



Policy options for encouraging low-emission electricity generation and a possible ‘baseline and credit’ approach for the NSW retailer GHG benchmarks scheme

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October 2002

This paper first discusses the importance of low-emission electricity generation in responding to climate change, and possible policy frameworks for supporting greater use of such generation. We then briefly consider some key issues in designing ‘baseline and credit’ policy measures. Finally, we outline one possible approach to implementing a low-emission generation ‘baseline and credit’ measure in NSW given recent proposals to revise NSW’s Greenhouse Gas Emissions benchmarks scheme.

Policy frameworks to address climate change

Encouraging a move from present coal-fired electricity generation towards lower emission technologies will be an important part of any comprehensive, economically efficient and environmentally effective policy response to climate change.²

Driving our electricity generation choices towards lower emission technologies is, of course, only one component of a complete climate change policy framework. Other actions including energy efficiency and potentially carbon sequestration also have important roles to play.

One question that arises is whether a single ‘universal’ policy measure might be designed that effectively encompasses all possible climate change responses to drive activity in the most economically efficient manner. Alternatively, a range of different policy approaches may be required to effectively drive the complete range of necessary activities for responding to climate change.

While a single universal policy has great practical and theoretical appeal, the widespread and diverse range of greenhouse gas emitting activities associated with virtually all of our society’s undertakings and the many possible policy ‘agents’ and stakeholders who will likely be required to act all pose considerable difficulties.

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² See, for example, the IPCC *Third Assessment Report (TAR)* and the recent *World Energy Assessment* by UNDP.

Instead, we are seeing widely varying international, national, regional and local measures targeting different aspects of climate change emissions all being undertaken.³

The next question then is what policy options are available, and which are best suited to different climate change activities. The range of measures is broadly categorised by the IEA under fiscal policy, tradable permits, regulatory instruments and voluntary approaches, R&D policy, and policy processes.⁴ Identifying the most appropriate of these for particular climate change responses and policy jurisdictions is an important area of ongoing work. There is a growing international body of experience to draw upon in this development work.⁵

‘Baseline and Credit’ schemes

In this paper, we will briefly outline one possible option for the NSW state government to encourage low-emission generation using a ‘baseline and credit’ approach applied to electricity retailers. This draws upon present NSW proposals to revise their existing electricity retailers benchmark scheme.⁶

We have previously presented some of our concerns with these proposals.⁷ Major challenges in climate policy development and, in particular, ‘baseline and credit’ schemes that we believe need to be better addressed in the NSW proposals include:

- the difficulties and possible dangers in attempting to implement schemes that treat supply-side, energy efficiency and sequestration activities as directly comparable and tradeable (fungible) through a single instrument, given their very different characteristics and measurement challenges,⁸
- the importance of setting appropriate baselines with such schemes to ensure that they actually drive measurable change rather than ‘free-riding’ off business-as-usual and other existing policy measures,⁹
- the need to ensure that claimed activities resulting from such a policy match the jurisdictional scope of the policy developers in order to maintain the policy’s integrity and not impede other policy agents (for example, other state governments) from introducing similar schemes,¹⁰
- the key role of accurate measures of climate changes emissions and the outcomes of claimed activities as a basis for such a scheme, and
- the need for simplicity and clarity so that all stakeholders can contribute to policy development, while recognising that there is some trade-off here between these objectives and that of accuracy noted above.

³ See, for example, *Dealing With Climate Change - Policies and Measures in IEA Member Countries* released by the IEA. The latest volume details more than 200 new policies and measures undertaken in the year 2000 to address energy-related emissions in IEA member countries.

⁴ These categories are used in *Dealing With Climate Change - Policies and Measures in IEA Member Countries*, referred to in the footnote above.

⁵ See again, for example, the IEA’s *Dealing With Climate Change - Policies and Measures in IEA Member Countries*. A growing body of literature is becoming available through journals and conferences worldwide reporting on work by international organizations, national governments, the NGO sector and regional and local authorities.

⁶ NSW Government (2001) “Greenhouse-related Licence Conditions for Electricity Retailers” December, available from www.energy.nsw.gov.au. See also George Wilkenfeld and Associates (2002) “Emissions Calculation Methodology for the Revised NSW Greenhouse Gas Emissions Benchmark Scheme: Options Paper”, September, available from www.energy.nsw.gov.au.

⁷ Outhred H, MacGill I, Nolles K (2002) A discussion of the “Emissions Calculation Methodology for the Revised NSW Greenhouse Gas Emissions Benchmark Scheme: Options Paper”, September, available from www.ergo.ee.unsw.edu.au.

⁸ Detailed methodologies for Energy Sales Forgone and Sequestration in the revised NSW scheme have not yet been released but the stated intent is to have a single tradeable instrument (NGAC) for all eligible activities.

⁹ Our discussion (referenced in footnote 7) on proposed revisions to the NSW benchmarks scheme identifies important possible baseline problems in the treatment of assigned generation that could see much of the required ‘abatement’ from 2003-7 being provided by existing gas generation across the NEM with no change in behaviour or investment required.

¹⁰ Present proposals for the revised NSW scheme allow low-emission generation anywhere within the NEM (NSW, Victoria, ACT, South Australia and Queensland) to contribute to meeting NSW’s emission reduction target.

A possible approach for NSW

We now attempt to address some of these concerns in briefly outlining one possible approach for the NSW state government to drive greater investment use of low-emission generation using a 'baseline and credit' approach applied to NSW electricity retailers. Note that we are not suggesting that such an approach is the only, or even necessarily best, framework for supporting such generation, and are currently undertaking further work investigating other possible policy measures.

Policy objectives:

These are to reduce greenhouse emissions associated with NSW electricity sales in an economically efficient manner by encouraging low emission generation within NSW. This assumes that separate and compatible policies for energy efficiency and sequestration would be developed.

The following also assumes that the policy would be implemented by a licence condition on electricity retailers. It is also important to note that there are other more direct approaches to achieve this overall policy objective such as carbon taxes and load based licensing of generators that should also be considered.

Key design criteria:

These criteria are for a 'generation only' scheme that:

- is based on actual emissions associated with electricity generation,
- targets generation options only,
- quarantines generation benefits to NSW,
- manages price risk (both high and low),
- avoids overlap with MRET and other existing policy measures,
- allows other States to implement compatible schemes at a time of their choosing, and
- is a "Plain English" policy that is comprehensible to stakeholders.

Key design features:

- The "NSW Pool coefficient" could be replaced by a 'NEM pool coefficient' - the annual average emission coefficient for all metered generation feeding into the NEM, calculated each year from the previous year's historical data and plant specific emission coefficients. This could be done by NEMMCO or by some other body using NEMMCO data. This would set a moving target that took account of 'business as usual' growth and technological progress. Impacts of the NSW scheme on the overall NEM pool coefficient would drive greater activities as would similar initiatives by other states – a positive outcome in encouraging additional activity from the scheme.
- Any eligible NSW generator that had an emission coefficient better than the NEM pool coefficient for the previous year would be allowed to create (proportional to the difference in coefficients) NGACs for the MWh produced in the current year – these would have to be registered and placed on public record within a limited time period following their creation in order to maximise market information on the availability of such NGACs. Only generators located within NSW should be eligible and each generator should be given a 2002 baseline (or average 00-02) if the scheme starts in 2003. There may have to be a once-off compensation provision, which would be done by bequeathing an appropriate number of NGACs to approved generators at the start of the scheme - the number would be placed in the public domain to ensure transparency and accountability.
- All retailers purchasing on behalf of end-users in NSW, and all direct consumers in NSW would be obliged to surrender a number of NGACs each year representing a specified fraction of their annual electricity purchases. The government would stand in the market at both a "floor" and a "ceiling" price to manage risks for both buyers and sellers of NGACs. Network losses and sub-annual temporal effects could be ignored given their relatively minor impact on outcomes and possible complexity.

- It would be possible to prevent any overlap with the MRET scheme by requiring eligible NSW generators to affirm that they have not created RECs and NGACs for the same MWH. Risk management could be better distributed amongst scheme participants by adopting either buyer-beware or regulator novation of risk.

Key measures of performance:

These performance measures would be the:

- volume of NGACs surrendered and their impact on improving the NEM pool efficient coefficient,
- average cost of emission reduction, and
- investment in new low-emission generation in NSW.

Likely outcomes:

This scheme would mainly promote gas-based plant and in particular cogeneration and combined cycle plant. It would not be a direct competitor to the MRET scheme, although if the scheme was sufficiently ambitious it could encourage some additional renewables investment. The NSW government could separately promote renewable energy in NSW in a manner that was compatible with both the above scheme and MRET by either itself selectively buying RECs (including forward purchase agreements to promote investment) or by setting appropriate REC purchase targets for electricity retailers.