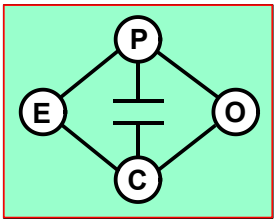

Consultation

on

Promoting competition in the wholesale electricity market in the transition toward 100% renewable energy

ISSUES PAPER

Submission by

Electric Power Optimization Centre

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Chapter 2

1. Do you agree that a key competition issue in the transition toward 100% renewable electricity is that it weakens competition during extended times when intermittent generation cannot run?

1.1 Although this weakening of competition is an issue, its impact should be no more deleterious than the gross pivotal position of some generators in the New Zealand market, as long as the exercise of market power is monitored closely, and measures are put in place to penalize exercise of market power detected by this monitoring.

1.2 We agree with paragraph (2.33) that monitoring has limits as a tool for mitigating the exercise market power. However these limits are not as pessimistic as claimed in this paragraph. Opportunity cost under various risk preferences can be estimated using well-tested models such as the JADE model used by the Electricity Authority. These can be used as benchmarks for observed behaviour.

2. Do you have any comments on the contents of this chapter?

Chapter 4

3 Do you have any comments on the impediments to generation investment?

3.1 In an energy-only wholesale electricity market consisting of dispatchable (thermal) generation, all offering at short-run marginal cost, new entry in each technology occurs optimally at the margin. This assumes that there are no barriers to new entry and investors discount risk by the same factor.

3.2 Exercise of market power in energy-only markets is supposed to be disciplined by the threat of new entry. Several factors make this problematic.

- 3.2.1 If market power changes the dispatch merit order, then the resulting price signals can lead to suboptimal investment.
- 3.2.2 Intermittent renewable generation and stored hydro generation have very different risk profiles.
- 3.2.3 New entry of stored hydro plant is constrained to the extent that it is considered infeasible.

3.3 Because new entry in some technologies is very difficult, the threat of new entry is not sufficient to discipline market power. To do this, short-run behaviour of market participants should be monitored and compared with competitive benchmarks.

4. Do you agree that the lag in investment is not due to anticompetitive behaviour to slow down investment and discourage entry, or can you provide instances or other evidence to the contrary?

4.1 We agree that the lag in investment in New Zealand is unlikely to be due to anticompetitive behaviour, but due to other factors. An explanation for a delay in investments could be the uncertainty around government interventions, such as those proposed in the NZ battery project.

5. Do you have any comments on the role and impact of carbon pricing on investment and wholesale market competition or the other contents of this chapter?

5.1 Carbon prices affect the wholesale electricity price. In the short term they impose costs on non-renewable electricity generation that are reflected in system marginal costs. In the long term they force the shutdown of non-renewable electricity to be replaced by plant that has higher long-run costs (in the absence of carbon charges).

5.2 In the short term, the effect on wholesale electricity prices is complicated by water valuation processes. The Electricity Allocation Factor (EAF) has been estimated (using SDDP models and current thermal capacity) to lie somewhere in the range 0.4-0.5, meaning a $100/tonne increase in CO2-e price yields a $40-50 average increase in wholesale electricity prices. This factor should decrease with the replacement of non-renewable plant with renewable energy.

5.3 CO2 charges add to the short-run marginal cost of emitting plant making them less efficient in comparison with renewable plant. In a competitive wholesale market this will make them dispatched less often, which is a desired outcome. Inframarginal rents for renewable plant will increase, even if the wholesale market is perfectly competitive. One expects that increased prices will incentivize investment either in demand response (to replace thermal peakers) or in wind/solar generation to replace baseload.

5.4 Monitoring market participant behaviour will discipline market power exercise irrespective of the presence of carbon prices, which should be accounted for in benchmark marginal water values.

Chapter 5

6. Do you agree with the Authority's overall conclusion that it currently considers that continued reliance on the current conduct-based measures to mitigate the exercise of market power remains broadly appropriate in the transition toward 100% renewable electricity?

6.1 We agree that conduct-based measures are the best tool to mitigate the exercise of market power.

6.2 Some care is needed in designing appropriate benchmarks. For example, conduct-based measures should include benchmarking historical water values against opportunity-cost estimates using JADE. Also, lack of flexibility can result in different market offering behaviour than one might expect from a perfect market.

7. Do you agree with the objective and evaluation criteria set out in this chapter?

7.1 The objective of interventions is to act for the "long-term benefit of consumers". It is not clear how this is to be measured, e.g., what time scale is meant by "long-term". One would hope that this would be resolved by the evaluation criteria, but these repeat the phrase in a somewhat tautological fashion. It would be good to be precise in how this long-term benefit is to be measured.

8. Do you have any comments on the contents of this chapter?

Chapter 6

9. Are there any other options that would promote wholesale electricity market competition in the transition that you consider would be more effective and efficient?

9.1 The transition entails large-scale investment in wind and solar generation. Compared with hydro (such as Onslow or other hydro projects), wind and solar has approximately constant returns to scale. This makes them ideal candidates for new entry at the margin. A wholesale electricity market for wind, solar and thermal peaking plant, backed up by Onslow and other stored hydro plant could work well, at least in terms of incentivizing new entry. In such a market, river chains[1] would revert to Government ownership to be offered according to system optimal schedules and the investment market would be confined to wind, solar and thermal peaking plant, as well as other potential new technologies. Inframarginal rents earned by hydro plant would accrue to Government, who would also be setting the appropriate level of risk to accept in the way that their reservoirs were operated. The flexible hydro plant would be charged with managing short-term volatility from wind and solar.

9.2 We realize that the transaction costs and political and commercial disruption from reverting river chains to Government ownership are a major impediment to such a proposal. It is not without precedent. Such a move has been proposed in France, whereby EDF nuclear plant is to be taken out of the market to be owned and operated by the French government.

10. Do you have any comments on the contents of this chapter?

10.1 The Authority should consider changes to the pre-dispatch process. Inefficiencies from a single settlement real time market might not accrue solely from learning competitor's strategies, but from poor coordination arising from imperfect information[2]. The effects of this would be less dramatic if confined to a balancing market. Most overseas jurisdictions have separate day-ahead and balancing markets, where the former accommodates the dynamic constraints of unit commitment. This should at least be considered for New Zealand where river chains have similar constraints.

Chapter 7

11. Are there any other options that would better facilitate efficient investment in renewable generation to promote wholesale electricity market competition in the transition?

12. Do you have any comments on the contents of this chapter?

[1] One could restrict this to stored hydro only, but run-of-river plant could easily be included in the portfolio.

[2] See Philpott, A. Price discovery can be inefficient, www.epoc.org.nz, 2021.