Submission No. 12
17.10.05

Mackay Sugar Co-operative Association Limited
ABN 12 057 463 671

Production Services

Phone: (07) 4953 8200
Fax: (07) 4953 8590
PO Box 5720, Mackay Mail Centre, Qld 4741

17 October 2005

Mr Rob Hansen
Research Director
Impact of Petrol Pricing Select Committee
Parliament House
Brisbane QLD 4000

Dear Mr Hansen

Impact of Petrol Pricing – Submission

I have just attended the Mackay public hearing of the Impact of Petrol Pricing Enquiry, where questions were raised by Ms Rachel Nolan MP, Member for Ipswich, regarding the fuel energy intensity (i.e. energy input / fuel energy) of ethanol. These questions were directed to Mr Jones (CSR) and Dr Bill Wells.

Without figures at hand, I made no comment at the hearing, however I have been involved with life cycle analyses (LCA) of ethanol production during a recent two year secondment to the Sugar Research Institute in Mackay. This investigation covered conventional ethanol production at a sugar mill, and while the results were not made public, nor scrutinized by other research organizations, they were similar to previous independent consultancy results.

The 2001 CSIRO Transport Fuels report listed the energy intensity (MJ energy input/MJ fuel energy) and greenhouse gas emission intensity (kg $CO_{2\text{-eq}}$/MJ fuel) for premium unleaded petrol (PULP), and this was used as a benchmark for comparison.

Unfortunately the CSIRO report, and indeed most published information on ethanol, does not take into account the unique environmental benefits of using renewable bagasse fuel as the year-round energy source for sugar mill ethanol production. It is also most likely that new ethanol plants in the sugar industry will be collocated with efficient bagasse-fired cogeneration plants, significantly reducing greenhouse emissions and energy intensity of ethanol production.

The results of the SRI study are based on the LCA “allocation” method, where upstream energy and emissions are apportioned between sugar and molasses on a sugar content basis. These are compared to the CSIRO results for PULP below:

Parameter	Non-crush fuel			
	Coal		Bagasse	
	No Cogen	Cogen	No Cogen	Cogen
Energy(MJ input/MJ fuel)				
-Sugar mill ethanol	0.96	0.81	0.96	0.81
-PULP	1.14	1.14	1.14	1.14
Improvement	16%	29%	16%	29%
Emissions ($CO_{2\text{-}eq}$/MJ fuel)				
-Sugar mill ethanol	0.046	0.014	0.013	-0.019
-PULP	0.089	0.089	0.089	0.089
Improvement	47%	84%	85%	121%

It is obvious that the greenhouse gas (GG) emission benefits of ethanol are substantial, to the point of exceeding 100% when coupled to a sugar mill cogeneration project (where some GG credits flow down from renewable electricity exported to the grid).

The point is that it is very difficult to quote a single figure for energy and greenhouse intensity of ethanol production. Subject to the efficient use of bagasse fuel, the sugar industry can offer ethanol production with extremely low greenhouse emission and energy intensities.

In supporting an ethanol industry in Queensland, I suggest that the Government should evaluate and understand the specific environmental benefits offered by the sugar industry. These are quite sensitive to the type of non-crush fuel and the presence of a collocated cogeneration plant.

Yours sincerely,

John Hodgson
Senior Project Engineer
Mackay sugar Cooperative Association Ltd.