumps, but additional emissions reduction is achieved by running trucks on gaseous fuels instead of diesel or petrol.

20. What are the key issues the Queensland Government should address with respect to land use and land use planning?

As an industry association responsible for downstream gas applications, we note that LPG, LNG and CNG come from a diverse range of upstream conventional and unconventional sources.

It is worth noting that as a fuel, gas does not require large scale land clearing. However, other submitters will be in a better position to talk to the Government about upstream activities.

21. How can we provide some stability in the livelihood of our farmers, and support the potential for transition to new industries such as carbon farming?

While as an industry body for gaseous fuels we are not in the best position to comment on carbon farming, we note that through facilities such as the BOC Condamine Micro LNG plant, significant steps have been taking to ensure that local businesses and communities get to share the benefits of local gas production.

As outlined in the case studies of our Vision documents, a range of farmers, agricultural and horticulture businesses use gaseous fuels as the main energy source for production and have been supported with cleaner, cheaper gaseous fuels.

22. What role do you think the Commonwealth, State and Territory Governments should play in securing terrestrial and marine blue carbon storage areas?

NA

Closing Remarks

There are many options and approaches to reducing carbon emissions which have different impacts on factors which influence living standards in addition to the environment, such as the economy and the financial burden on households. We encourage the Queensland Government to assess climate change actions objectively to determine that they are the optimal choices with respect to environmental, economic and equity objectives. Advice from independent organisations such as the Climate Change Authority would be valuable in guiding the approach to evaluating these policies. Nevertheless, Gas Energy Australia is pleased to have been given the opportunity to contribute to Queensland's climate change strategy and looks forward to continue working together on important initiatives in the future.

Yours sincerely

A handwritten signature in black ink, appearing to read "John Griffiths", with a long horizontal flourish extending to the right.

John Griffiths
Chief Executive Officer