

**Caltex Australia Limited submission to  
Garnaut Climate Change Review Emission  
Trading Scheme Discussion Paper**

**April 2008**

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**Summary**

Caltex is Australia's largest refiner and marketer of petroleum products. Under an Australian emissions trading scheme (AETS), one option is that liquid fuel suppliers would have to hold permits for the emissions from the liquid fuels purchased by customers (referred to in the discussion paper as an upstream point of obligation and also commonly referred to as an "upstream point of acquittal"). The cost of the permits would have to be recovered fully from customers through the market.

At a carbon cost of \$40 per tonne of carbon dioxide, Caltex would have to purchase \$1.4 billion of permits annually for its customers' 35 million tonnes of emissions from fuel combustion. This would impose a huge and inequitable financial risk on Caltex far out of proportion to our earnings and financial capability. In contrast, we acknowledge responsibility for our own 2 million tonnes of emissions (mainly from refining), which would cost about \$80 million annually \$40 per tonne of carbon dioxide but which we consider should receive a full offset for the loss of competitiveness of oil refining as a trade-exposed emissions-intensive industry.

In considering application of emission trading to all liquid fuels, including that used by private motorists, we believe the Garnaut Review and the Government should take the following into account:

1. A carbon price of \$40/tonne of carbon dioxide (equal to about 10 cents per litre of petrol) would not be environmentally effective in reducing emissions from liquid fuels. For example, it would reduce petrol emissions by only about 2 million tonnes annually after 10 years, out of a total of 47 million tonnes annual emissions.
2. The integrity of the AETS could be preserved if coverage was limited to large end users of liquid fuels (ie above the emission trading threshold) and smaller users including private motorists were excluded from coverage. If smaller liquid fuel users were excluded from the AETS, this would mean that some alternative to the carbon market would be required to reduce greenhouse gas emissions from petrol and other liquid fuels. However, such alternatives should be considered with caution.
3. The ACCC Petrol Prices Commissioner will want to monitor the impact of carbon prices on the market. Under emission trading, carbon pricing will not be transparent as there can not be any agreement between suppliers on methodology for carbon pricing and methodologies would vary. The problem of carbon price transparency and monitoring could be reduced by frequent permit auctions: in essence, a weekly carbon auction in which there was substantial participation by liquid fuel suppliers could provide a benchmark carbon price for ACCC price monitoring, although there should be no restriction on pricing of the carbon implicit in market prices.
4. Emitters above the AETS threshold ("large end users") should have the liability to acquire permits for their emissions from liquid fuels and acquire these annually to the AETS regulator. Emitters below the threshold would not be subject to permit liability because of high transaction costs and either could be (a) exempt from coverage or (b) permit liability could be imposed on their liquid fuel suppliers for the emissions implicit in the volumes supplied.
5. An AETS with both upstream point of acquittal and large end user liability could not be implemented by 2010 because of the time required to make the necessary accounting system changes once AETS design and regulation is completed. However, such an AETS design could be phased in. In the confidential attachment to this submission, Caltex proposes a simple and robust set of rules can be regulated to allow end user liability to operate, including appropriate treatment of non-fuel users of liquid fuels.

6. In relation to an upstream point of acquittal for liquid fuels, there should be a weekly auction of permits. If a permit auction was held at annual or six-monthly intervals, there is no way Caltex could fund the purchase of more than a small fraction of the permits it would need at the auctions. Caltex's current debt level is about \$600 million and this debt could not be increased to \$2 billion for an annual auction. The net effect of financial intermediaries purchasing permits for resale to fuel suppliers would be to reduce the return to government from auctions, increase the return to shareholders of the financial institutions (including overseas shareholders) and limit the recycling of auction revenue to households and for other uses by about \$200 million pa.

7. An upstream point of acquittal has significant implications for the way auctions operate, causing them to deviate greatly from the idealised model. A fuel supplier could not bid a cost curve at auction so could not contribute directly to formation of the market price for carbon. Similarly, an upstream supplier could not contribute directly to the forward price of carbon through either auction or the secondary market. An upstream fuel supplier can only be a price taker, paying the price for carbon determined in other sectors of the economy or through speculative market activity.

8. A consequence of Australian refinery pricing is that any increase in production costs due to the AETS cannot be passed through to customers as the import parity price and actual cost of imports will not change, so refinery prices will not change. Accordingly, oil refining should be treated as "trade exposed". ABS input-output data for 2002 suggests the emissions intensity of the general economy at \$20/tonne CO<sub>2</sub>e divided by value added is about 1.65%. The comparable value for petroleum and coal products (mainly petroleum refining) is 15.25%. These figures suggest a strong empirical case for considering refining as emissions intensive.

9. Caltex argues that arrangements need to be made to fully offset the loss of competitiveness arising from the introduction of an AETS until offshore competitors have comparable carbon costs. We disagree that loss of profits alone does not make a sufficient case for transitional arrangements and we also argue that potential relocation is not an appropriate ground for eligibility. Specific arguments are made against the methodology proposed in the discussion paper.

## **1. Introduction**

### **1.1 Background to Caltex**

Caltex is Australia's largest refiner and marketer of petroleum products, which include petrol, diesel and jet fuel. Our two refineries located in Sydney and Brisbane manufacture these products in competition with imports from overseas refineries, mainly in Singapore, as well as production from other Australian refineries. We have no oil or gas production interests so all our crude oil must be purchased from Australia and overseas. We also import petroleum products as our refinery production is less than sales.

Caltex is an Australian company with an international brand. While US oil company Chevron is a 50% shareholder, all decisions are made in Australia by Caltex's management and board. We have some clear views on climate change and the policies that are needed to address the serious issues we all face.

Caltex therefore is pleased to have the opportunity to make a submission to the Garnaut Climate Change Review on its March 2008 *Emission Trading Scheme Discussion Paper*. The submission concentrates on the section of most direct relevance to Caltex: coverage and point of obligation (section 3.4), auctioning (section 3.5) and avoiding distortion in trade-exposed, emissions-intensive industries (section 3.8).

### **1.2 Caltex and climate change**

Caltex's views on climate change are as follows:

- Caltex accepts the science behind global warming. The Intergovernmental Panel on Climate Change, a body set up by the UN in 1988, says it is very likely the increase in temperatures since the mid twentieth century is a result of increased greenhouse gases in the atmosphere from human activity.
- Climate change presents a significant risk to economies, societies and the environment and Caltex is helping to tackle this problem. There are costs for Caltex in reducing emissions but also opportunities, and a responsibility to the community to act.
- Caltex supports setting a national goal for reducing greenhouse gas emissions by 2050. This goal should be determined and adjusted from time to time on the basis of the best available science. We believe a long term aspirational goal for emissions reduction is important. We accept climate change is a serious issue and our business is likely to change.
- Caltex supports the introduction of a national pricing mechanism for controlling carbon emissions in 2010.

We have some specific views on the design of a pricing mechanism. An Australian emissions trading scheme (AETS) would be most appropriate for point source emissions of greenhouse gases from industry, including refinery emissions of carbon dioxide, but Caltex believes a carbon tax would be a better scheme for liquid fuels, including fuels used in the transport sector. It would be simpler, more transparent and more certain while achieving at least the same reduction in emissions.

However, while there are good technical arguments in favour of a hybrid carbon tax/emissions trading scheme of this type, Caltex recognises that the government is not in favour of such a system and the discussion paper also effectively rules it out. Consequently our comments in this submission and our ongoing advocacy efforts will concentrate on least cost and risk implementation of the AETS.

### 1.3 Climate change policy risks for Caltex

Carbon pricing would impact Caltex in two main ways. Firstly, as a cost associated with emissions from company operations, in particular our two refineries. The second issue arises from carbon emitted from our transport fuel products – that is, emissions from our customers.

For carbon emitted due to company operations, the main commercial risk arises from imported fuel if overseas refineries do not bear the same cost of carbon as Australia. This is because the majority of imports are mostly from non-Annex 1 countries under the Framework Convention on Climate Change, such as Singapore, Taiwan and Korea, which are unlikely to impose direct carbon costs on their industries for many years. Australian refiners would bear carbon costs on their refinery emissions of greenhouse gases whereas overseas competitors would bear no such costs, giving them a competitive advantage and threatening the viability of local refineries.

If carbon costs were high enough, this could start to affect the viability of some Australian refineries. Caltex therefore argues that government policy should maintain the competitiveness of Australian export and import competing industries and, in particular, protect energy-intensive, trade-exposed industries from the impact of any emission trading scheme while competing nations are not subject to commensurate emissions reduction policies.

A second commercial risk arises from an “upstream point of acquittal” in an emission trading scheme ie the point at which carbon emission permits must be held for greenhouse gases emitted during a year and then surrendered to a regulator (or “acquitted”).

Under the emission trading scheme proposed by the former Australian Government's Task Group on Emission Trading and considered in Section 3.4 of the discussion paper, suppliers would have to hold permits for the emissions from the transport fuel purchased by customers. The cost of the permits would have to be recovered from customers through the market ie from the emitters of the greenhouse gases. This requirement to hold emission permits on behalf of customers would apply to petroleum products sourced from Australian refineries as well as imports.

Australia's annual greenhouse emissions were 559 million tonnes in 2005. As a company we emit directly about 1.8 million tonnes. Our products, once used by our customers, emit another 35 million tonnes, mainly from vehicles. That is, emissions by customers from using Caltex's petroleum products are 20 times greater than emissions from making the products.

Out of total Australian greenhouse gas emissions in 2005 of 559 million tonnes of carbon dioxide equivalent, about 8 per cent was from use of petrol, 8 per cent from diesel and 4 per cent from jet fuel and other fuels. To manufacture these fuels, oil refineries produced about 1 per cent of Australia's emissions.

#### Australian greenhouse gas emissions

- Total Australian GHG emissions 559 Mt CO<sub>2eq</sub>
- Contribution of petroleum products
 

Petrol (motorists)	47 Mt	8%
Diesel (transport/industry)	44 Mt	8%
Jet/other fuels	22 Mt	4%
Total	113 Mt	20%
Refinery emissions	5 Mt	1%

If the carbon market is volatile (as has been the case for example in the EU market), the cost of acquisition could vary greatly between suppliers and the ability to recover could vary with market conditions. At a carbon cost of A\$40 per tonne of carbon dioxide, Caltex would have to purchase \$1.4 billion in permits annually – then increase our prices to recover the money. This would impose a huge financial risk on Caltex far out of proportion to our earnings and financial capability. We believe the environmental principle of polluter pays should apply so Caltex is not unfairly exposed to this risk.

Under the European Union Emission Trading Scheme in 2006, carbon prices varied over a five week period from the equivalent of 12 cpl down to 4 cpl and back to 8 cpl. While this may be an extreme example of volatility, such rapid fluctuations in price when passed on to motorists could give rise to political issues and questioning about the fairness of the carbon taxes implicit in the price – questions that would be difficult to answer under emission trading.

With an emission trading scheme starting in 2010, Australia will be entering uncharted waters and the carbon market is likely to be uncertain and volatile. In addition, there will be no trial period to sort out problems in a market that could be trading emission permits worth \$17 billion annually.

## **2. Coverage**

### **2.1 Emission trading for all liquid fuels may not be environmentally effective**

How much would a carbon price reduce emissions from liquid fuels? A carbon tax of A\$40/tonne of carbon dioxide equates to about 10 cents per litre of petrol. At a petrol price of 140 cents per litre, this would result in a 7% increase in price. Petrol is highly price inelastic in the short run (say one year) and significantly inelastic in the long run (say 10 years, allowing for turnover of vehicle stock). Academic estimates vary but representative short and long run elasticities of petrol demand with respect to price are -0.1 and -0.5 respectively.

This means that a \$40/tonne carbon price would reduce demand by 0.7% after one year and 3.5% after 10 years. These changes equate to 0.3 million tonnes of carbon dioxide after one year and about 2 million tonnes after 10 years. Australia emitted 559 million tonnes of greenhouse gases in 2005, of which petrol accounted for 47 million tonnes. It follows that applying emission trading to petrol would be highly ineffective in reducing emissions. Effectiveness could be increased if consumers were made aware of the impact of carbon costs.

The same conclusions could be drawn for diesel as for petrol, although the elasticity of diesel may be lower than petrol because of the lack of alternatives to diesel for road freight and many other off-road automotive uses, including mining, construction and farming equipment. We note this lack of alternatives could place substantial cost pressures on fuel users, reducing their international competitiveness unless the AETS provides some administrative allocation of permits or other offset for trade exposed emission intensive industries.

The low price elasticity of demand for liquid fuels is not a sufficient argument for excluding liquid fuels from the AETS but does raise questions about the effectiveness of their inclusion. If the benefits of covering all liquid fuel users are low but the costs and risks are high (including financial costs and risks to particular parties such as Caltex), this may be an argument for limiting coverage.

In particular, Caltex considers that the integrity of the AETS could be preserved if coverage was limited to large end users of liquid fuels (ie above the emission trading threshold) and smaller users including private motorists were excluded from coverage. The arguments in support of this position include price monitoring, price formation in the carbon market and financial costs and risks to fuel suppliers, as discussed in this submission. This policy option should be evaluated by the government.

If smaller liquid fuel users were excluded from the AETS, this would mean that some alternative to the carbon market would be required to reduce greenhouse gas emissions from petrol and other liquid fuels. However, such regulation should be considered with caution, recognising that the price signal from emissions trading is intended as the primary policy instrument for carbon abatement in Australia. This is different from Europe and the US where emissions trading is applied (or will be applied) as a complementary policy to regulatory measures, such as vehicle fuel or carbon efficiency targets and biofuels mandates.

Australia needs to be cautious about overlaying market-based policies and regulatory measures to address the same issues. Market failures may legitimately be addressed with regulation to reduce

liquid fuel use, such as congestion pricing for urban areas, improved public transport and urban design, and grants for research into advanced vehicle powertrains and alternative lower-carbon fuels.

## 2.2 Emission trading for all liquid fuels could reduce the transparency of petrol prices

### *2.2.1 Petrol price formation*

To understand the issue of petrol price transparency with carbon pricing, it is essential to understand a little about price formation in petroleum product markets. Petrol prices are the most topical and politically sensitive, although diesel prices are also very important.

Petrol prices in Australia are based on an international benchmark price, the export price from Singapore refineries, the closest import alternative source of Australian quality fuel. Refiners and importers then build up to wholesale prices in varied but similar ways and all quote wholesale prices ex-terminal in Australia. Australian market prices are closely related to international market prices for petroleum products, not the cost of manufacturing petroleum products from crude oil in Australian refineries.

Petrol manufactured in Australian refineries or imported is stored under bond before being "entered for home consumption" for excise purposes. When petrol leaves a bonded storage terminal by truck, the volume is carefully measured at the loading rack. Actual volumes sold from such terminals are corrected for invoicing and excise purposes to the volume at 15 degrees Celsius (known in oil industry jargon as the L15 volume or litres at 15 degrees). This is a legal requirement under trade measurement and excise legislation. For supply from non-bonded locations such as oil company depots and service stations, volumes are not temperature corrected because of the cost of measurement and not required by law. At the terminal loading rack, the supplier from each terminal becomes liable for excise tax of 38.14 cents per litre. This must be calculated and paid to the federal government weekly. As all suppliers are subject to exactly the same rate of tax, the 38.14 cents per litre is undoubtedly included in all prices. The supplier is only a tax collector and there is 100% recovery of the tax through higher prices. This is generally seen as one of the most efficient forms of tax collection.

### *2.2.2 Price monitoring*

Enhanced monitoring of petrol prices was a key election commitment of the Commonwealth Government and a Petrol Price Commissioner has been appointed to carry out this role. The Minister for Competition Policy and Consumer Affairs has issued a price monitoring directive covering the three year period to December 2010.

Petrol excise is quite explicit and motorists know with certainty the rate of excise is 38.14 cents per litre (plus 10% GST). For the purpose of petrol price monitoring, the new Prices Commissioner can easily monitor market prices net of excise and GST.

With emission trading, monitoring of carbon price impacts would be very different. Each supplier would have to take account of carbon costs in a unique way. There would not and could not be any agreed methodology for carbon pricing between suppliers because that would be illegal under the Trade Practices Act. Moreover, different companies would employ different strategies to manage carbon risk, including type of permit (including permits from other trading systems and the Clean Development Mechanism), timing of permit acquisition and source of permits supply. The cost of permits would then be recovered in various ways, possibly including pricing in advance if competitively possible in order to fund purchases.

There would be no price transparency and any regulation of carbon cost pass-through would not only be undesirable but also impossible because of the highly variable factors discussed above. In addition, errors in regulation through failure to recognise market realities (ie regulating at less than the real

carbon price) could have large and potentially disastrous financial consequences for the regulated suppliers.

The problem of carbon price transparency and monitoring could be reduced by frequent permit auctions, as suggested in the discussion paper. This is considered further in the section of this submission relating to auctioning. In essence, a weekly carbon auction in which there was substantial participation by liquid fuel suppliers could provide a benchmark carbon price for ACCC price monitoring, although there should be no restriction on pricing of the carbon implicit in market prices.

### *2.2.3 Carbon price awareness*

Every time motorists filled up at a service station, there would be little awareness of the carbon price, therefore little encouragement to motorists to think about driving less, taking public transport or buying a smaller car when possible. Only the increased petrol price would have a small impact through the price elasticity of demand for petrol. While not drawing attention to the excise component of petrol may have been politically desirable in the past, a carbon price needs to be communicated to be environmentally effective. The government should publicise estimates of the carbon costs in fuels as part of the overall effort to reduce Australia's greenhouse gas emissions.

### 2.3 Point of obligation ("point of acquittal")

Point of obligation is also known as "point of acquittal". The simplest form of upstream point of acquittal would be based on the volume of liquid fuels sold from terminals and other bonded premises subject to excise and there should be complete equivalence of liquid fuels subject to excise and emission trading. In this way, existing excise accounting systems including verification procedures could be adapted to calculate carbon liability. Constructing a different system based on a different point of liability would not be possible by 2010, taking into account the lead time for emission trading legislation and regulations, and measurement and accounting system design and implementation.

Caltex's view is that emitters of greenhouse gases should to the maximum practicable extent be responsible for their own emissions under the Australian emission trading system (AETS). This is consistent with the principle of polluter pays and also allows large emitters to contribute directly to price formation in the carbon market through participation in permit auctions and carbon market supply/demand.

Under the AETS, emitters above the AETS threshold ("large end users") should have the liability to acquire permits for their emissions from liquid fuels and acquit these annually to the AETS regulator. Large end users could include large commercial transport fleets, car rental and lease companies, mining and mining service companies, civil construction contractors, railways, shipping and airlines.

Emitters below the threshold would not be subject to permit liability because of high transaction costs and either could be (a) exempt from coverage or (b) permit liability could be imposed on their liquid fuel suppliers for the emissions implicit in the volumes supplied ("upstream point of acquittal"). As discussed above, option (b) might be cost-effective but not environmentally effective or justified on cost-benefits grounds.

To achieve the design outcome of upstream point of acquittal combined with large end user liability, accounting system modifications (a "carbon tracking system") would be needed that enabled the AETS to avoid double-counting of emissions: some supply would be "carbon inclusive" (ie permit liability lies with the supplier) and some supply would be "carbon exclusive" (ie permit liability lies with the customer). For practical reasons, suppliers and customers would probably agree to set the basis of supply relatively infrequently (eg annually) rather than on a transaction by transaction basis. The system would also allow accounting for non-fuel uses of liquid fuels eg for solvents or chemical manufacture, biofuels production and exports.

An AETS with both upstream point of acquittal and large end user liability could not be implemented by 2010 because of the time required to make the necessary accounting system changes once AETS design and regulation is completed. However, such an AETS design could be phased in from 2010 with the nature of the phasing dependent at least in part on technical issues. These issues have not yet been fully explored with stakeholders.

A commonly envisaged scenario is that the AETS would be introduced in two phases, with all liquid fuel supply being carbon inclusive from 2010 in Phase 1 and large end users having liability imposed ("net out" option) or voluntarily taking on liability ("opt in" option) at a later date in Phase 2. Under this scenario, Caltex would prefer the "net out" or mandatory large end-user liability option.

However, the need to avoid imposing a carbon cost on non-fuel users of liquid fuels may require the reverse phasing, with large end users having to acquit carbon in Phase 1 with upstream supply liability for smaller end users to apply in Phase 2 including private motorists and non-fuel users. The reason for this is that some non-fuel users (for example chemical manufacturers) would be above the AETS threshold but their use of liquid fuels would not create an emission liability. Such users would need to net out the carbon implicit in "carbon inclusive" fuel purchases but would not have the means to do so until a carbon tracking system was developed some time after 2010. This problem would be avoided if there was no general upstream point of acquittal until the tracking system was in operation ie Phase 2.

Under any of the scenarios with mandatory large end users liability, a carbon tracking system would allow liquid fuel suppliers to make carbon inclusive sales to large end users who did not wish to manage their own carbon. The large end users would retain their legal permit liability but could negotiate with suppliers to effectively purchase their carbon for them - any carbon inclusive purchases would be netted out of the end users' emissions liabilities. This is an important policy point - permit liability and who actually acquires the permits are separate issues under an AETS with upstream point of acquittal.

Further details on how a carbon tracking system could operate are in the confidential attachment, including draft rules and a numerical illustration of the rules. The attachment is confidential because the material contained is work in progress and Caltex would like to more fully engage with relevant stakeholders before making the details public.

However, the key point is that Caltex believes on the basis of quite detailed consideration that a simple and robust set of rules can be regulated to allow end user liability to operate. This may require accounting system changes of varying complexity between liable entities, which may take an extended period to implement. The cost and time required for system changes needs to be weighed against the long-term benefits to the AETS of large end user liability and the reduction in cost and risk to upstream suppliers from having their larger customers self-acquit. At this stage Caltex believes the balance is strongly in favour of self-acquittal by large end users.

### **3. Auctioning**

#### **3.1 Frequency of auctions**

The discussion paper states that "auctioning would be made on a fixed schedule - weekly, monthly, quarterly or on any other basis that suited market participants". However, the paper also states that permits would be issued in advance of full AETS operation and it is unclear how far in advance of anticipated cost recovery permits would be issued.

Caltex's view is that in relation to an upstream point of acquittal for liquid fuels, there should be a weekly auction of permits. While this would incur some additional administrative costs, such costs would be greatly outweighed by the reduction in working capital requirements that would be incurred with less frequent auctions. This auction would most likely have to be open to all market participants but the number of permits on offer would take into account current liquid fuel supply volumes as well as

the requirements of other greenhouse gas emitters. A closed auction for upstream acquitters only might be possible but would require further consideration.

Such an auction would allow fuel suppliers to estimate carbon-inclusive liquid fuel sales for the coming week and purchase sufficient permits to cover the implied emissions. As fuel suppliers could not bid on the basis of a cost curve (other than for their own emissions), bid prices would have to be based largely on current secondary carbon market prices. Fuel suppliers could then build permit prices from the auction into fuel market prices for the coming week. If most market participants followed such an approach, this would assist with fuel price transparency for customers and the ACCC Petrol Commissioner and reduce financial cost and risk for fuel suppliers. Working capital cost could be reduced further if the settlement terms for the auction allowed time for cost recovery before payment for the permits was due.

Caltex notes there could be no agreement between competitors on such a pricing procedure because it would breach the price fixing provisions of the Trade Practices Act. It would also be undesirable to restrict fuel suppliers from following alternative permit acquisition and carbon pricing strategies.

### 3.2 Working capital cost to Caltex and impact on debt

The frequency of auctions has major financial implications for Caltex.

Based on the 2005 National Greenhouse Gas Inventory, emissions from use of liquid fuels by Caltex customers were about 35 million tonnes of carbon dioxide. By the time the AETS starts in 2010, this figure will have increased, so the following numbers are conservative. For a full upstream point of acquittal (no large end user liability), Caltex would have to purchase about \$1.4 billion of permits annually at \$40 per tonne of carbon dioxide.

If a permit auction was held at annual or six-monthly intervals, there is no way Caltex could purchase more than a small fraction of the permits it would need at the auctions. Caltex's current debt level of about \$600 million, with gearing of 25% (lease adjusted), is manageable. This debt could not be increased to \$2 billion because of constraints on debt and equity raising. All other liquid fuel suppliers would be in a similar position.

So what would happen? Petroleum product suppliers would be effectively locked out of the auction, a highly inequitable outcome. Financial institutions would purchase emissions permits for resale in relatively small parcels during the year to petroleum product suppliers. They would incur a working capital cost and would need to charge a risk premium for their speculative activity. Assuming a pre-tax return on capital of 20% (14% after tax) and an even sale of permits throughout the year, this would require permits to be purchased at auction for 10% less than the average secondary market price of carbon over the course of the year. This would reduce the return to government, increasing the return to shareholders of the financial institutions (including overseas shareholders) and limiting the recycling of auction revenue to households and for other uses (see discussion in Section 4.2).

For petrol, a 10% lower return from auctions equates to \$200 million per year<sup>1</sup> or 1 cent per litre cost to motorists compared to a system in which all permits were purchased by fuel suppliers at auction. In essence, annual auctioning would introduce a middleman between a petroleum product supplier and the government. In the case of liquid fuels, the middleman would profit from the emission permit transaction without adding any value.

A weekly auction would greatly reduce the financial burden of an upstream point of acquittal. At \$40 per tonne of carbon dioxide, a weekly auction would require Caltex to increase its debt by \$27 million for permits purchased on behalf of liquid fuel users, assuming immediate auction settlement and full cost pass-through of the carbon price to customers. As pointed out above, this debt impact could be

<sup>1</sup> Based on 50Mt carbon dioxide emissions from petrol, about 20,000 ML annual petrol sales and a carbon price of A\$40 per tonne of carbon dioxide.

reduced by delayed settlement terms. Increased debt of \$27 million incurred by weekly auctions would incur an additional interest cost of about \$6 million pa..

### 3.3 Financial risk

A weekly auction would greatly reduce the debt burden and working capital cost to Caltex but would not remove the huge potential risk of under-recovery of permit costs from the market ie through higher pump and contract prices.

Even a small under-recovery of emission permit cost, while insignificant in the context of total pump prices, could have a major impact on profitability because of the very low margins in fuel wholesaling and retailing. The essential problem lies with the permit acquisition costs and consequent market behaviour of competitors. These risks have to be managed for Caltex's own emissions but Caltex argues it should not have to bear the risks associated with its customers' emissions.

Caltex could face 3 to 30 times the carbon price risk of Australia's largest emitters.

To illustrate, the 2006 Australian emissions of BHP Billiton were 12.7 million tonnes of carbon dioxide equivalent and Bluescope Steel's emissions were 12.3 million tonnes, equal to about one third the emissions from Caltex's customers. However, as emissions-intensive, trade-exposed industries they should receive a full or very substantial allocation of free permits to offset this emission liability. There would be no free allocation of permits to motorists, nor to most other liquid fuel users.

To quantify the risk to Caltex, the carbon cost of Caltex's own emissions at \$40 per tonne of carbon dioxide would be about \$80 million annually, less an amount from free allocation of permits (or other form of offset as envisaged in the discussion paper) as an emissions-intensive, trade-exposed industry.

If the carbon acquisition price for Caltex was 5 percent higher than our competitors (ie \$42 per tonne) and market prices were based on competitors' carbon costs, the relative impact on earnings would be at most \$4 million or less than 1 percent of 2007 before-tax earnings of \$675 million (replacement cost of sales operating profit (RCOP) basis). Such a risk is manageable.

The carbon cost of Caltex customers' emissions at \$40 per tonne of carbon dioxide would be about \$1.4 billion annually. If Caltex's carbon acquisition price was 5 percent higher than the acquisition price of our competitors and could not be recovered at the pump (as is likely because of strong competition), the cost would be a very substantial \$70 million or 10 percent of 2007 before-tax earnings.

Caltex is prepared to accept the risk arising from its own emissions but believes it is highly inequitable to be forced to shoulder the risk on its customers' emissions. No other industry except perhaps natural gas is being placed in this position.

Caltex alone would have to purchase almost 10% of the permits in Australia's carbon market<sup>2</sup>.

### 3.4 Other sources of carbon market risk

The discussion paper states (p68) that for some time Australia's AETS will operate in a second-best world, where the global price of carbon could be unstable, and/or uneconomically high or low. It goes on to describe various factors that could create this second-best emission trading environment. These comments add realism to a debate that to date has often be addressed at the theoretical level of the perfect market.

While an idealised scenario has been necessary as a basis for initial discussion, Australia is now very close to implementation of an AETS that will impose real world risks on AETS participants. Caltex

<sup>2</sup> 37 Mt out an estimated 420 Mt carbon market (75% of Australian emissions), based on 2005 data  
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therefore regards as inequitable any AETS design that places an inequitable burden on particular market participants, as could occur with an upstream point of acquittal.

As discussed above, competitor strategies and market variability give risk to significant risk of permit price under-recovery, even in a well functioning market. Apart from these broad sources of risk, Caltex sees financial risk associated with emission trading arising from other specific sources, some of which have been noted in the discussion paper:

- Auction design – the discussion paper prepared for the National Emissions Trading Taskforce, *Further definition of the auction proposals in the NETT discussion paper, August 2007*, discusses various auction designs which may have discriminatory or uniform pricing. In addition, auctioning by its nature discriminates between bidders in terms of quantity supplied relative to individual demand, so that unsuccessful bidders must subsequently acquire permits through secondary markets. While auction design under AETS remains to be determined, it is almost inevitable that the auction itself will create inequities in relation to the price of emission permits for customers' emissions.
- Lack of experience of large scale auctions – the above paper notes, "There is no experience of auctioning more than 5% of total emission permits" (under various schemes for reducing greenhouse gas and other emissions). The paper also documents numerous problems and recommends a period of experimental testing before implementation. This effectively highlights the risks of auctioning as part of emission trading. Caltex's risks from auctioning would be greatly disproportionate to its own emissions.
- Teething problems – as experienced with the EU ETS, any scheme in its early years is likely to experience difficulties that could create price volatility eg from resetting of targets to modify pricing outcomes, creating a step change in pricing. There could also be significant design changes that give rise to step changes eg rules on offset availability. While all market participants will be subject to this risk, Caltex's much greater risk exposure would multiply the impact relative to other companies.
- Initial availability of international offsets (including for the purposes of this discussion linkages with other schemes) - if international offsets were not available in the early years of a scheme, this would increase the risk from price volatility within Australia due to the relatively small market and relatively large size of transactions on both the buy and sell sides of the market. Such price volatility has been experienced with the Mandatory Renewable Energy Target (MRET) and the NSW Greenhouse Gas Abatement Scheme.
- Access to Kyoto Protocol mechanisms – Australia has ratified the Kyoto Protocol but the future of the Clean Development Mechanism (CDM) and Joint Implementation (JI) is uncertain beyond 2012 so the availability of the key offsets, particularly CERs, is uncertain. (CERs - Certified Emission Reductions – are permits generated from Clean Development Mechanism projects.)
- Step changes in offset availability – if the market initially had few international offsets, the progressive addition of unilateral, bilateral or multilateral carbon trading arrangements, all with different dynamics and rules, would add further risk. For example, if a carbon trading partner were added to the Australian market at the beginning of a year (eg Canada), it would change both markets in ways that would take some time to become known through trading experience.
- Slowly emerging international market – there is no international carbon market, only a collection of partially linked markets. It will be many years, if ever, before a global carbon market emerges with the same rules and transparent pricing. This means that international carbon prices will be affected by the emergence of new carbon markets (ie carbon pricing schemes operating within national jurisdictions) fully or partially linking in with existing markets – the new linkages will affect the supply and demand of carbon, hence the price.
- Primary and secondary instruments – primary markets have less risk but lower prices than secondary markets. For example, the price of primary CERs averaged US\$10.90/tCO<sub>2</sub> in 2006 but traded at US\$14.30 to 19.50 in secondary markets. At these prices it would cost Caltex US\$120 to 300 million more to purchase the more secure secondary market CERs. Caltex would therefore

have to enter the business of acquiring primary CERs which is risky and complex and probably beyond a non-financial company of Caltex's size.

- Portfolio approach of multinational competitors – Caltex is an Australian company and will have to enter the carbon market as a minnow among global oil companies. Our Australian competitors are wholly-owned subsidiaries of very large international oil companies so should be able to access carbon offsets from their international parents, who will be able to build relatively low cost portfolios. For example, large multinational companies could afford to invest directly in primary CERs and spread the associated project-based risk. The same would be true of the emerging market in Emission Reduction Units (ERUs – permits generated from Joint Implementation projects).
- Market variability – even long-standing markets like crude oil are highly variable and unpredictable because of underlying supply and demand forces and random events. There is no reason why the carbon market – even when it eventually reaches reasonable maturity – to be any more predictable.
- Imperfect information – part of the problem in the EU ETS has been the lack of good inventory data, which the market relies on to make judgements. While the EU might improve, new carbon markets may face similar problems, creating market instability. This could also lead to "discount factors" being applied to permits from some countries.
- Market manipulation – some major sellers of CERs are centrally planned economies, notably China, and major sellers of ERUs are Russia, Ukraine and Bulgaria which have tight state control of markets. In 2006, China imposed an effective floor price on CERs. Direct or indirect manipulation of prices by centrally planned economies seems plausible.

While the AETS design may take many or all of these risks in account, Caltex remains very concerned about exposure to many of these risks once the AETS starts operating.

#### **4. Upstream point of acquittal for liquid fuels would not assist with carbon price discovery**

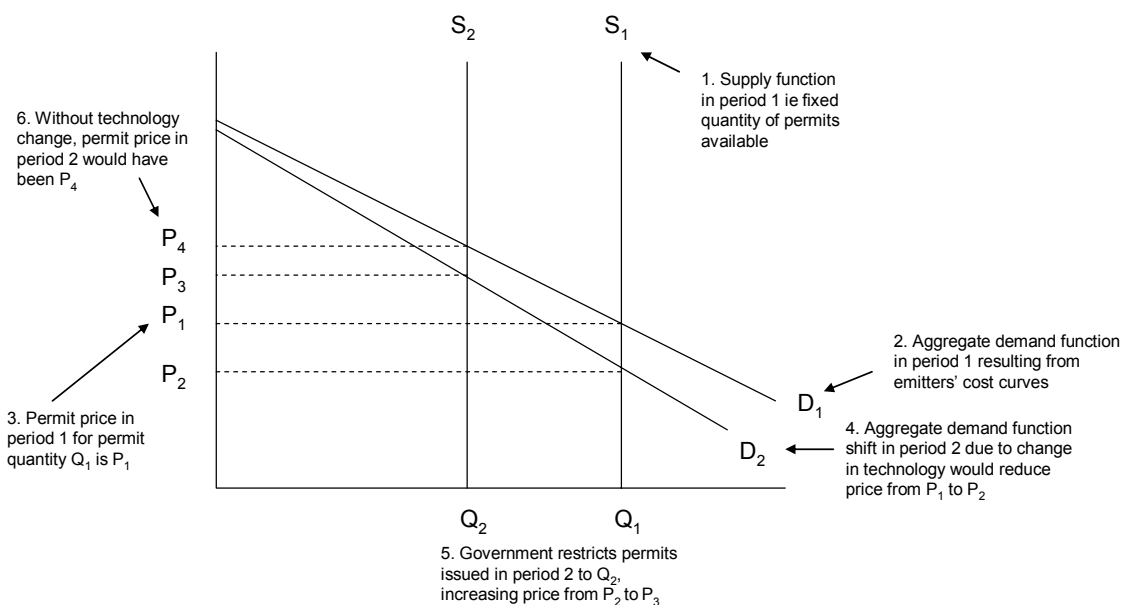
##### 4.1 Carbon price discovery through market operation

A general argument advanced in favour of emission trading relative to other policy instruments (eg carbon tax, regulation) is that it allows for price discovery based on the marginal cost of abatement by carbon emitters. In other words, if a facility emitting carbon dioxide (or another greenhouse gas) can reduce emissions at a cost that is lower than the market price of carbon, it will change its operations to reduce emissions in this way and not purchase carbon permits in the carbon market. As a result, the demand for carbon will be reduced and the price will fall.

The price for carbon is “discovered” through the operation of the market. In a perfectly competitive carbon market, the permit price would be the cost of emission reduction at the point where supply and demand for permits was equal ie the “marginal cost of abatement”. Demand would fall over time due to price-induced and exogenous technological change (assuming constant income) and supply would fall due to government restriction of permit supply, with the net effect producing a carbon cost curve over time.

Market operation is illustrated in the following chart. The numbered notes explain how the market changes over time.

## Carbon market operation



### 4.2 Carbon price discovery through auctioning

This submission makes a strong case for the government ensuring that suppliers liable under an upstream point of acquittal have the practical ability to acquire permits either at auction or through the secondary carbon market.

An upstream point of acquittal has significant implications for the way auctions operate, causing them to deviate greatly from the idealised model. Under an idealised market (without upstream point of acquittal), each fuel user would be liable to hold emission permits equal to their individual emissions. Each emitter would have the choice of emission reduction or purchase of permits and would bid at the auction on the basis of a known cost curve.

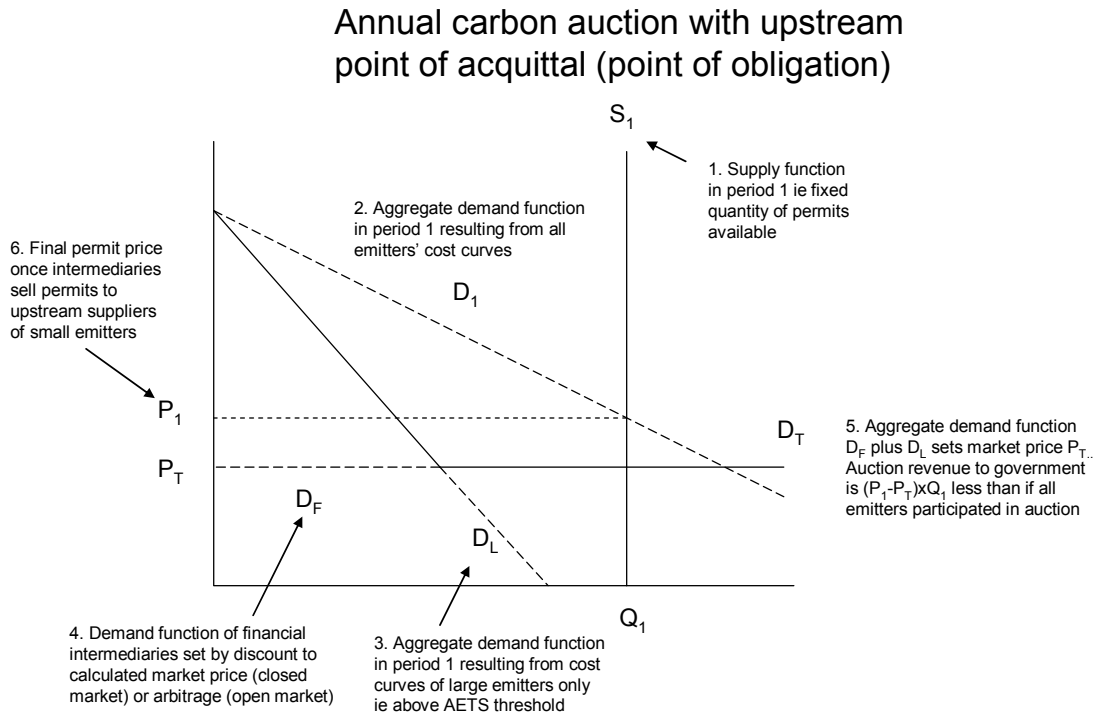
Permits would be purchased for emission reductions with costs above the market price and emission reduction measures would be taken for reductions below the market price. This is consistent with market operation as illustrated in Section 4.1. Auctions would simply be a way of introducing permits into the carbon market, where they could either be held before acquittal to the regulator annually (this would be the case for most permits) or traded.

With an "upstream point of acquittal" the situation is very different. Fuel suppliers would have to acquire permits equal to the calculated emissions from fuel supplied from bonded storage<sup>3</sup>. A fuel supplier would not have the option of reducing emissions from a particular piece of customer equipment and would have no knowledge of customers' cost curves.

<sup>3</sup> assuming the point of acquittal is the same as the point of excise liability  
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A fuel supplier therefore could not bid a cost curve at auction so could not contribute directly to formation of the current market price for carbon. Similarly, an upstream supplier could not contribute directly to the forward price of carbon through either auction or the secondary market. An upstream fuel supplier could only be a price taker, paying the price for carbon determined by costs in other sectors of the economy or through speculative market activity.

The following chart illustrates what would happen at an annual auction with upstream point of acquittal. The numbered notes explain how the market operates.



The total demand function  $D_T$  is inflected - a composite of the demand function for large emitters  $D_L$  and the price at which financial intermediaries would be prepared to purchase permits. While the chart is idealised, the key point is that demand at auction from entities with AETS liabilities is less than supply because of the financial inability of suppliers with upstream points of liability to participate in the auction. Financial intermediaries, having no emissions to acquit, would purchase permits at auction for the purpose of trading, offering a price that allowed them a return for working capital costs and risk.

With a weekly auction, suppliers with permit liability under an upstream point of acquittal would bid close to the current market price of carbon, with a view to recovering the cost in the near term. Financial intermediaries would play a much smaller role as liable entities would be able to purchase permits directly at auction instead of through the secondary market. Government auction revenue would be increased.

## **5. Avoiding distortion in trade-exposed, emissions-intensive industries.**

For the purpose of this submission, the term "trade-exposed, emissions-intensive industries" (TEEI) used in the discussion paper is interchangeable with the term "emissions-intensive, trade-exposed industries" (EITE) used by the Commonwealth Government.

### 5.1 Business environment and economic drivers for Australian oil refining

#### *5.1.1 Caltex operations*

Petroleum products are pervasive throughout the Australian economy. Caltex is in the business of refining crude oil into petroleum products, then distributing and marketing those products at the wholesale and retail levels; it has no oil or gas exploration or production interests and no overseas operations. Exports of petroleum products (excluding bunker fuels) are small relative to refinery production and incidental to Caltex's business. For example, Caltex exports some diesel that does not meet Australian standards and small quantities of butane surplus to the domestic market.

Caltex is an Australian listed company with about half our income coming from refining and half from wholesale and retail marketing. In 2007 our profit was \$444 million on a replacement cost basis. In the case of petrol alone, Caltex's profit after tax was around 1.5 cents a litre compared to the Australian Government's tax at the pump of approximately 50 cents a litre. Overall, Caltex has a high volume, low margin business.

#### *5.1.2 Australian refining and fuel supply/demand*

Australia has seven major refineries in operation. Earlier this decade, ExxonMobil closed its refinery in Adelaide and is now importing petrol and diesel mostly from its refinery in Singapore. It also scaled back its refinery in Melbourne to cut the cost of upgrading it to meet the 2006 national fuel standards. Caltex has two refineries, one in Sydney and one in Brisbane.

Australian refineries produce about 590,000 barrels per day of petrol, diesel and jet fuel or about 34,000 megalitres per year (1 barrel is 159 litres). This is well below Australian demand for these petroleum products, which is about 43,000 megalitres per year.

The shortfall in refining capacity means imports make up about a quarter of Australian demand for petrol, diesel and jet fuel<sup>4</sup>. Diesel is the product in shortest supply, with imports making up about one third of all diesel consumed in Australia.

Over the next decade, demand for petrol is projected to be fairly flat but demand for diesel and jet fuel is projected to grow strongly at 3 to 4 per cent per annum. Petrol demand growth is reduced by increased fuel efficiency and penetration of biofuels. Diesel demand is closely linked to economic growth and jet fuel to tourism. In 2007, for example, diesel demand in Australia increased by over 6 per cent due to strong growth in the industrial, mining and transport sectors.

Strong growth in demand for diesel and jet fuels means that imports will grow as no new refineries will be built in Australia and capacity increases at existing refineries will be much less than demand growth. One or two less efficient refineries may close over the next decade.

Imports in 2015 could equal 30 to 40 per cent of demand for petrol, diesel and jet fuel. By 2030 imports could be 50 to 70 per cent of demand<sup>5</sup>.

#### *5.1.3 Regional refining and supply/demand*

<sup>4</sup> 2006-7 demand for petrol, diesel and jet fuel equals total of sales of 42091 ML plus exports of 1169 ML. Imports of 9565 ML were 22 per cent of demand. Refinery production of petrol, diesel and jet fuel was 34120 ML.

<sup>5</sup> Demand growth is extrapolated at 0.2%, 4% and 3.5% pa for petrol, diesel and jet fuel. The higher numbers assume one notional refinery closure by 2015 and 2 refinery closures by 2030. These are scenarios, not predictions.  
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Economic growth, particularly in Asia, is driving global demand for petroleum products, particularly diesel, and keeping prices for diesel high. However, refining is a cyclical business. There was excess capacity in Asia in the late 1990s, particularly for petrol. Financial returns were unsustainably low and oil refining in Australia was in dire straits. Since about 2003, Asian demand has been very strong, particularly in China, and refining capacity has been scrambling to catch up.

Despite this, business cycles have not been eliminated and demand will not keep growing forever at a high rate. On the supply side, the prospect of higher returns has induced new investment and by about 2009 it is projected that enough refining capacity will have been added in Asia to bring Asian supply and demand back into balance.

For example, the new Reliance Petroleum oil refinery at Jamnagar in north-west India will be on stream in late 2008 making petrol, diesel and jet fuel for the export market. Its capacity of about 600 thousand barrels per day will be similar to the total capacity of Australia's seven oil refineries. The new refinery will complement the existing Reliance Industries refinery at Jamnagar, making a total capacity of 1.2 million barrels per day.

Large modern Asian refineries have economies of scale that mean lower unit costs than Australian refineries and higher energy efficiency. Apart from India, there are large oil refineries in Singapore and other refineries throughout Asia and in the Middle East with products for export to Australia.

#### *5.1.4 Competitive position of Australian refineries*

How can Australian refineries in compete with Asia? The answer lies in freight costs and efforts to reduce refining costs. Crude oil is imported in large ships – up to 200,000 tonnes. Petroleum products are imported in much smaller ships – up to 45,000 tonnes.

The key question for refinery viability is whether the landed cost of crude oil in Australia plus refining costs is less than the landed cost of petroleum products. The higher cost of freight for product imports provides a location advantage for Australian refiners.

In 2007, the freight difference for Caltex between small product ships and large crude oil tankers was US\$2.88 per barrel. However, this natural protection is eroded by the higher cost of refining in Australia which results from smaller scale, higher capital costs and better wages. So Australian refining is vulnerable to additional costs not faced by our international competitors, such as carbon costs.

Unless a competition offset is provided, \$0.80 per barrel<sup>6</sup> of Caltex's \$2.88 per barrel freight advantage over Asian refiners could be eroded. This level of carbon cost would probably make all of Australia's refineries uneconomic and shift production to Singapore, India and other countries that will not bear any carbon costs.

#### 5.2 Refinery prices and "trade exposed"

As discussed above, Australia will remain dependent on imports for the foreseeable future. The reality of import competition places a strong constraint on prices in Australia and reinforces import parity pricing as the essential basis of petroleum product pricing in Australia. Australian refinery costs play no part in the determination of Australian refinery prices - refiners are price takers and must accept the world price for their products.

Prices for petrol purchased from or sold to other refiners in Australia by Caltex are set under competitively negotiated contracts and are closely related to actual prices paid by Caltex for import

<sup>6</sup> \* Based on 1.7 Mt of refinery emissions, A\$40/t CO<sub>2</sub>e carbon price, 0.90 US\$/A\$ exchange rate, 12,100 ML fuel production in 2007.

cargoes. These "buy/sell" contracts are generally limited to a 6 month term due to volume and pricing changes over time between the buy/sell partners.

Pricing is negotiated based on an efficient import by the purchaser for supply into that location taking into account the source of the import, cargo mix and cargo size (based on available tankage). The international marker used is the Mean of Platts Singapore (MOPS) price quoted for the relevant product and quality grade, which is the marker used by all refiners for trade in the Asia-Pacific region. Actual prices are negotiated relative to this marker, taking into account factors such as local product quality. For example, Australia's fuel quality standards exceed those of many countries in the region.

Import prices ie the prices actually charged by overseas refineries are very close to buy/sell prices. This is further evidence that buy/sell prices track overseas refinery prices.

A consequence of Australian refinery pricing is that any increase in costs due to the AETS cannot be passed through to customers as the import parity price and actual cost of imports will not change, so refinery prices will not change. Accordingly, oil refining should be treated as "trade exposed".

### 5.3 Refining emissions intensity

Oil refineries consume a large amount of fuel for heating, compressing and pumping the materials being processed from crude oil into petroleum products. Combustion of this fuel creates substantial emissions of carbon dioxide, 1.7 million tonnes annually for Caltex's two refineries, plus 0.3 million tonnes of indirect emissions from electricity consumed, a total of 2.0 million tonnes of Scope 1 plus Scope 2 emissions.

Emission intensity must be measured relative to some measure of throughput. Caltex currently favours value added for this purpose as it allows comparison across industries and effectively provides a metric for emissions (which can be expressed as a carbon cost at some given carbon price) relative to a firm's returns to capital and labour. Other measures such as value of throughput fail to distinguish between firms within the supply chain and physical units do not allow for comparability across industries.

ABS input-output data for 2002 suggests the emissions intensity of the general economy at \$20/tonne CO<sub>2</sub>e divided by value added is about 1.65%<sup>7</sup>. The comparable value for petroleum and coal products (mainly petroleum refining) is 15.25% compared with general manufacturing at 3.08%. These figures suggest a strong empirical case for considering refining as emissions intensive. Caltex through the Australian Institute of Petroleum will be undertaking further work on the most appropriate measure of emissions intensity.

### 5.4 Discussion paper policy proposals

The discussion paper (p38) states "although a loss of profits alone does not make a case for special arrangements following the introduction of an ETS, there is a case for government intervention on economic efficiency grounds if the scheme leads to a misallocation of resources". It goes on to discuss potential relocation of activities away from Australia because competitors do not impose carbon costs and concludes there are grounds for establishing transitional arrangements for industries that face a material misallocation of resources in the absence of a global carbon agreement.

Caltex argues that arrangements need to be made to fully offset the loss of competitiveness arising from the introduction of an AETS until competitors have comparable carbon costs. We disagree that loss of profits alone does not make a sufficient case for compensation - there are equity reasons why compensation is appropriate, considering that the AETS should ideally not have distributional effects, just effects on relative prices. We also argue that potential relocation is not an appropriate ground for

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<sup>7</sup> Michael Hitchens Consulting, private communication to Australian Institute of Petroleum  
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compensation as it could result in firms being substantially disadvantaged if the impact of the AETS is not sufficiently large to cause relocation, just slash profits.

That said, Australia's refining industry in recent years has experienced one refinery closure and one refinery downsizing by ExxonMobil, with production being replaced with imports from ExxonMobil's Singapore refinery. In Caltex's view, refining industry viability is sufficiently marginal that carbon cost increases could cause further relocation of refinery production.

In relation to the specific proposals for transitional arrangements in the discussion paper, Caltex recognises that "over-shooting" is a potential problem. However, we do not believe there is any "objective contemporary evidence" available that would allow the proposed calculations to be made.

We also argue that adjustment from the outset along the lines suggested are inequitable because they do not allow time for the Australian economy to adjust. For example, cogeneration provides a substantial opportunity to reduce refinery emissions but the economics have been adversely affected in the past by operation of the electricity market. Distortions in Australian energy markets should be corrected before judgements are made about the emissions intensities of Australian industries relative to overseas competitors.

The factor M as proposed cannot be calculated because it depends on knowledge of how overseas refinery costs would be affected by carbon costs. This requires knowledge of the cost structure of the refineries that have the highest marginal costs in the market for the relevant grade of petroleum products, as these will determine market prices. It is unlikely that the most modern and lowest emissions refineries will influence market prices; it is more likely these prices will be set by higher cost refineries which may be more emissions-intensive. The factor M therefore should simply be the increase in costs due to carbon for Australian refineries.

The factor e is inappropriate for the same reason as above: the marginal refinery is unlikely to be the most efficient. Applying e to the factor M effectively places a regulatory overlay on a market system, so adding a factor e is more likely to distort the market than increase efficiency. There are already strong market signals for greater refinery energy efficiency (which indirectly results in greater carbon efficiency) through ex-refinery prices for petroleum products and all Australian competitors will be aware that when Asian refineries eventually have carbon prices imposed, their product prices will reflect the carbon efficiency of the marginal refinery.