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The Research Director
State Development, Infrastructure and Industry Committee
Parliament House
George Street
Brisbane QLD 4000

Dear Sir/Madam

LIQUID FUEL SUPPLY (ETHANOL) AMENDMENT BILL 2014

Please find attached our submission on the proposed minimum Ethanol content amendment to the Liquid Fuel Supply Act 1984. Please feel free to contact me if you would like to discuss any aspects of our submission in more depth.

Yours Faithfully,

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Queensland Liquid Fuel Supply (Ethanol) Submission

Thank you for the opportunity to make a submission on a potential mandate for Ethanol in liquid fuels in Queensland. We would be happy to discuss this submission in more detail with you or provide additional information including copies of the listed reference documents if required.

TfA Project Group can offer a unique insight into the Ethanol and Petroleum Industries being recognised Industry experts in petroleum storage and distribution facilities and also the development of Ethanol plants. We have been involved with Ethanol plants in Australia for 14 years, performing preliminary engineering and cost modelling for over a dozen proposed plants including the Dalby Bio-refinery. We have travelled extensively to visit operating plants and industry conferences internationally and investigated a variety of feed stocks including Wheat, Sorghum, Sugar Cane, Cassava and cellulosic technologies using sugar cane bagasse and waste fibre.

Environmental and Health Benefits

The benefits of Ethanol displacing gasoline are well recognised and widely documented.

- Ethanol is non-toxic, biodegradable and does not permanently affect the water table.
- Unlike some components of gasoline such as benzene Ethanol is not carcinogenic.
- Ethanol reduces greenhouse gas emissions by 34% –96% (13) with sugarcane typically 51% and cellulosic feed stocks achieving the greatest reductions in the order of 96%.
- Ethanol reduces carbon dioxide emissions by 30-40% (15).
- E10 fuel reduces cancer causing particulate emissions by over 30% (15)(2), benzene emissions by 25% (2) and total toxic mass emissions by 13% compared to conventional gasoline.
- Ethanol is energy positive with grain feed stocks producing 61% (13) and sugarcane 332% more energy than the fossil energy required to produce them due to utilising solar energy absorbed by plant feed stocks. Relative to petrol, sugarcane can reduce the fossil fuel energy use by 96% and cellulosic feed stocks even more.
- Molecular ethanol contains 35% oxygen which improves the efficiency of fuel combustion in vehicles.
- Ethanol has an Octane rating of 113 increasing the Octane rating of gasoline.

Feedstock Availability and the Impact on Food

Ethanol is a renewable fuel that does not utilise fossil fuel reserves. Primary first generation feed stocks in Australia include Sorghum, Wheat, Sugar Cane and Waste Starch from Gluten production. Farm land can be utilised on a sustainable basis to produce grain or sugar feed stocks for ethanol production without adversely impacting the environment. There is adequate arable land available to produce both food producing and ethanol producing feed stocks in selected areas.

Australia's existing ethanol plants have minimal impact on food supply. Manildra uses waste starch from Gluten processing and Wilmar Sarina uses molasses. Whilst the Dalby plant utilises Sorghum, the process only removes starch which has no nutrient value to livestock. The protein and fibre content is on-sold to the feedlots as a high protein distillers grain feed that offsets alternate feeds imported from overseas such as soy meal. Whilst existing Queensland plants can supply 70% of that required for a 5% Queensland mandate, substantial additional capacity could be implemented utilising sugar cane without any significant impact on domestic food supplies.

Queensland grows over 90% of Australia's sugar of which over 75% (17) is exported. Over the last ten years sugar sales have fallen, four sugar mills have closed and the Queensland Government has provided financial assistance to 624 (17) farmers to leave the industry via the Sugar Industry Reform Package 2004. Recent actions by Wilmar, MSF and Tully to withdraw from the QSL collaborative marketing arrangement places more pressure on farmers. The potential to secure significant alternate long term domestic market options as a feed stock for local Ethanol plants can form an important element in assisting farm viability.

The Jamison Report (15) postulated that sugar cane used for exports could support five 200ML per annum Ethanol plants. Combined with existing Queensland plants this is equivalent to 28% of the state's gasoline sales. With only one such plant required to support a Queensland 10% mandate unlikely to have any major impact on sugar pricing. Whilst first generation plants are susceptible to variations in agricultural feed stock pricing influences, second generation cellulosic feed stocks such as sugar cane bagasse improve plant viability as they are a low value by product generally produced in excess of the requirements for power generation with modern boilers.

Energy Security

Over 50% of Australia's crude oil and 35% [14] of Petrol requirements are imported from overseas, substantially increasing our trade deficit. The majority of these imports come from Singapore [10] with the remainder typically from the South East Asian region. Australia's stock in hand reserves of petroleum products in accordance with International Energy Agency requirements should be 90 days [14], however they have steadily been decreasing with automotive gasoline stockholdings in April 2014 representing 20 [3] days cover. This becomes more critical in the context that Australia will shortly only have 50% of the number of operating refineries that it did 10 years ago and our imports of gasoline and diesel are increasing. A major incident associated with Singapore production facilities or shipping restrictions in this region would have a significant impact on Australia's supply chain.

Sustainable biofuels offer a continuous home grown fuel supply, independent of international Petroleum price fluctuations, that creates employment for Australians, and maintained irrelevant of other influences in our region or around the world that affect petroleum supplies and access for shipping.

Development of an Ethanol Industry

The majority of countries that have a viable established ethanol industry do so via the mechanism of a mandate with over 50 countries having a mandate in place [5]. This includes many modern economies and trading partners of Australia including the USA, Canada, Brazil, India, Indonesia and all countries within the European Union.

In Australia, the Ethanol Production Grants Program was introduced in September 2002 with an excise exemption of 38.143 cents per litre however by 2005 E10 annual sales were only 12.1 ML [11] representing the equivalent of 0.006% ethanol as a percentage of total gasoline sales. This was despite direct Government negotiation with Oil Companies regarding a 350ML renewable fuels target.

The reality is that the grants program does not provide any financial incentive to the Oil Companies to replace a product that they manufacture, trade and distribute via their own network with an alternate product such as Ethanol. This has been emphasized in recent Government reports criticising Oil Companies for not passing on 100% of the excise exemption to the consumer. Whilst the excise exemption has discounted the price of E10 fuel, there is no evidence in any country using Ethanol that market forces alone motivate financial investment decisions in Ethanol infrastructure.

In 2007 the NSW government introduced a 2% ethanol mandate progressively ramping up to 6% in 2011. This had an immediate impact with NSW E10 sales in 2007 reaching 790ML and increasing to 1,790ML per annum [12] in 2010 or 3% Ethanol as a percentage of gasoline sales.

However the drafting of the legislation permitted Oil Companies to seek an exemption if adequate supply is unavailable. Under this framework no Oil Company has directly developed or invested in Ethanol production in Australia. Private industry has been prepared to invest but funding from financial institutions is conditional on firm offtake agreements with the Oil Companies who control the service station outlets which have been limited. Without direct investment or commitment from Oil Companies the 6% mandate has not been met with only 3.5% ethanol achieved as a percentage of total fuel sales in NSW in 2012/2013 [3].

Over the past ten years there have been many privately funded Ethanol plants proposed but only one new to industry plant at Dalby has actually been constructed, commencing operation in 2009. This was largely justified on the premise of a forthcoming 5% mandate in Queensland announced in 2006 and proposed to be implemented on 31 December 2010. However the mandate was suspended in October 2010.

The impact was dramatic with Oil Companies removing E10 from their sites and ethanol sales dropping. Within 14 months the number of sites in Brisbane selling E10 dropped from 340 to 140 [10] and sales of E10 in Queensland dropped by 59% [7]. Not surprisingly the Dalby plant struggled with financial viability, entering receivership and subsequently being

sold to United Petroleum. Such inconsistency from Government has caused massive financial pain to the industry where investment decisions were made based on Government commitments that were not honoured.
This scenario is a significant contrast to that in countries which have had an effective ethanol mandate for some time with Brazil having over 430 [8] Ethanol distilleries and the USA over 220 [9]. In 1975 [15] Brazil also introduced supporting measures in the form of low interest loans to assist Ethanol plant developers access to finance.

The key is to provide certainty to industry. Once this is established investment decisions can be made and this is clearly demonstrated with Oil Company investment strategies. Over the last four years Shell have invested billions of dollars in ethanol production in Brazil with 2 billion litres [4] of capacity. In the same period of time they have not invested in any Australian ethanol plant production.

Recent Federal Government Reports

A recent report on Ethanol grants [18] has been used as a justification to bring forward the wind back of the ethanol excise program. The report has a number of misconceptions and questionable arguments, notably

- Declining sales are attributed to consumer choice and ignores the fact that their decline coincided with the announcement to abandon the Queensland mandate, the subsequent removal of E10 from service station sites by Oil Companies and their non-compliance with the NSW mandate.
- Energy security benefits are completely discounted due to the limited ability to deliver from a single Ethanol plant or a loss of crops during a rare major flood event. The report completely ignores sugar cane which is a plentiful, resilient and reliable feed stock.
- Feed stock production benefits are stated as negligible as they are based on grain only. There are significant potential benefits to the Sugar industry which is currently receiving Government support.
- The economics of sugar cane (juice) feed stocks, currently the basis for a number of proposed Ethanol plants, and second generation cellulosic bagasse and grain residue are not considered in the report.
- Production cost calculations for existing plants are miscalculated. The report acknowledges that Manildra utilise a waste stream from their gluten, starch and glucose plants as a feed stock for the Ethanol plant but then goes on to attribute the cost of the Wheat to the Ethanol production costs when the waste feed stock is nil cost.
- The lack of financial incentive for Oil Companies to market Ethanol aggressively under an EPG other than to keep part of the EPG is not considered. This reduces the price advantage in the market place and the expectation that 100% of the EPG will be passed on to the consumer without a mandate is unrealistic.

Conclusion

Ethanol is an environmentally friendly, sustainable fuel that could improve Australia's fuel security and support employment for Australians using proven technology. Feed stocks are grown within Australia, independent of direct and international petroleum price fluctuations, and available irrelevant of other influences around the world that may affect petroleum supplies and access for shipping. Ethanol plants can provide significant long term markets for sugar growers to assist farm viability at a time when the industry is under pressure.

The suspension of the proposed 2010 Queensland Government mandate just before it was to be implemented, subsequent drop in Ethanol sales and 2011 financial failure of the Dalby plant demonstrates how critical a mandate is. It is also evidence that the Queensland Parliament May 2013 motion [10] that the Commonwealth 38.143 cents excise is a more effective support for the ethanol industry than a mandate is not valid and in fact a mandate is the most effective way to support ethanol.

The experience in NSW should serve as a cautionary example regarding exemptions to compliance with the mandate. It is critical that the granting of exemptions under section 35AG of the proposed legislation cannot be abused by Oil Companies simply through their inaction. Privately funded Ethanol plants cannot gain finance without firm offtake commitments from major Oil Companies who control access to the majority of the retail market.

We support an immediate 5% mandate to ensure ongoing viability of Queensland's existing ethanol plants [6] and a progressive increase in the mandate to 10% over several years. This will provide certainty, encourage investment decisions for further plant development and innovation in Queensland to develop second generation technologies which reduce costs and utilise waste materials. Experience in over 50 countries around the world including Australia has proven that the only way to establish a strong, viable successful ethanol industry is via a mandate.

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