2 November 2001

Hydro Tasmania
the renewable energy business

Mr Michael Rawstron
General Manager Regulatory Affairs
Australian Competition and Consumer Commission
PO Box 1199
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By Email electricity.group@accc.gov.au

Bidding and Rebidding Code Changes

Dear Mr Rawstron,

Thank you for the opportunity to respond to the NECA proposed code changes in respect to the bidding and rebidding provisions of the National Electricity Code. Hydro Tasmania is concerned at the continued moves on rebidding when the existing additional provisions have not been implemented for sufficient time to be properly assessed.

Hydro Tasmania is a member of the National Generation Forum and fully supports their submission which addresses our more generic concerns. The following points are additional concerns which are more specific to our business.

There has been no robust analysis of a standard sufficient to justify the changes proposed. Indeed, the changes proposed are not supported by

- an adequate analysis of the perceived problem,
- any statement of the effects on the market efficiency or investment signals of the proposal,
- consideration of the economic basis of the proposals

In Hydro Tasmania's view, the proposed Code changes should not proceed as they are not in line with the Code objective for light handed regulation. In addition they create a discriminatory additional burden on renewable energy generators who, by virtue of their unpredictable fuel resource, make far greater use of rebidding.

Yours sincerely

D. Bowker.

David Bowker
Manager Market Development

AUST. COMPETITION & CONSUMER COMMISSION
CANBERRA
8 NOV 2001

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Hydro Tasmania Submission to ACCC on Rebidding November 2001

1 Overview

Hydro Tasmania is very concerned with the continuing proposals for the variation of the rules of NEM in respect of rebidding. As a renewables energy business, the nature of our generation is such that rebidding is more frequently used than for thermal stations due to the unpredictable nature of our fuel. It follows that additional impositions on rebidding, inequitably impact on renewables businesses. In this respect, the reversal of the onus of proof is particularly onerous in both a legal and administrative sense.

There has been no robust analysis of the nature of the problem. Even those who contend that there is a problem describe it as "very small". In this context and with a Code objective of light handed regulation, we submit that there needs to be demonstration of a significant benefit prior to the imposition of additional regulatory burden. No such benefit has been demonstrated.

Hydro Tasmania is a member of the National Generation Forum and fully supports their submission which addresses our more generic concerns. The following points are additional concerns which are more specific to our business.

2 Water Management

Rebidding is essential for effective water management. One of the key reasons for introducing re-bidding into the Code was to facilitate efficient fuel management particularly of hydroelectric generation. Hydroelectric generation is characterised by a finite energy resource, water, and uncertain inflows and market opportunities. The short run marginal cost of hydroelectric generation is the opportunity cost of using the water now as opposed to later. This opportunity cost is dependent on the state of any storage and the forecasts and uncertainties regarding market opportunities and inflows.

If a hydro-generator is faced with unexpectedly large inflows and little storage the opportunity value of the water it has in storage will go down to nearly zero. Consequently, if the generator were in a perfectly competitive market it would re-offer its generation at its new marginal cost. That is it would have to re-bid to effectively lower the price it was offering to the market to increase it's generation to use the higher than expected inflows.

Similarly, if the same generator discovered that the market demand for its limited output had increased due to the failure of another generator, its marginal cost of fuel (opportunity cost of its water) would substantially increase. Under these circumstances the same hydro-generator in a perfectly competitive market would raise its prices by increasing the amount of generation offered in higher priced bands. This behaviour could be falsely construed as abusive but in reality it is behaviour that is aimed at optimising

the use of its scarce water resource. It is behaviour to be expected in a competitive market. It also replicates the outcomes that would have occurred in a centrally operated system.

2 Water Management in Cascades

Hydro power stations that are linked in a cascade have an extra dimension to their management relative to a single power station. In a cascade the water output of the top most station in the cascade provides water to the next station in the cascade. This station in turn provides water to the following one and so on. The time between when water is released from one station to when it is available to the next station may be almost instantaneous or could be hours or days. In order to manage a cascade of hydro stations consideration must be given to the fact that the stations are effectively coupled but with time delays between the water being released from one station being available to the downstream station. Further, in a cascade there are inevitably local inflows between the stations. This adds another degree of uncertainty to the planning.

In this complicated environment changes in market generation at one time period will necessitate changes in generation at other time periods. For example if prices were low in one period generation in the upstream power stations is reduced. Subsequently if prices increased later in the day back to originally forecast prices, the original bids for the later time period may have to be changed to reflect the reduced availability of water at downstream stations. Re-bidding is the only tool available for the effective management of cascades in a decentralised dispatch energy market. Loss of this tool will lead to inefficiencies in the market's use of hydrological reserves.

3 Water Management with a Portfolio of Aggregate Units

In the steady state, the marginal cost of a portfolio of hydrological reserves will tend to the same value. The reason for this is that, if the cost of one of the hydrological reserves is lower than other reserves, then that reserve will be drawn down until its marginal cost is equal to the cost of the other reserves. This will lead to the profit maximisation/utilisation of the portfolio of reserves.

It follows from this that the most efficient way for a hydro generator to meet a desired output is to have all units, which are committed, running at equal marginal efficiency. For hydro generators with a portfolio of aggregate units such as Hydro Tasmania and Snowy Hydro this means being able to continuously shift output between units and stations. The use of aggregate units enables this to be done to some degree but to achieve overall efficient operation, generation needs to be able to be shifted from one aggregate unit to another in near real time. This is because inflows and dispatched generation may be different from what was originally planned.

To achieve this shift of generation from one aggregate unit to another requires the ability to rebid in near real time. This form of re-bidding would be unlikely

to have any impact on market prices as all that is occurring is a shift in generation between aggregate units by increasing the MW quantities offered in high priced bands for some aggregate units and decreasing the corresponding amounts for other units. The total supply curve offered by the portfolio would not materially change.

5 Need for Wind Generators to Rebid

With the Federal Governments target of increasing renewable generation by 2% by 2010, there is likely to be a substantial increase in wind generation. This generation will cluster near the best wind resources. Wind farms of 100MWs or more are quite likely in the foreseeable future. These farms would exceed the threshold of 30MWs for being self-dispatched.

Other than the ability to shut down a turbine and reduce its output to zero, the output of a wind turbine is not controllable. Even though individual turbine outputs can be highly variable, the output of a wind farm is more stable but still not controllable.

Under the Code, wind farms over 30MWs will be obliged to be centrally dispatched and follow dispatch instructions. The dispatch instructions are based on the outputs of SPD (the scheduling, pricing and dispatch algorithm). The SPD outputs are, in turn, determined from the supply offers and demand side bids.

Generators which do not follow their dispatch targets are now sometimes liable as a causer to meeting some ancillary services costs.

To avoid becoming a causer a generator has two options:

1. Adjust its output to meet its targets or
2. Rebid to ensure that it gets new targets that match its output.

A wind generator can't readily adjust its output, therefore, it needs to change its bid. To do this a wind farm would have to estimate its output for the end of the next five-minute dispatch period and bid in such a way that its dispatch would equal its predicted output. The rebids could be done in either of two ways.

The first way is to offer the entire wind farm's registered capacity at very low prices and just re-bid the farm's maximum available capacity to equal the wind farm's predicted output. This would ensure that NEMMCO's dispatch always equalled the bid available capacity and hence the predicted output.

The other way would be to only bid very high and low prices and re-bid the MWs quantities in the very low and high price bands such that the MW quantity of predicted output is offered in the low priced bands. This approach would also ensure that NEMMCO's five-minute dispatch aligns with the forecast generation.

In conclusion, the only way that wind farms of 30MWs or more can manage within the Code is for such farms to forecast their generation for the next few five minute periods and rebid every five minutes so that NEMMCO's five minute dispatch aligns with their forecast generation. Any impositions on rebidding would hinder the development of large wind farms or create the incentive to have multiple small farms that are outside of NEMMCO's dispatch process. The latter outcome could materially affect system security.

In order to avoid the rebidding problem for wind farms, arrangements could be proposed that would exempt wind farms from being required to participate in the central dispatch process. However, any such arrangements that did not apply to all types of generation would contradict the Code objective of all energy sources and technologies being treated equivalently.

5 Rebidding and Self Dispatch of wind generators

Alternatively if re-bidding is unattractive, we are likely to see the creative structuring of wind generators, in particular, so that they fall outside the NEMMCO dispatch process.

At present those participants who do not explicitly bid into the market have total freedom to increase or decrease their output or consumption of electricity as they wish. At the moment this freedom is matched by the freedom of participants who are centrally dispatched to adjust their bids anytime to change their dispatch. Centrally dispatched and self-dispatched participants have equivalent flexibility.

Any imposition on rebidding will change this symmetry in favour of those who are self-dispatched.

6 Light Handed Regulation Code Objective

One of the fundamental Code objectives is for light handed regulation. This seems to be overlooked in many of the developments of the market.

In this case, there has been no robust analysis of the nature of the problem. Even those who contend that there is a problem describe it as "very small". In this context and with a Code objective of light handed regulation, we submit that there needs to be demonstration of a significant benefit prior to the imposition of any additional regulatory burden. No such benefit has been demonstrated.

As the market develops, there should be an increasing confidence that the market can deliver an efficient outcome. The type of regulation that is proposed is another step in the wrong direction.

6 Summary

In summary, Hydro Tasmania makes the following points:

- It supports the National Generator Forum submission
- There has been no robust analysis of what the problem is which these changes purport to fix.
- Adding additional regulatory burden for, at worst, a very small problem contravenes the Code objective for light handed regulation
- The additional constraints impose a disproportionate burden on renewable energy businesses due to the more frequent use of rebidding due to the nature of their fuel