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Dear Mr Murashev

## **Introduction**

1. Mighty River Power welcomes the opportunity to make a submission on Castalia's consultation paper, prepared for the Electricity Commission, entitled "*Electricity Security of Supply Policy Review*" (the Castalia Paper), dated March 2007. Mighty River Power also appreciated the opportunity to discuss our views with Castalia prior to the Castalia Paper being published.
2. No part of this submission is confidential and we are happy for it to be made public.

## **Opening comments**

3. Mighty River Power believes that the competitive operation of the electricity market can be relied on to manage security of (energy) supply appropriately. We believe that the dry years of 2001, 2003 and 2006 – where there was the potential for electricity shortages, but none actually occurred – provides sufficient evidence to support this view. The operation of Whirinaki in 2006 helped reduce the risks, and dampened spot prices, but does not change this conclusion. Castalia have not identified any market failures, or evidence of market failures, that may provide grounds for concern as to whether the market can be relied on.
4. The Government's Reserve Energy Policy, and the establishment of Whirinaki, reflects a perception that managing security of (energy) supply is the Government's responsibility, irrespective of the fact the Government passed responsibility to the market in 1999 when ECNZ was broken up. The perception of Governmental responsibility is similar to the way that the Government is held accountable for hospital services, and waiting lists.
5. It should be borne in mind that the Government's Reserve Energy Policy was introduced in response to two dry-years that occurred over a very short space of time, 2001 and 2003.

The competitive wholesale electricity market was relatively new, the three generator State-Owned Enterprises (SOEs) were relatively young and the information available at that time was lacking.<sup>1</sup> There is evidence that there was a lack of maturity in the way that dry-year risk was managed. It would appear some market participants were caught out by the lure of very low spot market prices, which lead to a failure to take out adequate hedge cover at prices that turned out to be reasonable. NGC provides a prime example. NGC's hedge contracts expired in May 2001. By the time they sought renewal of their hedge contracts, prices had increased to reflect that the country was moving into a new dry year.<sup>2</sup> NGC declined to take out hedge contracts complaining that they were over-priced, only to find that they were exposed to even higher prices in the spot market. The hedge prices were not over-priced, they simply reflected the relative scarcity of electricity in a dry year.

6. Another contributing factor to the uncertainty associated with the fledgling electricity market, was ECNZ's limited development of new generation in the period leading up to its splitting into three SOEs. This caused a gap in the generation investments cycle, at the same time as the new SOEs were finding their feet in the first years of the market.
7. It is understandable that the Government felt nervousness about how well the market would manage the dry-year risk in such circumstances, particular as the market had not been operating long enough to prove itself.

### **Reliance on the market**

8. Mighty River Power believes that the market can be relied on, in relation to energy supply, to satisfy the principal objective in the Government Policy Statement on Electricity Governance 2006 (GPS) to *"ensure that electricity is produced and delivered to all classes of consumers in an ... reliable ... manner"*. We also consider that the market can be relied on to achieve the GPS' specific outcome *"risks (including price risks) relating to security of supply are properly and efficiently managed"*.<sup>3</sup>
9. Mighty River Power considers the Castalia Paper to be supportive of our view that the electricity market can be relied on to ensure appropriate management of security of supply. We believe this is something that Castalia should be more explicit about.

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<sup>1</sup> In particular, limited information was available on thermal fuel stocks which are in effect the discretionary fuels.

<sup>2</sup> It is unclear why NGC did not seek to secure new hedges prior to its existing contracts expiring.

<sup>3</sup> Paragraphs 1 and 2(b) of the GPS.

10. The Castalia Paper describes how normal market operation will balance demand and supply, even where there is a reduction in supply:<sup>4</sup>

If supply is reduced, prices rise to attract supply from more costly sources and to suppress demand to be within the level of supply available. If supply is inflexible or if demand is inflexible, prices would simply need to go as high as necessary to keep the two in balance. Those who value supply most will be satisfied. Those who value supply less – perhaps because they have alternatives – will opt out.

Of course, these mechanisms are in operation in electricity markets. When supply is tight, spot prices increase, higher cost sources like Huntly and New Plymouth are used more and major users reduce consumption to some degree.

11. The Castalia Paper also articulates why electricity participants have incentives to manage security of supply risks:<sup>5</sup>

Retailers with insufficient contracts to cover their customers' demand will make substantial losses during dry periods when spot prices are high and they have to buy their shortfall. As a result, we expect market participant [sic] - acting in their own commercial interests - to provide enough generation capability - enough of an **energy margin** - to ensure that demand restraints are unlikely to be needed.

12. We agree with this. In a competitive electricity market the risk of dry-year, and the resulting potential scarcity of electricity, will be signalled through increases in spot and hedge prices. As the risk of a dry-year increases so will spot and hedge prices. This sends a signal to electricity generators to increase use of thermal generation (which is made economic by the higher spot prices), and to 'store' electricity in hydro dams (which can be sold at a later time, at a higher price). End-users in turn face strong incentives to reduce electricity demand. Either because of exposure to high spot prices, or the opportunity to profit from on-selling hedge contracts. This is how the market is intended to work, and how it did work in 2001, 2003 and 2006. The lights stayed on, despite these being some of the driest years that New Zealand has experienced.

13. In each of 2001, 2003 and 2006 the risk to security of supply was signalled by wholesale electricity price increases. We believe that Castalia should review these years, and compare them with dry years – notably 1992 – before the wholesale electricity market was established (and review the findings of the 1992 enquiry). In our view, Castalia would find that the market is providing a higher degree of security than the previous centrally planned regime.

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<sup>4</sup> Box 3.1, page 26 of the Castalia Paper.

<sup>5</sup> Page 29 of the Castalia Paper.

14. The only potential evidence that the market cannot be relied on to manage dry-year risks contained in the Castalia Paper that may suggest that the market cannot be relied on is 19 June 2006:<sup>6</sup>

On 19 June 2006, the country came very close to localised blackouts due to capacity shortages. Most observers believe that this was due to an unusual combination of constraints and plant outages, and raised questions about the way the market handles plants with significant start-up costs rather than indicating that the New Zealand market is peak-constrained yet.

15. We refute the associated inference that 19<sup>th</sup> June was evidence of this, or, more erroneously, that it was evidence of market failure. Rather, we believe that 19<sup>th</sup> June demonstrated that the market is still capable of delivering security of supply even under a low-probability combination of events:

- a. Severe weather conditions;
- b. 190MW reduction of supply from Tokaanu Power Station as a result of unexpected weed buildup; and
- c. 125MW reduction in output from Mighty River Power's hydro scheme due to a poorly-timed Transpower circuit outage.

16. The only localised demand shedding was observed in the Bay of Plenty due to transmission grid insufficiency. This has nothing to do with the market. Transpower has identified this area as being in need of transmission reinforcement for some time now.

17. We remind Castalia that even under this combination of events supply was maintained. Furthermore, the inference that the system was "*very close*" to blackouts is exaggerated. The perceived risk was that if a major plant (e.g., Otahuhu CCGT) had tripped, there would have been insufficient reserve available to return the system to a stable frequency. Hence the alleged risk of blackouts (which would have possibly resulted in tripping of automatic under-frequency load shedding<sup>7</sup>) would have required a major plant to fail. We note that there are approximately 10-12 such events per year. This would suggest that the probability of blackouts as a result of 'capacity shortages' during the small number of hours of system stress was less than 1 in 1000.

18. Given this, Mighty River Power reiterates that 19 June 2006 shows the ability of the market, and the security policy in New Zealand, to deliver security of supply under an "N-3" series of events.<sup>8</sup>

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<sup>6</sup> Section 3.2.2 of the Castalia Paper.

<sup>7</sup> Mighty River Power is of the view that AUFLS would not have operated due to the significant quantity of undispached reserves (e.g., free governor action) available on the system at that time.

<sup>8</sup> The events of 19 June would have been completely avoided if Transpower's Outage Planning had been more sensible. Notably, despite our objections, Transpower conducted maintenance on our Maraetai - Whakamaru connection lines, which substantially reduced our capacity, and our ability to offset the potential shortage in electricity supply that arose at that time. The market was providing the appropriate signals for more generation, but transmission limitations resulting from the circuit outage limited the ability of the market to respond. We doubt Transpower will repeat such poor outage timing in the future.

## *Market failure*

19. It is notable that the Castalia Paper does not identify any market failures that could mean the market should not be expected to be able to manage security of energy supply. The Castalia Paper claims to discuss three types of market failure:<sup>9</sup>
- Contingency-specific failure.
  - Periodic failure.
  - Systematic failure.
20. None of these are actually market failures. Market failures are things like the existence of monopolies, imperfect information, externalities and public goods.<sup>10</sup> At most, contingency-specific failure, periodic failure and systematic failure may be possible symptoms or outcomes of market failure, and they may reflect the way in which the market does not deliver the *"optimal security of supply standard"*.<sup>11</sup> They beg more questions rather than saying anything about market failure. Why would it be *"that markets do not deal well with low probability events"*? Or that there might be a *"difference between the private and social cost of the error"*? Or *"on average and in general"* the market may fail *"to deliver adequate resources"*?<sup>12</sup>
21. Mighty River Power is of the view that there are only two types of market failure which, in theory at least, could mean that the market may not appropriately manage security of supply.
22. A potential market failure could be imperfect information. To the extent that there is imperfect information in the market about the risk to security of (energy) supply, we consider that this is addressed by the Electricity Commission's publication of the Minzone and associated thermal fuel stocks (recognising that hydro information has been available since approx 1998). We find the Minzone to be useful, as an independent check on our own assessment of security risk. We understand that less sophisticated market participants who are not able to undertake their own assessments also find the Minzone to be useful.
23. The other potential market failure that could be relevant would be if the market was not sufficiently competitive. A textbook analysis would suggest lack of competition could mean under-supply and over-pricing. In this context it is relevant that the wholesale electricity market has gone from a monopoly (ECNZ) to duopoly (Contact Energy + ECNZ) to a workably competitive market. While questions have arisen about the level of

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<sup>9</sup> Pages 13 and 14 of the Castalia Paper.

<sup>10</sup> The Castalia Paper (section 7.3, page 66) correctly notes that *"Reserve Energy is not a public good."*

<sup>11</sup> It follows that we refute that Table 6.5, and section 6.4.3, of the Castalia Paper match potential solutions to market failures.

<sup>12</sup> Pages 8 and 9 of the Castalia Paper.

competition in the wholesale electricity market, no evidence of insufficient competition has, to date, been produced.<sup>13</sup>

24. The importance of identification of the market failure is important when considered against potential policy options. Without proper identification of the market failure policies may be aimed at dealing with the apparent symptom rather than the cause of the problem. Some options could actually exacerbate the problem, e.g. if inadequate competition is the cause of the problem options such as centralised procurement would make matters worse.
25. The Castalia Paper claims *"Our analysis of forward generation investment commitments and plans indicates that some form of market failure cannot be ruled out."*<sup>14</sup> However this finding is tempered against the acknowledgement that *"... while it is useful to classify types of market failure in principle, we find that at present there is simply no information to identify in practice what may be causing potential problems, and how serious those problems are"*.<sup>15</sup> In other words, Castalia's claim that market failure cannot be ruled out is based on uncertainty as to whether forecast future generation projects will actually go ahead. However, uncertainty over future investment will exist in any market that is not centrally-planned and even in centrally planned systems, i.e. 1992 under ECNZ the result of a shortage was worse than in period post the break-up of ECNZ.
26. The reality is that the sum of all potential generation under investigation by potential and actual participants is significantly in excess of potential or expected demand growth. However, the quantity that will actually be developed will be such that the investors each individually expect to earn their required rate of return overtime. In the absence of perfect information it is not possible to determine whether the quantity that will be developed is sufficient at any given point in time to maintain prices at or below long-run marginal cost (LRMC). Can we say with surety that New Zealand wine production will increase with demand, or any other product supplied in a competitive market?
27. It is notable that the Castalia Paper concludes *"... we believe there is insufficient information to conclude what the exact nature of the market problem is, or indeed if there is a problem"*.<sup>16</sup> We agree with this statement because the market actually works.

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<sup>13</sup> This is probably a matter beyond the scope of Castalia's present review. It may be a matter that is better suited to the Electricity Commission's Market Design Review, which was foreshadowed in the Statement of Intent for 2006-09. The intent is to review the performance of the electricity market, and identify any modifications that maybe desirable to improve its performance. Details can be found at: <http://www.electricitycommission.govt.nz/pdfs/opdev/wholesale/market-design/Presentation.pdf>

<sup>14</sup> Page 7 of the Castalia Paper.

<sup>15</sup> Page 13 of the Castalia Paper.

<sup>16</sup> Page 15 of the Castalia Paper.

## **Castalia's assessment of the 'optimal' level of security of supply**

28. The Castalia Paper starts off by asking:

- a. What is the optimal security of supply standard for New Zealand?
- b. Is it likely that the market will deliver this level of security by itself?

29. The Castalia Paper suggests that the present 1-60 year standard may be too high, and its heavily qualified "*preliminary calculation*" suggests the optimal level would be between 1-11 and 1-35.<sup>17</sup> Mighty River Power is comfortable with a 1-60 year standard. The Castalia Paper's calculations beg the question, what level of security of supply would the "*ordinary market*" achieve in the absence of intervention? Would it be in the range that Castalia estimate, and if not why not? Paragraph 47 of the Government Policy Statement on Electricity Governance 2006 makes the presumption that it would be less than 1-60 years but provides no empirical evidence for this. Further we note that much of the angst around dry-years is caused by high spot prices and price volatility. This is incorrectly perceived to reflect a failing of the market.

30. However, Mighty River Power cautions Castalia that estimating an optimal security of supply, and then forming a view that the market may not be able to be relied on to deliver it, does not necessarily mean that regulatory intervention is warranted. Castalia could be in error, due to miscalculating (i) the "*optimal security of supply standard*" and/or (ii) the likelihood of the market delivering this standard. This creates a serious risk of Type 1 Error – intervention where none is justified. There can be no surety that regulatory intervention is warranted unless it has been determined that there is a market failure.

## **What changes to the Reserve Energy Policy should be considered?**

31. Given that the Castalia Paper concludes "*... we believe there is insufficient information to conclude what the exact nature of the market problem is, or indeed if there is a problem*"<sup>18</sup> we are surprised that the Castalia Paper did not raise as an option, removal of the regulated procurement of reserve energy from Whiranaki. Mighty River Power does not advocate the removal of regulated procurement of reserve energy from Whirinaki. We hold this view not because we believe that this intervention is justified by any market failure, or shortcoming of the market, but rather because we consider that it mitigates against the risk of further and more substantive regulatory intervention in response to some future dry-year. We say this in the context of having read Cabinet Papers on the matter of security of (energy) supply giving consideration to a single-buyer wholesale electricity market or reintegration of Genesis, Mighty River Power, Meridian and

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<sup>17</sup> Page 7 of the Castalia Paper.

<sup>18</sup> Page 15 of the Castalia Paper.

Transpower.<sup>19</sup> It is better to leave in place a regulatory intervention which has relatively minor adverse impacts on the wholesale electricity market, than risk interventions that could have much more substantive impacts.

32. The Castalia Paper appropriately considers how the current Reserve Energy Policy could be fine-tuned. In this respect we have a number of comments.
33. Mighty River Power noted above that we consider the Minzone to be a useful tool, which helps to address imperfect information (to the extent that it exists). We believe though that the Minzone is somewhat of a 'black box'. It would be more useful if the Electricity Commission provided greater information on how the Minzone works, and on the assumptions that are used in the model. Our views accord with the Castalia Paper's observation:<sup>20</sup>

Most stakeholders consider the information published by the Commission is helpful, but could be improved in several ways. For example, stakeholders do not understand how the Minzone is actually derived and many noted that they would welcome more clarity about the assumptions and modelling methods behind the Minzone. Stakeholders with modelling capabilities (generators and retailers) want to be able to reproduce the Minzone for closer cross-checking with other modelling carried out internally. Stakeholders without the modelling capabilities (such as major energy users) want some reassurance that the assumptions behind the Minzone are realistic. Stakeholders without technical knowledge (mainly consumer groups) would also like to see information that is simple and easy for consumers to understand.

34. Castalia argue that the current voluntary approach to information provision be retained *"Given that the Commission is generally satisfied with the quality of information provided so far"*.<sup>21</sup> We agree with this.
35. The Castalia Paper alludes to a number of potential distortions that regulated procurement of reserve energy can cause. Setting the price at which the procured reserve energy can bid into the market at a relatively high price helps to mitigate this. Mighty River Power believes that the bid price should be the higher of \$200/MWh and the short-run marginal cost (SRMC) of the Reserve Energy. The SRMC of Whirinaki will have increased substantially due to high oil prices. Mighty River Power estimates that the SRMC is now likely to be higher than \$200/MWh.
36. Mighty River Power does not support the pre-consenting of potential new regulated Reserve Energy. Mighty River Power does not believe that additional regulated

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<sup>19</sup> Cabinet Paper from the Office of the Minister of Energy *"Electricity Market Review: Summary of Review (Paper One)"*, 2006.

<sup>20</sup> Section 9.5.2, pages 83 and 84, of the Castalia Paper.

<sup>21</sup> Page 20 of the Castalia Paper.

procurement is necessary, which is consistent with our view that the market can be relied on.

37. In addition, without amendment to the Resource Management Act 1991 (RMA) it is considered that there may be legal difficulties with 'pre-consenting'. There may be the cost of defining the project in sufficient detail to apply for consent, and the possible need for subsequent changes to the consent as technologies change.<sup>22</sup> There may also be the cost to the relevant local authority, the community and possibly the Courts in engaging in a process that is acknowledged openly to be for the purposes of providing the applicant with an 'option'.
38. Although the RMA does not actually prevent a person from applying for a resource consent for a facility that may never be needed or built, such an approach is likely to face difficulties.
39. In addition, if a proposal involves "*significant adverse effects*" or a discharge of contaminants, then it is necessary to identify in the application material "alternative locations or methods" for the proposal.

### **Scopes of Regime and Policy**

40. The discussion in section 8 of the Castalia Paper, "*Scopes of Regime and Policy*", suggest that the GPS is overly prescriptive, and addresses a number of policy matters which are more appropriately left with the Electricity Commission. The Castalia Paper suggest that the GPS should:<sup>23</sup>
- Explain how the high-level legislative objective should be interpreted by providing more detail, including quantifying the objective where possible
  - Define and set clear boundaries on the powers that the Commission can use to achieve the objective (including any ability to impose costs on market participants either directly or by compelling them to act in a certain way), and
  - Leave all other details to be defined in the Policy, thus allowing the Commission maximum operational flexibility subject to the two bullet points above.
41. The Castalia Paper argues that this approach will help to ensure that:<sup>24</sup>
- The regulatory objective is clear to the Commission and market participants alike
  - The Commission, as an expert regulatory body, is given appropriate operational flexibility to achieve the regulatory objective in the most effective way, and

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<sup>22</sup> Which changes themselves, depending on their nature, require public notification: section 127 of the RMA. In addition, if changes proposed are fundamental to the activity consented then an entirely new application for consent may be required.

<sup>23</sup> Page 68 of the Castalia Paper.

<sup>24</sup> Page 68 of the Castalia Paper.

- Market participants have clarity and certainty with respect to the sort of costs the Commission can impose in order to achieve the objective, without the need for additional regulations to be introduced by Government
42. Mighty River Power agrees with these views. They coincide with the views that we expressed recently in our submission on the Government's draft New Zealand Energy Strategy, for example:<sup>25</sup>
- The GPS is a mix of objectives, outcomes and policy initiatives the Government either wants the Electricity Commission to consider, or requires the Commission to implement. The GPS is very prescriptive in places as to how the Electricity Commission should implement the Government's policy initiatives.
- This raises questions about the boundary between the role of the Electricity Commission in developing policy and giving effect to the GPS, and the role of Government.
43. Given Castalia's views, Mighty River Power suggests that the appropriate next step for Castalia would be to propose an alternative version of the Reserve Energy section of the GPS.

### **Concluding remarks**

44. In summary, Mighty River Power believes that the market can be relied on to appropriately manage security of (energy) supply risks. The market can be relied on – in relation to electricity supply – to satisfy the principal objective and specific outcomes in the GPS, in terms of security of (energy) supply. No further intervention will result in the GPS objectives being better satisfied.
45. The dry-years in 2001, 2003 and 2006, where there was the potential for electricity shortages but none occurred, demonstrate that the market works. The operation of Whirinaki in 2006 helped reduce the risks, and dampened spot prices, but does not change this conclusion.
46. We do not believe that the Electricity Commission should procure further reserve energy in the future, or gain pre-consents for potential sites. We believe that the Electricity Commission could improve the operation of its Reserve Energy Policy by providing more information on the assumptions that underlie its Minzone model.

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<sup>25</sup> Paragraphs 50 and 51 of Section 8 of Mighty River Power's secondary submission to the Ministry of Economic Development on the Draft New Zealand Energy Strategy: Regulatory and Non-Environmental Matters, 5 April 2007.

47. If the Commission has any queries regarding this submission please do not hesitate to contact the undersigned (on 09 308 8259 or robert.allen@mightyriver.co.nz) or William Meek, Mighty River Power's Generation Investment Manager (on 09 308 8247 or william.meek@mightyriver.co.nz)

Yours sincerely

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