PROPOSAL: REBATE SCHEME FOR SUSTAINABLE ENERGY SYSTEMS/SERVICES THAT REDUCE GREENHOUSE GAS EMISSIONS

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Overview

Sustainable energy technologies and services will be disadvantaged relative to their conventional competitors under a GST. Further, it is widely recognised that many subsidies for fossil fuels exist which adversely impact on adoption of sustainable energy solutions. Rapid rates of adoption of sustainable energy systems are critical to achievement of Australia's international commitments on global warming. Yet existing market distortions are limiting take-up of these technologies.

It is widely recognised that a carbon tax or tradable emission credits would encourage greenhouse emission reduction actions such as adoption of sustainable energy solutions. However, it will be some time before workable emissions trading systems are introduced, and there is debate about the possible adverse impacts of a carbon tax on some export industries. Further, proposals for emission trading focus on large emitters, and ignore the impacts of critically important groups such as designers, manufacturers, retailers and installers, who strongly influence the levels of emissions by influencing the energy-using characteristics of appliances and equipment installed in homes and businesses. This paper proposes an arrangement for emission reduction credits (via tax rebates) to be applied to purchases of sustainable energy solutions that lead to reductions in greenhouse gas emissions. This approach compensates for the adverse impacts of introduction of a GST on the sustainable energy industry, while providing immediate market signals consistent with a carbon tax or emissions trading to purchasers of energy-related systems.

This scheme provides compensating assistance for the sustainable energy industry in a way that reinforces the Government's broad policy commitments. It is linked to outcomes, in the form of greenhouse gas emission reductions.

Initially, funding would be required from funds allocated in the GST package, or from other sources. However, once emission trading is introduced, it could be funded from revenue from sale of emission permits. If the estimated value of emission credits changes over time, the value of these tax rebates could also be varied.

This scheme would complement the emission trading schemes being proposed, as it focuses financial incentives on designers, manufacturers and other market intermediaries who determine the energy efficiency and fuel sources of appliances and equipment. These groups are excluded from emission trading proposals at present.

The Proposed 'Emission Reduction Credits' Scheme

It is proposed that an 'emission reduction credit', in the form of a once-off rebate linked to the quantity of greenhouse gas emissions avoided over the life of the system, be provided to suppliers of specified sustainable energy solutions. Essentially, this is the reverse of a carbon tax or purchase of an emission permit: instead of charging those who emit greenhouse gas emissions an extra amount, those who invest in systems that avoid emitting greenhouse gases are paid an incentive. This avoids the negative impacts of a carbon tax or purchase of emission permits, while providing a positive financial incentive for those who choose to reduce emissions.

This rebate should be applied at two rates:

- at least $10 per tonne of carbon dioxide emissions avoided over the specified lifetime of the system installed where it substitutes for natural gas or electricity generated from sources other than diesel

fuel (or other oil-based fuels). This is based on the lower end of values discussed for the value of emission credits for greenhouse sinks (see below). It could be varied with the actual price of emission permits.
- $135/tonne of CO2 where the sustainable energy solution replaces diesel fuel eligible for exemption from excise and other subsidies. This higher rate is intended to be equivalent to the financial benefit offered to users of non-transport diesel fuel in rural areas. At this rate, this rebate is equivalent to a diesel fuel rebate of approximately 40 cents per litre. If diesel rebates are varied, this rebate rate should be adjusted.

This scheme should have low net cost for the Commonwealth Government because:

- The Government is providing an incentive equivalent to approximately 1 cent/kilowatt-hour of conventional energy saved to encourage investment in measures which are cost-effective and will often save them 3 to 12 cents/kWh. Thus application of this scheme will indirectly increase disposable income and reduce business overheads, leading to greater economic activity and increasing tax returns to Government.
- The scheme would generally be targeted at manufacturers and importers, who are at the beginning of the supply chain, so each dollar of price reduction there leads to much bigger reductions at the retail level

SEIA considers it essential that the impact of the scheme be reviewed after an initial period of twelve months, and the possibility of a higher rate of rebate for strategically significant technologies such as photovoltaics should be considered in that review.

The scheme also provides assistance to electricity market participants to comply with requirements under the 2% renewable electricity target measure announced by the Prime Minister in November 1997.

Implementation of the scheme

The scheme could be applied immediately to sustainable energy systems that have known performance and average service lives. It would be progressively expanded to cover additional areas as methodologies were developed. The Australian Greenhouse Office would provide technical support to the Tax Office to specify standard conditions for calculation of the rebates.

The following gives examples of the proposed scheme's application:

- for domestic and business appliances for which energy labelling schemes and/or Minimum Energy Performance Standards or other clear criteria are in place, lifecycle emission savings can be based on the energy savings relative to a specified standard appliance (which can be varied over time, as average performance of new appliances improves), and a specified typical lifetime. For example:
    - if a refrigerator saves 300 kilowatt-hours per annum compared with the baseline appliance using the Australian Standard test, and a life of 15 years is assumed, it will save 4,500 kWh over its life. At an Australian average greenhouse intensity of 1.0 kg CO2/kWh, this equates to 4.5 tonnes, and the manufacturer is eligible for a rebate of $45.
    - a solar hot water service which replaces an electric HWS and saves 3,000 kWh per annum according to standard tests for 15 years would attract a rebate for the manufacturer of $450 (similar to the rebates now offered by NSW and Queensland governments at the retail level)
    - a 20 Watt compact fluorescent lamp with a life of 8,000 hours would save 640 kWh and gain a rebate of $6.40.
    - a renewable energy system that is certified as supplying 10 kWh/day, with an assumed life of 20 years, would save approximately 73 tonnes of carbon dioxide, attracting a rebate of $730 if it replaces grid electricity or, where it replaces diesel fuel eligible for a rebate (assuming a greenhouse coefficient of approximately 0.78 kg CO2/kWh), $7,700.

    - a new house which achieves a saving relative to a standard house using the NatHERS rating system could gain a tax rebate related to the predicted savings and the fuel used for heating. For example, a 5 star rated house in Melbourne would save more than 30% relative to a house just complying with mandatory insulation regulations. Over a 50 year life, and assuming natural gas heating, the projected saving would be at least 50 tonnes of carbon dioxide, attracting a rebate of over $500.
- for large-scale systems such as utility-scale wind generators, the rebate would be based on independently certified calculations of predicted energy production: the rebate would be equivalent to approximately 1 cent/kWh of renewable energy generated. This element of the scheme would reduce the cost to electricity suppliers of compliance with the Government's 2% renewable electricity target.
- for systems where recognised methodologies do not yet exist, the scheme could be phased in over time, as appropriate frameworks are developed. For example, the NSW Sustainable Energy Development Authority's Commercial Building Energy Rating Scheme will be launched this year. It will provide a basis for estimation of the greenhouse emission reductions for commercial buildings. A building that saves, say, 100 kWh/square metre per annum would save 2.5 tonnes of carbon dioxide per square metre over 25 years, attracting a tax rebate of $25. For a 10,000 square metre building, this would lead to a rebate of $250,000 (compared with a building cost of around $10-15 million)
- if the scheme were applied to cars (and this may need to be considered separately), a car that saved 2 litres/100km relative to a specified benchmark over an average 200,000 kilometre life would save 4,000 litres of fuel, or approximately 9.5 tonnes of CO2, so it would receive a rebate of $95. This would translate into a retail price saving of several hundred dollars. While this would be modest relative to many incentive schemes, it would be sufficient to finance inclusion of many worthwhile efficiency improvement features at no additional retail cost.

Who should receive the rebate?

For items of equipment sold in large quantities, there are strong arguments for providing the rebates to the manufacturer/importer in preference to paying it to individual buyers. It is more administratively efficient to provide the rebates to the manufacturer or importer. Further, this injects the rebate funds closer to the point of manufacture, so that the value will be amplified as it passes along the distribution and retailing chain. Lastly, the manufacturer/importer will have the flexibility to invest the rebate funds in an optimal mix of areas such as:

- RD&D and design
- Higher performance materials and/or components
- Enhanced marketing strategies
- Incentives for retailers
- Price reductions for purchasers
- Or other strategies that lead to further efficiency improvements.

This approach runs the risk that manufacturers may choose not to pass on a fair share of the benefits - unless clear guidelines are established and the scheme is monitored. But this problem is no greater than that of ensuring those who buy emission permits pass on the costs in an appropriate manner. And receipt of the rebates could be dependent upon compliance with requirements for provision of information on how the funds have been allocated.

For larger systems such as cogeneration systems or large office buildings, rebates could be paid to the purchaser, or the purchaser could assign the right to the rebate to the system supplier. Alternatively, the rebates could be paid annually, on presentation of evidence of actual performance. This would reduce the up-front cost to government, and would provide an incentive for ongoing effective performance. Since a limited number of participants would be involved, administration would not be onerous.

Implications of the rebate scheme

These rebates would provide significant financial incentives for market intermediaries to supply equipment and systems for households and business to adopt low greenhouse emission sustainable energy solutions. They would be a significant step towards compensation of the sustainable energy industry for the negative impacts of the GST, and would overcome a serious weakness in the proposed emission trading scheme.

The rebates would be of less benefit for grid-connected renewable electricity technologies such as solar (PV) cells, as they would comprise a relatively small proportion of their cost. However, where these technologies replace diesel fuel subject to excise rebates, the rebate would be much larger, and this is where these technologies are most cost-effective and are, at present, victims of severe market distortions. Further, other programs such as the 2% renewables target, GreenPower and state-based schemes provide additional incentives for utilisation of these technologies. However, in the medium term it is essential that PV systems gain market share in conventional grids in order to gain economies of scale: any necessary additional support should therefore be considered in the review SEIA proposes after one year's implementation of this scheme.

The economic impacts of this scheme will depend upon the range of sustainable energy solutions included, the baselines used for savings estimates and the rate of take-up by energy consumers.

The net cost of the measure to Government should be relatively low. As noted above, the Government is contributing only a small proportion of the total amount invested by energy consumers, and the financial returns on these investments for purchasers are generally substantial. The extra investment in sustainable energy products and services will increase economic activity and assist in the development of the sustainable energy industry. Once the cost of the investment is recovered, investors will have additional disposable income which will contribute to expansion of the economy, and which will generate additional tax revenue for Government. The scheme can be phased in by limiting the range of products eligible, and by varying the level of the rebate, to control short term costs.

The following is an indicative estimate of gross costs for Government, and ignores the indirect effects discussed above.

For this analysis, we assume:

- annual building and appliance turnover is 5% of total stock
- emissions savings achieved through efficiency improvements of new equipment and buildings compared with 'business as usual' are 10% (for individual purchases, savings may be higher, but not all purchases will be influenced by the rebates)
- renewable energy options complying with the scheme achieve an additional 0.2% market share of non-transport energy (which generates around 225 Mt CO2 per annum)
- average life of measures is 20 years

Annual greenhouse emissions from the residential and commercial sectors are approximately 95 Mt CO2. The lifecycle greenhouse savings of the above would save 0.05 x 0.1 x 20 x 95 = 9.5 million tonnes. This would be eligible for rebates of approximately $100 million. Lifecycle savings due to take-up of the renewable energy measure would be 0.002 x 20 x 225 = 9 million tonnes, eligible for rebates of less than $100m at the proposed lower rebate rate.

Based on this tentative calculation, introduction of a comprehensive rebate scheme could have a gross cost in the order of $200 million per annum. This is modest in comparison with the income from sale of emission permits (estimated at around $3 billion pa) and the more than $2,000 million paid annually for diesel rebate exemptions. Further, this rebate scheme will generate financial savings for consumers far in excess of the rebate cost, increasing disposable income of households and business, and providing significant indirect economic benefit. It will also assist and encourage Australian

industry to pursue more aggressive greenhouse remission reduction strategies through design and manufacture.

Rationale for setting tax rebate at $10/tonne of carbon dioxide avoided

Various sources have suggested that greenhouse emission credits are likely to be traded at prices in the range of US$5 to $200 per tonne of carbon. Converting this to tonnes of carbon dioxide and adjusting to Australian dollars (say at A60 cents/US$) suggests that emission credits valued at US$22/tonne of carbon would be equivalent to A$10/tonne of carbon dioxide. The initial rebate is therefore proposed to be set at this level, which is towards the lower end of the range of values considered likely to occur in emissions trading schemes. However, once emission trading is introduced, the value of the rebate could be linked to the price of permits, although stability in the rebate value is desirable as a signal for investment.

The higher rebate level of $135/tonne of carbon dioxide avoided is approximate only, as it is intended to provide compensation at a level equivalent to that provided to diesel fuel in rural areas. The value of $135 compensates for diesel fuel receiving tax exemptions of 40 cents/litre.