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ENERGY AND ENVIRONMENT

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Energy efficiency inquiry
Productivity Commission
LB2 Collins Street East
MELBOURNE VIC 8003

3 November 2004

Dear sirs

I have been involved in the development and delivery of energy efficiency programs since the beginning of 1982, when I started work as an Energy Conservation Officer with the then Energy Authority of NSW (the precursor of the NSW Department of Energy, Utilities and Sustainability).

The first major task I was given was to develop energy labelling for refrigerators and freezers in NSW. There was no test standard, hardly any information on the product and no usable legislation. After four years of work, many diversions and, eventually, a fortuitous alignment of views between the governments of NSW and Victoria, the energy labelling of refrigerators and freezers became mandatory in those two states in 1986. This was the nucleus of what was to become the National Appliance and Equipment Energy Efficiency Program, recognised as one of the most effective (and cost-effective) of its type in the world.

Since leaving the NSW government in 1988, I have been regularly involved as an independent consultant in reviews and extensions of the labelling program, and in the development of mandatory minimum energy performance standards.

My company has more experience with preparing Regulatory Impact Statements (RISs) for energy and water efficiency programs than any other consultant in Australia. We were sole or lead author for the following, RISs, all prepared to the Guidelines of the Council of Australian Governments:

- *Energy Labelling and Minimum Energy Performance Standards [MEPS] for Household Electrical Appliances in Australia*, February 1999, and *Supplementary Cost-Benefit Analysis of Transition to a Revised Energy Label*, November 1999.
- *Minimum Energy Performance Standards and alternative strategies for electric motors*, September 2000.
- *Minimum Energy Performance Standards and alternative strategies for airconditioners and heat pumps*, September 2000.
- *Revised Minimum Energy Performance Standards for Small Electric Storage Water Heaters*, July 2001.
- *Minimum Energy Performance Standards and alternative strategies for fluorescent lamp ballasts*, August 2001.

- *Revised Minimum Energy Performance Standards for Household Refrigerators and Freezers*, August 2001.
- *Revised Minimum Energy Performance Standards and Alternative Strategies for Small Electric Storage Water Heaters* August 2003.
- *Proposed National System of Mandatory Water Efficiency Labelling for Selected Products*, May 2004 (prepared to Commonwealth, not COAG guidelines).

We have carried out a number of similar projects for the New Zealand government, and have worked on a number of occasions with Lawrence Berkeley National Laboratory, which undertakes all engineering and economic analyses for the US appliance MEPS program. Two of our RISs have been selected by the Office of Regulation Review as examples of RIS best practice.

I therefore feel reasonably well qualified to respond to the Commission's inquiry with respect to energy labelling and MEPS. I would like to make a number of key points rather than address each question in the Issues Paper in turn.

Markets and Market Failures

Having studied a number of product markets in detail, I have come to the conclusion that all markets for energy-using products are characterised by one or more of the following:

- Weak or incomprehensible signals of energy price and low buyer/user awareness of energy price;
- A lack of awareness of the contribution of energy costs to the total lifetime ownership cost of products;
- An absence of consistent, credible and readily usable information on the relative energy efficiency of competing products;
- Frequent occurrence of split incentives ('landlord-tenant' problem);
- Even among aware purchasers, excessive discounting of the value of certain or near-certain savings in energy costs;
- Supplier reluctance to offer or promote more energy-efficient products without external (ie government) intervention to reduce business risk, by ensuring that less-efficient competing products are labelled, or by setting MEPS so that less-efficient product cannot undercut on price.

The consequences are that the average energy efficiency of products is well below what the 'ideal' level would be if all buyers made rational decisions based on energy prices and on the comparative energy consumption of products, and if investment costs were fully recoverable (ie if sellers could command higher price for more energy-efficient buildings, or building owners could command higher rents for properties with lower energy operating costs).

These multiple market inefficiencies and market failures cannot be resolved by any one response, even by an increase in energy prices to levels which internalise the costs of

environmental damages or which fully reflect spatial and temporal variations in supply costs – which electricity prices, especially residential prices, fail to do.

There is now considerable evidence, in Australia and elsewhere, that government can intervene in product markets in a way that brings energy-efficiency much closer to the ideal, with consequent reduction in the total societal cost of energy services (including environmental costs) and with negligible impact on product choice, no impact on quality and often negligible impact on product price.

Where a program increases product price this represents a transfer of energy service market share from energy suppliers to the product suppliers, as would occur if buyers were more aware of energy price – ie it shifts the market closer to the ‘ideal’.

The most effective instruments of market intervention are information and MEPS. Many buyers can be made more sensitive to energy cost and product price tradeoffs through the provision of information in a readily digestible form at the point where decisions are made, eg as a label in the appliance showroom. Consumer research indicates that buyer awareness of the Australian energy label is well over 90%, and a high proportion of buyers use the information in their purchase decision, although different buyer segments respond in different ways.

However, there are many buyer segments that the label does not influence, and many products are purchased through channels not easily influenced by labels or indeed other modes of information. MEPS is a highly effective way to address these market segments and product types, since it is effective without needing to engage product buyers at all.

For labelling and MEPS to be effective in overcoming market inefficiencies and failures, they must be mandatory. No energy labelling or MEPS program in the world has been successfully implemented other than by direct government legislation, via regulatory powers delegated by government to energy utilities or industry associations, or – more rarely – via the market power of governments themselves as product buyers able to dictate standards, such as in IT equipment.

Motor Vehicles

Labelling and MEPS are well developed for household appliances and commercial and industrial sector energy-using equipment in Australia, but significantly under-used in analogous product markets, namely motor vehicles.

The motor vehicle industry has remained largely exempt from the pressures to increase product energy efficiency faced by other industries. In 1993 my firm reviewed the National Average Fuel Consumption (NAFC) program for the then Department of Primary Industries and Energy. We concluded that the program, which had been running since 1978, was largely ineffective and would continue to remain so unless major changes were made, possibly including the imposition of mandatory compliance obligations. No significant changes were made to the NAFC program, and our

impression is that motor vehicle fuel efficiency has not improved any faster than the business-as-usual trendline.

Energy labelling at point of sale is not appropriate or effective for every buyer segment and every product type. A form of energy labelling has been introduced for motor vehicles, but it has had very low impact compared with appliance labelling, because:

- Point of sale labelling does not work as well in the motor vehicle market;
- The information is not presented in an accessible way; and
- The energy efficiency rating is combined with a general pollution rating in a way that obscures the message and reduces its effectiveness.

Unlike appliances, motor vehicle showrooms are restricted to the one brand, so quick visual comparisons between models on the buyer's shortlist are not possible. There is no indication on motor vehicle energy label of relative fuel-efficiency compared with cars of similar size, information that is instantly and clearly communicated by the star rating scale on the appliance label.

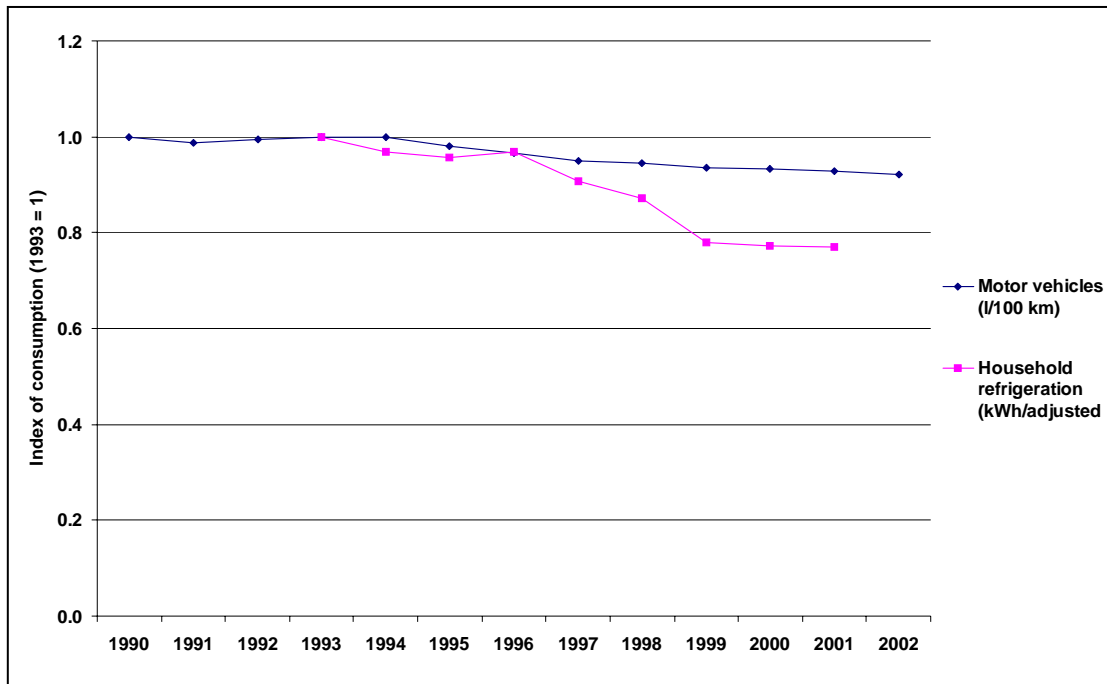
Comparative data are available on the internet (via the Fuel Consumption Guide and the new www.greenvehicleguide.gov.au website), but awareness of it is negligible compared with awareness of appliance energy labelling, and its format is not conducive to easy consultation during the search process.

The effectiveness of the label has been compromised further by the recent introduction of a 'grams CO₂ per km' value, which is intended to indicate the relative greenhouse-intensity of different fuel types, in which few buyers will have any choice, and if they do, will decide much earlier in the search process. Although a more visually accessible star rating design has been adopted in the internet listing, its value and impact as a decision-making tool is compromised by the incorporation of (non-CO₂) pollution criteria into the ratings.

The trend in the sales-weighted energy consumption of refrigerators and motor vehicles sold in Australia since 1990 is illustrated in the following diagram. Between 1993 (the first year of reliable data) and 2001, the average energy intensity of new refrigerators sold fell by 23%. By contrast, the average energy intensity of new vehicles fell by only 7% over the same period. It is probable that the amenity or quality of service of new vehicles increased (eg features, performance, safety) but this was also the case for refrigerators – for example frost free models increased their market share from about half to three quarters over the period.

While there are many factors contributing to the comparatively low level of energy efficiency improvement in motor vehicles compared with household appliances (including an increase in average gross vehicle mass, the public costs of which probably exceed the public benefits) I have no doubt that one significant factor is the failure to implement effective labelling or MEPS programs in the motor vehicle market.

Figure 1 Sale-weighted index of energy consumption – new motor vehicles and refrigerators sold, Australia (1993 = 1)



Sources: Motor vehicle data from published National Average Fuel Consumption (NAFC) series; Refrigerator data from *Greening Whitegoods – a report into the energy efficiency trends of major whitegoods in Australia*, AGO Feb 2003

Conclusions

To sum up, we would reiterate the following points:

- All markets for energy consuming products exhibit various forms of inefficiency and market failure, resulting in higher societal costs for energy services than in ideal markets;
- Many of these inefficiencies and failures can be effectively and cost-effectively addressed through information programs ('energy labelling') and minimum energy performance standards (MEPS);
- Government intervention and direction is a necessary (but not sufficient) condition of success in labelling and MEPS – but the programs also need to be well designed;
- The household appliance market is an example of successful labelling and MEPS; and
- The motor vehicle market is an example of poor implementation of labelling, and reliance on voluntary rather than mandatory efficiency standards.

I would be pleased provide more information to the Inquiry on these issues

Your s sincerely

George Wilkenfeld