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Sent: Friday, August 25, 2000 5:55 AM
To: jsct@aph.gov.au
Cc: S.Stone.MP@aph.gov.au; emissions.trading@greenhouse.gov.au
Subject: submission to inquiry into Kyoto

Dear Sir/Madam

Please find attached a submission to the Joint Standing Committee Inquiry on whether the Australian Federal Government should ratify the Kyoto Treaty.

This is a personal submission & does not represent the views of my firm.

regards

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(See attached file: Submission to Kyoto inquiry.doc)

Mac Word 3.0

Submission to the Joint Standing Committee Inquiry on whether the Australian Federal Government should ratify the Kyoto Treaty

The key issues that determine the answer to the question posed by the above Inquiry are:

- What will the economic costs be?
- How fairly will these costs be distributed throughout society?

The answers to both of these question are in turn determined by the form of regulation used to achieve the emission reductions required by the Treaty.

This submission therefore necessarily discusses in some detail the impacts of various forms of emission regulation, especially tradable emission permits, and from this highlights the best way forward – an extension of the current "2% renewable" requirement on electricity retailers to a somewhat larger but more general emission reduction requirement on retailers (consistent with existing and proposed State-based regulation), resulting in only small impacts on energy costs, & hence small impacts on wealth distribution and economic restructuring costs. The conclusion from this is that Australia should ratify the Kyoto treaty.

The following discussion outlines why it is essential that the main plank of regulation take the form of emission reduction requirements on energy retailers. The key points to be made are:

1.1. The issue of applying "Cap & Trade" or "baseline & credit" to emission permits has been a worthless debate. The key issue is allocation of permits, and emission liabilities.

1.2. Permit trading – useful, but a distraction

2.1. The prime benefit of emission permits, or "emission reduction requirements", is the ability to provide strong incentives for small emission reductions without significantly increasing the price of energy, thus minimising both inequitable distributional impacts and restructuring & economy-wide costs.

2.2. If permits were imposed at the generator level, then whether auctioned or freely allocated to generators they would result in significant energy price rises. Compensation to consumers via auction revenue would be hampered by the inefficiencies of Government expenditure, whilst with free allocation there would be no Government revenue available to compensate consumers. Furthermore, if permits were freely "grandfathered" to generators, this would grossly distort the new competitive electricity market, providing protection to existing polluting generators that does not presently exist, increasing their profitability and *increasing* the barriers to new reduced-emission players.

3.1. To minimise (or compensate) energy price rises, and hence the impact on energy consumers, emission permits should be freely allocated to energy customers (or rather, retailers on their behalf).

3.2. Emission *liabilities* should be placed on retailers (on behalf of customers), not generators, with permits freely granted to retailers based on their current (not past) customer base.

3.3. Retailers are best placed to both contract for low emission generation and engage in demand side management.

3.4. Such a retailer emission control scheme would be a natural and consistent extension of the current "2% renewable" requirement on retailers, the existing emission reduction requirements on NSW electricity retailers (under the 1995 Electricity Supply Act), and similar retailer-based schemes currently under serious consideration by the Victorian & Queensland Governments.

3.5. A "feebate" version of retailer permits would reduce uncertainty & disincentives to emission reduction & trading, and may produce surprisingly large emission reductions (below the Kyoto target).

The following discussion expands on the points above.

1. The existing emissions permit trading debate

For over two years now, an intellectually moribund emissions trading debate has revolved around the issue of "cap & trade" vs "baseline & credit". Yet in the case of freely allocated permits (implicit with baseline & credit), the two approaches are identical. Under cap & trade, permits may be freely allocated to liable participants, and the Government would have to decide how many to grant them – a baseline level. The result is that if the receiving entity produces less emissions than its permit allocation then it will have an excess of permits (or "credits") that it can sell. This is identical to the baseline & credit model. It's time the debate moved on.

Tradable Permits are a red-herring

There has been far too much hype about tradable permits as a market mechanism for reducing emissions at least cost. Certainly at the international level, permit trading may well have value. This is because the prime benefit of permit *trading* is to reduce emission abatement costs *when participants have emission reduction requirements with different marginal abatement costs*. This situation is one that is deliberately imposed for the case of developed vs developing countries, on the grounds that poorer countries should incur lower marginal emission reduction costs. However, at the domestic level, the policy intent will generally be to impose emission reduction requirements (i.e. allocate permits) on participants throughout the national economy in a manner that more nearly imposes more uniform (& hence "fairer") marginal emission reduction costs. Consequently, at the domestic level, the benefits of *tradable* permits are somewhat over-hyped (though still useful, given imperfect permit allocation).

2. Why Permits?

If the tradable aspect of permits may be something of a red herring, why then consider "permits" at all? We need to recognise the benefits of permits themselves – which will explain why despite the rhetoric over the desirability of market-based solutions, time & again governments the world over resort to direct regulatory controls to combat issues such as this.

Emission permits, or "reduction requirements", applied to retailers would have dramatically lower energy price impacts than carbon taxes (or permits applied to generators)…

The simplest form of price-based emission regulation is the carbon tax. No government in the world is considering this tool at any significant level. Why? Because it would unnecessarily increase energy prices, causing major economic restructuring costs and cause an unfair and politically unacceptable redistribution of wealth (even with the most optimistic compensation efforts from Government carbon tax revenue).

The principle of the carbon tax is to *increase* the price of undesirables. The alternative is to apply regulation that *forces* the reduction of undesirables, &/or to subsidise preferable alternatives (i.e. *reduce* their price).

In choosing the preferred form of regulation it is essential to consider the wealth distributional impacts and to recognise the dynamics of the emission reduction programme and the associated gradual market transformation.

Specifically, in the early stages it is only desired to reduce emissions by a relatively small percentage. Also in the early stages, the cost of alternative emission-reducing technologies will be high (hence requiring large incentives), but these costs will reduce over time as economies of scale and continual improvements are achieved. These factors suggest it would be better to temporarily subsidise a small group of alternatives down to current (energy) prices, rather than to temporarily (& substantially) increase the bulk of existing prices (with resulting industry restructuring costs), only to see prices fall again later (with further restructuring) as economies of scale in new technologies are achieved.

To provide a simple quantitative example, let us assume a 10% emission reduction target (relative to Business As Usual – BAU) during the first 5 years of regulation, and an initial marginal abatement cost of \$50/tCO_2, which for simplicity can be equated to \$50/MWh of conventional coal-fired electricity generation avoided (i.e. assume 1tCO_2/MWh). Assume also a simplified electricity market with an average pool price of \$50/MWh (pre carbon tax), and a retail distribution cost of \$50MWh, resulting in a retail price of \$100/MWh (10c/kWh).

If a carbon tax is then applied at a sufficient level to reduce emissions by 10% (ie. at \$50/tCO_2), then the pool price of electricity will double to \$100/MWh, and the retail price will increase 50% to \$150/MWh. Clearly this would have major impacts on the poor, and on energy intensive industries (with knock-on impacts throughout the economy). No wonder a carbon tax is off the political agenda.

Now instead consider old-fashioned regulation – an order by the Government for retailers (& large customers) to reduce by 10% the emissions associated with their purchases. (This is the same as holding retailers liable for emissions and freely granting them permits equal to 90% of their BAU emissions.) A retailer previously buying 100MWh of coal-fired electricity (causing 100tCO_2) will now reduce its purchases of coal-fired electricity to 90MWh (still at \$50/MWh), thus avoiding 10tCO_2 emissions. To meet demand, the retailer will then buy another 10MWh of renewable energy (or demand side management activities) at \$100/MWh (\$50/MWh + \$50/tCO_2 marginal abatement cost). The total cost will be 90 x \$50 + 10 x \$100 = \$5,500 and the average cost will be \$55/MWh. The retail price will thus rise by only 5% to \$105/MWh – **a price rise 10 times less than that imposed by a carbon tax**.

This minimising of energy price rises is the fundamental advantage of "emission reduction requirements", or "permits".

Note that the effect of permits is the same as if the Government were to "recycle" carbon tax revenue back to electricity consumers as compensation. However, there is always the temptation (& lobbying) for governments to use the revenue in other ways, and perhaps to develop an addiction to it & its source. The retailer-permit approach on the other hand can avoid the administrative cost of recycling cash flows by never requiring it in the first place.

Auctioned permits would have exactly the same energy price impact as a carbon tax

It is important to note that the benefits of this retailer-permit / emission reduction requirement approach depend on the form of implementation. Particularly, if the Government were to auction permits (either to retailers, or to generators if they were liable for emissions) then the result would be essentially the same as with a carbon tax. i.e. a large increase in energy prices and a need for Government to redirect revenue back to consumers.

Freely "grandfathering" permits to generators would be uncompetitive, inequitable, inefficient & possibly counter-productive

Finally consider the case where permits are freely allocated to existing generators ("grandfathered") & generators are liable for emissions. In this case the generators holding the permits would have monopoly power until demand exceeded the level where all permits had been used. Below this level therefore, generators would be able to raise their bids (& hence the pool price) by the marginal abatement cost (permit trading value). Generation above this level would of course (by definition) also have the permit price premium. In other words, the impact on pool prices (& customer finances) would again be the same as with a carbon tax or auctioned permits. This time however, there would be no Government revenue available for compensation, as this wealth would all have been handed to the generators.

The significant increases in energy prices could easily outweigh the effect of the reduced output of existing generators, and hence the profitability of existing polluting generators could actually increase (at the consumers expense), whilst the uncompetitive grandfathering of permits would create new barriers to low-emission competitors. The result of such regulation would be higher prices, less competition, reduced

innovation and even perhaps higher emissions than BAU (e.g. if the BAU growth of gas turbines was underestimated and too many permits then allocated to coal-fired generators).

Economic costs of emission reduction depend on the form of regulation

It is recognised that the above discussion does not account for the real complexities of generator bidding, dispatch and pool price variation throughout the day. These details create some considerable uncertainty as to the actual outcomes of such a permit scheme.

The important points to appreciate however are:

- **Practically all economic modelling of the cost of Australia reducing emissions (including ABARE's modelling, which has played such a key role in the Government's policy position) has been based on the assumption of a carbon tax or a generator-based permit scheme, and it is these assumptions that directly lead to the significant energy price rises and economic costs that these models predict.**
- **The simplicity and clarity of a retailer-based scheme clearly shows that emission-reduction requirements can be imposed with minimal energy price rises and hence minimal economic costs.**

A permit per MWh generated?

A variation on a generator-based permit scheme could grant a permit of say, $0.7tCO_2$/MWh generated. This would minimise price rises via the same principles discussed above for retailer emission reduction requirements. However, it would not reward or encourage demand side management in the way the following discussion suggests a retailer-based permit scheme would.

3. Grant Permits Freely to Retailers Based on Current Customer Base

The above discussion, highlighting the ability to minimise energy price increases & the associated knock-on economic costs, should demonstrate the clear advantages of applying emission-reduction requirements on retailers (i.e. imposing emission liabilities on retailers & freely granting permits to them).

Furthermore, **a retailer-based scheme can be fully compatible with the new competitive energy market**. Firstly, all emission-producing generators, existing and new, would compete with each other to supply energy up to the retailers' level of permits. And secondly, by allocating permits to retailers based on their *existing* customer base (allocation could, for example, be based on their customers' historic consumption, or on the basis of $XtCO_2$ per customer & $YtCO_2$ per business customers' value-added (i.e. GST liability)), retailers will compete amongst themselves (on the full introduction of customer choice) to attract customers, and their customers' allocation of permits.

Far from being anti-competitive, **this retatiler-based scheme would result in a highly competitive market for reducing emissions**, with differences in retailers' energy prices driven by how cost-effectively they contract for low emission services. This may involve investing in their own embedded low-emission generation, contracting with generators feeding into the pool to claim the right to their emissions (a mechanism adopted as part of the NSW environmental requirements on electricity retailers), or subsidising energy efficiency measures for customers. The latter mechanism could be a powerful driving force for accelerating the transition of energy retailers to full "energy service companies".

Retailers would also compete in the way they structured and distributed emission-reduction costs and incentives to customers. For instance, whilst there would be some inevitable approximations and perhaps

unfairness in the way Governments allocated permits to customers, retailers would have the opportunity to aggregate the permits of all the customers that choose them as their provider, and then apply incentives and disincentives to those customers showing the greatest response to these incentives. Retailers might also vary the structure of incentives, for example, rather than applying a uniform price increase they may choose to create a stepped tariff, where customers experience no change in prices for the vast majority of their consumption (corresponding to the customers' level of allocated permits), but incur a significantly higher tariff above this level. This approach may be attractive to customers for its consistency with a social equity view that all people are reasonably entitled to a basic level of energy consumption, but consumption above this basic level is more of a luxury and so is more reasonably charged at a higher rate.

The unique ability of retailers to respond to emission reduction requirements in all the above ways seems to have been lost in the all-too-abstract emissions trading debate. *These benefits would not exist in a generator-based scheme*.

Retailer permits are a natural and consistent evolution of existing and proposed legislation

Given the overwhelming advantages of retailer-based emission reduction requirements, it is perhaps not surprising that existing and proposed legislation adopts exactly the same principles as described above (although explicit recognition of the benefits above is surprisingly absent in the national emissions trading debate). This legislation includes the environmental requirements of retailers in the 1995 NSW Electricity Supply Act (though currently lacking teeth due to an absence of fines for exceeding the permit), similar proposed legislation by the Victorian & Queensland State Governments, and the Federal "2% renewable" programme (essentially a free permit for emissions from 98% of retailers' electricity sales, with the remaining 2% of energy service demand to be supplied by specific technologies).

Intra vs inter-industry trading and "feebates"

As has been described, requirements for retailers to reduce emissions are essentially equivalent to freely granting them an insufficient number of emission permits. By then permitting the trading of permits it is possible for retailers to meet their requirements either independently, or by buying spare permits from retailers that reduce emissions by more than required, or by buying emission reduction "credits" from other sectors of the economy (e.g. officially audited forestry projects).

One possible disadvantage of relying on trading however is that there may be strategic disincentives to intra-industry trading (i.e. retailer to retailer). This may be because a purchaser of permits would stand to reduce their costs (or avoid fines) from the trade, whilst the holder of excess permits may prefer to see their competitor incur the higher costs, and so may not sell them the permits.

Another disadvantage of relying on trading is that is that the fixed level of emission reductions demanded by the Government creates uncertainty as to the value of permits. This uncertainty in permit value necessarily raises the rate-of-return hurdle on potential emission-reduction projects, thus raising the cost of finance and ultimately, the cost of reducing emissions. This uncertainty over the cost of emission reductions also slows the implementation of policy.

"Feebates" are an alternative permit-based system that remove this price uncertainty by ensuring emissions are reduced to whatever level is achievable at a Government-set maximum marginal abatement cost – say, \$20/tCO_2. The "permit" level of each retailer is then based on the average achieved by all retailers in the industry – for example, at the industry-average emissions per customer multiplied by the number of customers the retailer has. Retailers that reduce emissions below this level then receive a "rebate" of \$20 for each tCO_2 below this level, and these rebates are paid for by fees (per tCO_2 above the permit level) imposed on those retailers with emissions above the industry average. This process is essentially compulsory trading at a fixed price between retailers demonstrating greater or lesser abilities to

reduce emissions. Besides reducing risk for the industry, and hence encouraging greater emission reductions at lower cost, such a “feebate” scheme would also provide an incentive for emissions to be reduced *below* any level that the Government (or the Kyoto treaty) may set. This feature of feebates is potentially of significant political advantage for attracting the support of environmentalists and energy efficiency advocates who believe that Australia can, and should cost-effectively reduce emissions below the levels agreed for Australia at Kyoto.