Electricity sector assistance: getting it right

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Bruce Mountain

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Electricity generators: To compensate or not to compensate

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<th>To compensate</th>
<th>Not to compensate</th>
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<tr>
<td>Sovereign risk: &quot;If Govt decisions strand investments, future investors will require higher returns to compensate for this risk.&quot;</td>
<td>Moral hazard: &quot;Heads I win, tails you lose&quot;</td>
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<tr>
<td>Foresight: &quot;we could not see it coming&quot;</td>
<td>Foregone opportunities: &quot;we could spend the money better on something else&quot;</td>
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<td>Foresight: &quot;they could/should have seen it coming&quot;, or &quot;so what if they could not see it coming, that's business&quot;</td>
<td>Other uncertain and subjective reasons (impact on jobs, severity of financial losses, generator financiability, security of supply) have been suggested as justification to compensate (and not to compensate).</td>
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Strongly held, divergent views are possible.
Pre-Rudd Government, compensation for coal generators was contemplated

**National Emission Trading Taskforce (finalised December 2007)**
- Once-off, allocation of permits to disproportionately affected generators;
- Designed to "offset the net present value of the reduction in operating profits (equivalent to reduction in asset value) that the ETS was estimated to induce"
- No strings attached – generators could close after receiving permits
- Permit allocation to be based on emissions between 2002 and 2005

**Prime Ministerial Task Group on Emissions Trading (May 2007)**
- Did not explicitly recommend compensation to generators.
- Did include illustration of how compensation to generators might work, suggested compensation for "disproportionate loss" – the difference between "economy-wide" loss and losses of specific participants

The Green Paper suggested compensation for coal generators to reduce sovereign risk

"Limited amount of direct assistance to existing coal-fired generators":
- to compensate for loss of asset value;
- to "ameliorate the risk of adversely affecting the investment environment"

Assistance intended to be part of a plan that would deliver support to strongly affected industries in order to:
- Underpin investor confidence;
- Facilitate structural adjustment;
- Ensure security of energy supply.

Assistance subject to windfall test, but no other strings attached.
Garnaut took a strongly contrary view

“There is no public policy justification for $3.9 billion in unconditional payments to generators in relation to hypothetical future loss of asset value. Never in the history of Australian public finance has so much been given without public policy purpose, by so many, to so few. The best that can be said is that these are once-for-all payments - unless the spectacular success of investment in lobbying inspires repetition and emulation.”

Oiling the squeaks
Ross Garnaut
Sydney Morning Herald
20 December 2008

The White Paper moved the debate further forward

Government noted that:
- Australian Energy Regulator and Australian Energy Markets Commission said conditionality provided no material benefit for energy security;
- Nemmco suggested that conditionality would provide a degree of increased mitigation against security risks;
- Market participants supported assistance without strings:
  - Conditions (on compensation) will distort market behaviour and frustrate the … objective of meeting emission reduction targets in the most flexible and cost-effective way’ (Energy Supply Association)
  - Conditions on direct assistance to coal-fired generator runs the risk of compromising the environmental and economic objectives … it is also completely unnecessary from a policy perspective (Truenergy – owner of the Yallourn brown coal power station)
  - Assistance and energy security are not related (Origin Energy)

Government concluded that:
- Limited direct assistance “likely to play a small role in maintaining energy security”;
- Unlikely that a vertically-integrated entity would withdraw its generation capacity from the market if that would leave it exposed to high and volatile prices.

But Government proposed compensation only if plant is available to produce electricity
Experience elsewhere: UK


- Under EU ETS, British Government had discretion to determine allocation of permits (EU Allowances), chose to reflect the shortfall between ELAs and expected emissions, in allocation of permits to all fossil fuel generators.
- Therefore for 2008 to 2012, British coal generators were granted permits equivalent to 55% of their average emissions between 2000 and 2003. Effectively 62.8 million permits were distributed amongst plant with average total capacity of 19,877 MW, that produced on average 86 TWh per year. No strings attached – payments made irrespective of availability.
- By comparison, gas generators were granted permits equivalent to 30% of their average emissions between 2000 and 2003.
- After 2013, no permits will be allocated to British fossil-fuel generators.

Source: (CME analysis based on British Government data)

Experience elsewhere: US

Currently two Bills under discussion (Waxman-Markey, started in the House of Representatives, and Kerry-Boxer – started in Senate). Both quite similar in respect of compensation to coal generators:

- Compensation only for merchant coal plant (these plants operate in competitive markets – around 25% of US coal generators are merchant), and plant with long-term contracts
- Permits granted for up to 50% of historic 2006-2008 emissions, declining over time to zero by 2030 (Kerry-Boxer) or constant to 2027 then declining to zero by 2030 (Waxman-Markey)
- Subject to limits defined as a proportion of permits allocated to electricity consumers (via distributors) (this proportion not yet defined in Kerry-Boxer).
- Compensation (with Waxman-Markey) to merchant coal equivalent will be max 3% of all allowances/permits (Robert Stavins, Belfer Centre, Harvard University, 27 May 2009). Similar proportion to be expected with Kerry-Boxer).
- Both Bills envisage substantial allocations of permits to CCS. To the extent that this involves CCS for existing coal generation capacity, this would amount to significant additional “compensation” to existing coal generation.
Experience elsewhere: US

Strong echoes of the compensation debate in Australia:

- “Giving credits to the coal generators will only lead to windfall profits for a particular sector of the electricity industry at the expense of end-use customers.” (National Association of Regulatory Utility Commissioners.

- “Our concern is that market prices will rise anyway, and consumers won’t get the benefit of allowances given (to) coal generators.” (Citizens’ Utility Ratepayer Board, Kansas)

- “Generators need free credits or some may be forced to shut down, which creates reliability issues” (Edison Electric – the biggest US coal generating company).

Government’s proposed compensation for coal-fired electricity generators

- 26.4 million permits per year for 5 years to be allocated amongst coal-fired generators with emission intensity greater than 0.86 t CO2-e/MWh, that entered service before July 2007.

- Sharing amongst eligible generators depends on their historic emissions between 1 July 2004 and 30 June 2007.

- Reliability test to be applied annually: if nameplate rating of generating unit is not registered as available to produce, no compensation to be paid in that year.

- An eligible unit will receive compensation even if the reliability test is not satisfied, if there is unlikely to be a breach of the applicable power system reliability standards within two years after that generating unit had reduced its nameplate rating.

- Windfall test to be undertaken in 2012
ESAS is essentially a brown coal generator compensation scheme

<table>
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<tr>
<th></th>
<th>Percentage of total ESAS permits</th>
<th>No. of permits (millions) per year</th>
<th>2008 emissions (mtCO2e)</th>
<th>Permits as % of 2008 emissions</th>
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</thead>
<tbody>
<tr>
<td>Hazelwood</td>
<td>26%</td>
<td>6.7</td>
<td>15.7</td>
<td>43%</td>
</tr>
<tr>
<td>Yallourn</td>
<td>19%</td>
<td>5.0</td>
<td>14.6</td>
<td>34%</td>
</tr>
<tr>
<td>Loy Yang A</td>
<td>17%</td>
<td>4.6</td>
<td>18.6</td>
<td>25%</td>
</tr>
<tr>
<td>Loy Yang B</td>
<td>9%</td>
<td>2.3</td>
<td>10.2</td>
<td>23%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>71%</strong></td>
<td><strong>18.6</strong></td>
<td><strong>59.1</strong></td>
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Source: CME analysis based on data from Innovest (December 2008) and Climate Group (July 2009)

What’s wrong with ESAS?

- **Unnecessary**: Brown coal generators contract forward, therefore have strong interest in orderly transition—no need to link compensation to continued generator availability
  - (counter argument: ???)

- **Deters CCGT investment by competitors**: Knowing that high emission incumbents are receiving substantial subsidies to remain available is likely to deter low emission new entry
  - (counter argument: If emission price still low by 2015, may be little incentive to invest in low emission generation anyway)

- **Reduces security of supply**: Discourages new entrants
  - (counter argument: If emission price still low by 2015, may be little incentive to invest in low emission generation anyway)

- **Distorts investment decisions**: For owners of Hazelwood, Yallourn and Loy Yang: large subsidies to keep existing plant available weakens incentive provided by emission prices, to develop low emission alternatives;
  - (counter argument: Availability payments do not necessarily affect investment decisions)

- **Promotes inefficient duplication**: CCGT likely to be located on same sites as existing generators, use same water supply, power station transformers etc.—probably can’t access this while existing plant kept available. CCGT development during ESAS may therefore result in inefficient duplication.
  - (counter argument: Not necessarily—need to examine case-by-case)
Suggested principles for the design of a compensation solution

- **Minimise competitive distortion**: some market participants should not gain a competitive advantage relative to others as a result of compensation.
- **Minimise investment distortion**: compensation should not distort market participants from selecting the most efficient investments.
- **Minimise operation distortion**: compensation should not distort asset operating decisions.
- **Maximise public benefit**: from the use of public money: Government should seek something useful in return for the allocation of public funds.
- **Minimise transaction costs**: solutions should be easy to administrate.

These objectives are sometimes mutually exclusive.

There is no golden bullet

<table>
<thead>
<tr>
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<th>Government’s proposals</th>
<th>Unconditional compensation</th>
<th>Compensation linked to investment in low emission generation</th>
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<tbody>
<tr>
<td>Minimise competition distortion</td>
<td>x</td>
<td>✔</td>
<td>x</td>
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<tr>
<td>Minimise investment distortion</td>
<td>x</td>
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<td>Minimise transaction costs</td>
<td>x</td>
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So, what’s the answer?

1. Avoid the problem altogether by not compensating (the Garnaut solution).

2. Look for the best trade-off of the public interest from the use of public funds, and the inevitable investment, competitive and operational distortions that follow.

While the first approach has great merit (and will be pursued in the EU from 2013), in the context of existing proposals in Australia perhaps the perfect is the enemy of the good. Our approach therefore pursues a compromise along the second avenue.

A proposed compromise

**Part A:** Permits to be given to the owners of eligible coal-fired generation, as defined in the Exposure Draft. This compensation will be determined on the same basis (historic emissions) as set out in the Exposure Draft but will not be subject to windfall profit or reliability tests.

**Part B:** Permits to be allocated to owners of eligible coal-fired generation for new plant that they develop that enters service between 2010 and 2020. The number of permits will be inversely proportional to the emission intensity of the new plant, and the capacity of the plant.
Details of the proposal

**Part A compensation:**
12 million permits paid annually over five years. Allocation amongst eligible parties on the same basis as the proposed legislation

**Part B compensation:**
For plant commissioned between 2010 and 2020 by an eligible entity (as defined in the proposed legislation):
- Allocated permits per additional kW commissioned = 20*(0.86 – emission intensity of commissioned capacity)
- Capacity developed must be in the same electrically-connected power system
- Existing high emission capacity does not necessarily need to be decommissioned
- Compensation under Part B restricted so that total compensation per eligible party under Part A and Part B may not be 30% higher than the total compensation under the existing legislation
Worked examples

- **Truenergy** develops 1,000 MW of CCGT capacity with emission intensity of 0.35 tCO₂-e/MWh and 500 MW of wind farms, between 2010 and 2020.

- **Part A compensation:** 12.5 million permits paid equally per year between 2010 and 2015 (half of what it would have received under the Government's proposals).

- **Part B compensation:** \(1,000,000 \text{ kW} \times 20 \times (0.86 - 0.35) + 500,000 \text{ kW} \times 20 \times (0.86 - 0)\) = 18.8 million permits.

- **Total compensation:** 12.5 m + 18.8 m = 31.3 m permits (by comparison, Truenergy would have received 25 m permits under Government's proposals).

- **Truenergy** develops no new capacity with emission intensity below 0.86 tCO₂-e/MWh between 2010 and 2020.

- **Part A compensation:** 12.5 million permits paid equally per year between 2010 and 2015 (half of what it would have received under the Government's proposals).

- **Part B compensation:** 0 permits.

- **Total compensation:** 12.5 m permits (by comparison, Truenergy would have received 25 m permits under Government's proposals).

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Bruce Mountain  
bruce.mountain@carbonmarkets.com.au  
0405 505 060  
03 9664 0680  
www.carbonmarkets.com.au