# SUBMISSION OF *THE BRATTLE GROUP* TO THE TASK GROUP ON EMISSIONS TRADING

*The Brattle Group* is an economic consultancy with substantial worldwide experience in the energy industry, including electricity, natural gas and petroleum. Based in the United States, we also have offices in Europe, and have significant experience in the energy industries of Australia and New Zealand. We have performed extensive analyses of the economic issues surrounding greenhouse gas policies, primarily in the context of electric utility capacity planning and U.S. climate policy. This work has been informed by our deep experience in North American power and energy markets, as well as lessons from the European experience with its Emissions Trading Scheme. Our submission here reflects our own objective assessment of the issues involved; it is not made in the context of work for or a relationship with any client on these issues. We thank the Task Group for its efforts in advising on these complex and controversial topics, and for providing the opportunity to comment on these important issues.

We have read with much interest the Issue Paper on the design of a greenhouse gas emissions trading scheme for Australia. As expressed in the forthcoming IPCC Fourth Assessment Report, recent scientific evidence points to the need to take action to reduce $CO_2$ emissions, to do it soon, and to ensure that it is serious enough to substantially reduce global emissions, especially via low-carbon technology substitution over the long term. Our work indicates, as the Issue Paper already concludes, that market-based pricing of carbon is the path to least-cost solutions for mitigating $CO_2$ emissions. But as is also recognized, the particular structure of any potential climate policy is crucial to its effectiveness in addressing environmental concerns, as well as to how well it protects the economy.

We confine our comments in this regard to two crucial issues that are key to developing an effective, efficient policy response, whether at the national or international level. To be sure, the need for international coordination presents special challenges in climate policy. Although our comments do not specifically address international questions, dealing properly with these issues at the national level will facilitate international coordination, and we believe our recommendation can readily be harmonized with other countries or policies. Briefly, the points we address are:

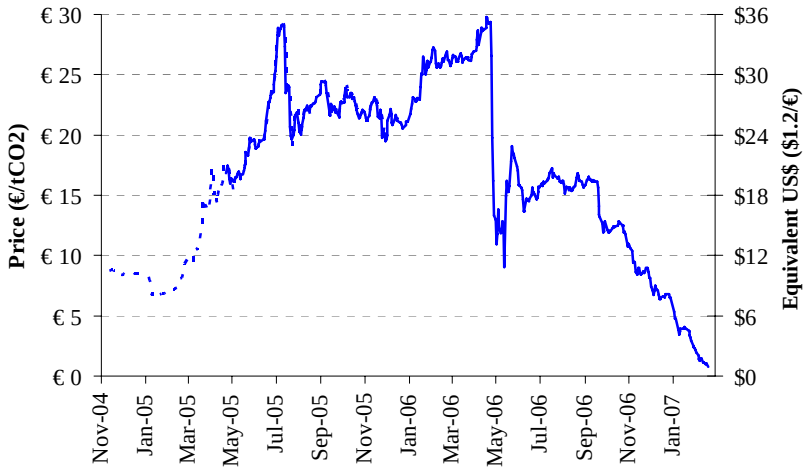
1. An emissions cap approach, unless very carefully structured, is likely to cause volatility in $CO_2$ price. Volatility will have negative effects on the economy and on incentives to develop and invest in the new technologies that will be necessary to effectively reduce emissions.

2. Free allocation of emission allowances to producers is generally unnecessary, and likely to be counterproductive. Where transitional protections may be necessary, other mechanisms are likely to be more effective.

It is widely agreed that a mandatory, market based program that "puts a price on $CO_2$" should be a fundamental foundation of an efficient, effective climate policy. Indeed, the Issues Paper notes that "Market-based approaches will generally reduce emissions at a lower cost than other interventions." It is also clear that substantial technological change will be needed to solve the climate problem. While existing technologies can and will play a role (e.g., broader implementation of efficiency and renewable energy technologies), fundamentally new energy production and consumption technologies will be necessary to achieve the reductions necessary in the long term, particularly if we hope to have continued worldwide economic growth.

## $CO_2$ PRICE VOLATILITY

A pure emissions trading scheme will lead to significant $CO_2$ price volatility. This kind of volatility is not surprising, for several reasons. First, an emissions cap combines a fixed supply of emission allowances with a highly inelastic demand for energy, in the presence of few if any low carbon substitutes for most sectors. Furthermore, because our understanding of the economics of abatement technologies remains in its formative stages, we cannot predict with any degree of confidence the relationship between specific emission limits and abatement costs. These conditions virtually guarantee that market forces will create substantial price volatility, and potentially very high prices. Experience to date with $CO_2$ allowance pricing in the European Union shows how volatile allowance prices can be. Since European allowances (for Phase 1, 2005-2007) began trading in January, 2005, they have varied in price by a factor of well over twenty, from a high of almost 30 Euros per ton of $CO_2$ to a low of less than 1 Euro, as illustrated below.




Second, the political temptation to manipulate the supply of allowances may be very high. This may be manifest as overly generous initial allowances to some sectors, or as unforeseen reductions in allowances if windfall profits occur or if there are inadequate emission reductions. Either of these manipulations, or even just the fear of them, can contribute to price volatility. Third, other factors that cause variability in $CO_2$ emissions

(e.g., due to uncertain factors like annual average weather conditions or relative fuel prices) will induce corresponding changes in allowance prices.

Volatility in the $CO_2$ price can cause economic harm in itself, because it affects the cost of energy, which in turn affects the cost of virtually everything else in the economy. This is particularly relevant in an energy-intensive economy such as Australia's. But besides being highly unattractive to customers and financially risky for all types of energy companies, such volatility has additional costs in environmental terms. A radical reorganization of our economy towards much lower net carbon emissions – including the development of new energy production, conversion and consumption technologies – is necessary for a climate policy to succeed. Substantial volatility in $CO_2$ prices will strongly discourage the research, development and investment that are necessary to bring new, carbon abating technologies into widespread use and mitigate long-term $CO_2$ emissions. Encouraging the necessary technological change will require consistent incentives over long periods of time, not volatile prices and uncertainty.

In contrast, a policy that offers long-term confidence in meaningful future carbon prices will minimize damage to the economy and will encourage R&D into new technologies.

## FREE ALLOCATION OF $CO_2$ ALLOWANCES

Emissions trading policies tend to be introduced in conjunction with initial, free allocations of allowances granted to help allegedly at-risk (or politically important) industries make a comfortable transition to the new policy. This happened in the U.S. with $SO_2$, and in Europe with $CO_2$. While the politics of such indemnification is understandable, the economic justifications are more important to the credibility and effectiveness of a $CO_2$ policy, and can sometimes be quite poor.

Widespread free allocation of emission allowances is unnecessary and can create serious problems, including windfalls for the recipients. It can be very difficult to determine the "incidence" of a carbon price – i.e., which parties actually bear the true costs of the policy, accounting for the fact that costs can to a significant degree be passed downstream by producers. Contrary to claims typically made in allocation debates, our research shows the incidence is likely to be relatively low for many energy companies (as well as most other energy-intensive producers): most energy suppliers and producers will be able to pass a significant portion of their $CO_2$ costs on to their customers. The impact of a carbon price will, as it should, fall primarily on consumers, in the form of higher prices for direct energy consumption, and in higher prices for other goods and services due to their implicit energy content. Importantly for Australia, this may be less true for energy-intensive industries exposed to international competition, as discussed below.

Free allocations to producers can create windfalls or have other unfortunate impacts. Most producers will recover the majority and perhaps all of their increased costs through higher market prices for their products. For instance, in many wholesale electric power markets around the world, the market price of power is set by the bid (which is closely related to variable operating cost) of the marginal producer – typically a fossil fuel

generator with low efficiency. Their $CO_2$ costs will naturally be included in their bid and thus in resulting prices. Giving generators free allocations in addition will double-compensate them. Apparently this has occurred in Europe under its emissions trading scheme, where producers are reaping windfalls as prices for consumers rise. In the case of regulated firms, the value of free allowances will likely be passed on to consumers, artificially shielding them from $CO_2$ costs and preventing them from participating in the solution – eliminating their incentive to pursue lower $CO_2$ energy sources, conservation and efficiency.

Perhaps worse, even when an industry is unable to pass along its cost increases and has a legitimate claim to needing some form of protection, free allocations are unlikely to provide the kind of protection desired. There is legitimate concern about energy-intensive industries that face international competition from firms not paying $CO_2$ costs, and a justifiable desire to offer protections in such cases. However, such an industry will find that its variable cost of production increases regardless of any (fixed) free allocations it may receive. Such a producer would find its most profitable strategy is to accept the free allocations and nonetheless shut down (or reduce) domestic production, eliminate domestic jobs and move production overseas. Because they do not address the problem of increased variable costs, allocations will not guarantee retention of domestic production or jobs; they will nonetheless create windfalls for shareholders and higher prices for consumers.

If Australia does pursue a climate policy outside of a truly global framework (and a true global framework looks unlikely in the near term), there is still a need to address the issue of some domestic industries that may require protection. For exports to countries without a comparable climate policy, it may be possible to do this by rebating allowances or otherwise exempting such exports from the policy. Similarly, imports from countries without a climate policy could require allowances. (This admittedly may necessitate some accommodations in international trade agreements.)

## POLICY IMPLICATIONS

In order for an emissions trading scheme to avoid the problems discussed above, it will be important to modify it from the policy structure typically discussed. These modifications include a $CO_2$ price ceiling (sometimes referred to as a "safety valve") and floor to limit price volatility. Ideally, these would follow a trajectory established in advance, starting relatively low (to protect the economy in the near term) and increasing over time to reach levels that will induce emission reductions within the planning horizon of energy infrastructure investments (i.e., within a decade or so). The scheme should also involve the auction of most or all emission allowances, rather than free allocations.

Although approaches other than emissions trading seem to have been rejected outright in this discussion, there may be value to giving them serious consideration. In particular, it is unfortunate if a $CO_2$ tax or fee approach appears to have been dismissed, since a fee structure offers substantial advantages as a climate policy approach. A $CO_2$ fee is every bit as market-based as an emissions trading policy. A fee simply sets the price and lets

the market adjust the quantity rather than the other way around. Market participants remain free in either case to find the least-cost response to carbon prices. By virtue of controlling $CO_2$ in this fashion, it naturally eliminates $CO_2$ price volatility, with the attendant advantages for protecting the economy and encouraging research and investment into new technologies. A fee also avoids the pitfalls of free allocations, and offers a simple alternative way to protect industries exposed to international competition (by applying the fee to imports and rebating it for exports). It has other advantages as well, reducing administrative costs by avoiding unnecessary infrastructure for allocation, auction and trading of emission allowances. It would be comparatively simple to administer, particularly if applied to fossil fuels "upstream" (at extraction or import) where there are relatively few sources to control. Upstream application also has the important advantage of facilitating an economy-wide $CO_2$ policy instead of a sectoral approach (a sectoral approach encourages economic distortions that can harm the economy while failing to reduce emissions). A $CO_2$ price applied upstream on the carbon content of fossil fuels would flow naturally throughout the economy, influencing all sources of $CO_2$ emissions and thus broadening the range of abatement opportunities and minimizing the impact of controls on any particular sector.

There is political reluctance to any policy that can be labeled a "tax", but this reluctance could be overcome by making the program revenue neutral, returning fee revenues directly to consumers (e.g., via a per-capita rebate) rather than retaining the revenues for government use. (This can and should be done under an emissions trading regime as well, e.g., by auctioning allowances rather than giving them away, and recycling the proceeds back into the program. However, the resulting revenues for redistribution will be less stable and predictable than under a fee-based approach.) Internationally a $CO_2$ fee appears to face many of the same problems of political unpopularity, but this is beginning to change. Even in the U.S. a $CO_2$ tax is beginning to attract some supporters and get well-deserved discussion. And it is likely to be easier to implement an internationally harmonized carbon tax than to develop an internationally harmonized emission trading system, because tax levels are far more transparent than the details of how allowance levels are set in one country or jurisdiction versus another. We believe that it would be valuable to at least discuss policy structures other than emissions trading, particularly in light of the fact that a pure emissions trading approach has several identifiable and material drawbacks in this context.

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