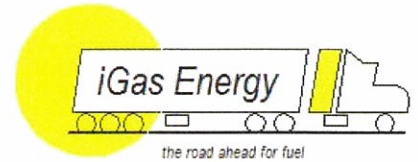


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3 February 2012

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Dear Sirs,

REF: EMO 0022 Energy Market Arrangements for Electric and Natural Gas Vehicles.

Attached please find a Submission by iGas Energy Limited in response to the Issues Paper on this subject dated 18 January 2012.

iGas Energy Limited is a Queensland based company that has developed patented technology to enable heavy duty highway and off-road vehicles to run on compressed natural gas (CNG). The technology is undergoing reliability and durability testing and is about to enter a demonstration phase as it also enters the early stages of commercialization. The technology is described on our web-site www.igasenergy.com

The Submission contains contact details for the iGas Group of Companies, and we would be pleased to receive correspondence on and invitations to future meetings regarding the Issues Paper and natural gas vehicles.

Yours Faithfully,

James K McDonald
Director

EMO 0022 REF. SUBMISSION TO AUSTRALIAN ENERGY MARKETS COMMISSION

From iGas Energy Limited

RE: ENERGY MARKET ARRANGEMENTS FOR ELECTRIC AND NATURAL GAS VEHICLES

iGas Energy Limited (iGas) is an Australian owned business operating from premises at Stapylton Queensland. It has developed patented technology designed to enable heavy duty highway trucks to run on compressed natural gas (CNG). The technology hydraulically maintains pressure on natural gas held in composite storage cylinders racked behind the cabin of the truck. CNG is delivered from the cylinders at the constant required pressure of approximately 300 barg for High Pressure Direct Injection (HPDI) engines, displacing approximately 95% of the diesel fuel consumed by the truck. The technology is undergoing durability testing and is in the early stages of commercialisation. Some detail may be viewed on our web-site www.igasenergy.com

As the iGas technology is new, the authors of the paper are understandably not familiar with it, and the Issues Paper does not mention it. Indeed the paper considers only LNG as an alternative fuel for large trucks and rightly concludes that the financial viability of LNG trucks is "marginal at best."

AECOM should re-visit the question of gas as fuel for heavy duty diesel cycle trucks in light of the recent development and superior economics of iGas technology compared to LNG and diesel.

We would be pleased to meet with AECOM to enable them to understand the technology, and to explain our vision of iGas as a fuel for heavy duty highway and off-road vehicles.

iGas wishes to comment on the Issues Paper dated 12 January 2012. The headings below correspond with the Chapter headings and sub-headings in the Issues Paper.

6.1 NGV Technology.

The emergence of iGas technology has created a new and compelling opportunity for CNG to fuel large highway trucks and displace diesel as the fuel for HPDI engines, both on and off road. It envisages the re-fueler taking advantage of the stored energy in (high pressure) gas transmission pipelines, augmenting it to the required 300 barg and re-fueling the highway truck fleet at service stations adjacent to where highways and natural gas transmission pipelines intersect, eliminating any impact on the capacity of the gas distribution (low pressure) networks.

Compared to LNG, CNG is less capital intensive and provides additional benefits in ease of handling, safety, transport, storage and management. Importantly, we believe it can be provided via the existing competitive gas market at prices significantly below either LNG or recent diesel prices, removing upward pressure on freight rates from imported liquid fuel prices. Further, we believe that at present and predicted diesel prices the opportunity exists for payment of an economic incentive to truck owners to convert from diesel, which LNG, per the AECOM analysis, cannot provide.

The iGas fuel pack has undergone extensive durability trials in the workshop, and has to date simulated running over 100,000 kilometres. It has also undergone on-road and loaded trials. Two demonstration trucks have been fitted with the iGas technology, and will soon commence on-road work in tow hire service to demonstrate the technology to the market. A third fuel pack will be fitted

to a truck in the USA and shortly commence tow hire work from the Port of Los Angeles for a Salt Lake City trucking company.

All three trucks are fitted with the Westport GX engine which is cited in the Issues Paper. It is noted in the Paper that the Westport engine actually runs on CNG and that LNG requires to be converted to CNG on-board in order to fuel the engine. Though the engine requires 5% diesel fuel as a pilot and for lubrication purposes, these engines are not dual fuel and, absent gas, will be able to be driven to safety at low speed, but not for a long distance.

6.2 Assessing The Take-up of NGVs.

There are some practical impediments to the take-up of iGas Technology, but they are somewhat different than the Paper suggests. It is true that storage tanks are required on the truck, however re-fueling intervals are not an issue with iGas and over 1000kms range is envisaged with the iGas fuel pack. It does however take space and add weight to the prime mover. Under existing transport policies, this weight and space requirement results in an effective penalty for using gas because of the effect of Gross Vehicle Mass and Total Vehicle Length limits.

For the iGas system to not disadvantage the truck owner he will require a 2 tonne dispensation for Mass, and a 1 meter dispensation for length for an iGas fitted truck .

In the discussions and preamble to recent Fuel Excise legislation, it was intended that natural gas would receive a benefit relative to diesel of 50% after excise was imposed of gas. As diesel receives a full rebate down to the level of Road Tax, this promised benefit has not been realized.

It is true that there is a higher capital cost in fitting a gas engine and fuel system relative to diesel. We believe that the capital cost penalty can be more than compensated for by a lower gas price compared to diesel, particularly with oil prices forecast to remain above \$100 per barrel. This will be more easily realized with competitively priced gas available as a result of the discovery of vast reserves of coal seam and shale gas.

There are also incremental maintenance costs due to the presence of the iGas system, however it is anticipated that these costs will be more than off-set by extended oil change and engine life intervals and reduced engine maintenance costs.

AECOM found that the take-up for LNG trucks depended on kilometres travelled, and that is true. The initial target market for iGas CNG comprises large heavy duty highway trucks travelling long distance on interstate highways. This fleet is estimated to consist of more than 25,000 vehicles in Eastern Australian states, running high kilometres and consuming over 100 Petajoules of energy per annum. However, once a re-fueling network is established, it can service lower mileage vehicles and spark ignition vehicles as well: and when the high mileage trucks move to secondary use in lower mileage applications, they too can be serviced. We have no reason to doubt AECOM's estimates of gas required under the assumptions it has made, but would welcome the opportunity to discuss this discrete market with them.

7.1 Impact of NGVs on Energy Markets.

This Chapter concludes that “.....for commercial NGVs (.....and NGV trucks) the refuelling stations are likely to be connected to the transmission and sub-transmission networks”. As discussed above in our introduction, we envisage that CNG trucks fitted with iGas systems will be refuelled at stations directly adjacent to high pressure transmission pipelines. There will be issues related to off-pipeline storage, use of line pack and load factor considerations, but they should be able to be managed through the gas haulage and supply contracts. It may be that capacity constraints exist on such pipelines from time to time and capacity augmentation will require funding by those that require capacity.

The biggest issue may be the competition for capacity with power generation. Transmission pipelines generally do not have large unsold capacity available. Australia now boasts “vast reserves” of gas in its various forms. Traditional market arrangements coupled with the competing demands for gas such as posed by electricity generation and NGVs bring into sharp relief the tensions that exist in supply and demand for gas in the domestic market. Gas producers argued for some time that a “world price” for gas exists and that Australian consumers should pay that price: they raise another argument altogether now that the “world price” as represented by the USA price has fallen to around \$2.50 per GJ (in the traditional peak demand period of winter) due to USA reserves being augmented by shale and coal seam gas.

8. The Way Forward

We do take a more optimistic view than the paper for the take up of NGVs. In particular, we have faith in the uptake of CNG as fuel for heavy duty interstate trucks and large off-road vehicles as:

1. The technology now exists for CNG to fuel this fleet, which consumes more than 100 Petajoules of energy per annum in the Eastern States alone,
2. We believe an incentive is possible at present diesel prices to support a decision by the truck or fleet owner to change fuels,
3. An abundance of indigenous natural gas in its various forms is emerging, and
4. It is in the national interest for conversion to occur.

It makes little sense for Australia to sell gas offshore and import diesel at more than twice the export price of gas when opportunities exist to displace diesel as fuel for plant such as large vehicles, rail engines and power generators.

Although the take-up of gas to fuel heavy duty diesel cycle trucks is presently low due to the economics of LNG, the potential for a large new market for gas still exists under a CNG regime, and may well be material in a relatively short time frame. Additionally, environmental pressures for particulate and noxious emission reductions as well as greenhouse gas abatement will put a focus on this fleet and add a further imperative to convert.

We do not believe that significant changes are necessary at this time, but we would be wise to observe the rate of change in other gas rich countries (such as the USA) as they seek to wean themselves off imported liquid fuels.

Any restrictions that affect the take up of CNG as fuel for large trucks should be removed.

Answers to Specific Questions

Question 20.

- A. AECOM may wish to re-visit their take-up estimates for long distance heavy duty highway trucks given that new technology will shortly be available that will enable a financial incentive to be provided to truck owners who elect to fuel their truck(s) with CNG. Whilst not expecting to achieve 100% market penetration, we believe that 10,000 such trucks could be running on CNG by 2020. This will certainly be the case when fleet owners are persuaded to convert, and we believe high liquid fuel prices provide the opportunity for the necessary incentives to persuade them.

Question 22.

- A. There is always a need for Government to monitor reserves and domestic supply, in particular energy supply. Australia is a net importer of both crude oil and refined products, with a net negative impact on balance of payments. Whilst export of natural gas is desirable and is an offset to this problem, holders of production licences should not be permitted to become gas bankers for export only whilst a domestic market exists. The Australian domestic market should determine the domestic price of gas and hoarding of reserves should be addressed and seriously discouraged. It would be better to encourage the use of domestic energy domestically to the extent possible rather than export energy as gas and import liquid fuels at twice the price in energy equivalent terms. The use of gas to fuel our fleets is an opportunity to reduce our dependence on imported liquid fuels and improve the balance of trade equation.

Question 23.

- A. The shape of ramp-up of gas sales that might be possible from conversion of the interstate highway trucking fleet to CNG is difficult to predict, and very difficult to contract. There are no known issues that require addressing, but lead time for capacity enhancement in transmission pipelines and the potential conflict for supply that might emerge from competing large loads such as power generation could yet be a problem.

Question 24.

- A. A typical interstate highway truck travels some 250,000 kms per year and consumes fuel costing approx \$200,000 at present diesel prices. A small fleet owner might have up to 20 such trucks, a large owner 100, and a very large owner 200 or more. A small fleet might therefore have a fuel bill of \$4 million per annum, and a large owner \$40 million. It is by no means obvious that existing retail licence holders will be re-fuelers for the purposes of such fleet owners, indeed we doubt they will be. We envisage that major users might have gas supply contracts direct with wholesalers or producers, and/or be spot market traders: in that event, the refueler might simply toll such gas through his meters, and should only require technical licences for the re-fuelling site.

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2 February 2012