

Submission on UTS Nov, Dec-19 Spilling

Prepared by Energy Link

for

The Electricity Authority



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1 Introduction

We welcome the opportunity to make this submission and to contribute positively to the debate over the conduct of trading in wholesale electricity markets. Questions on this submission can be directed to Greg Sise, Managing Director, Energy Link Ltd, at 03 477 3572 or greg.sise@energylink.co.nz.

2 Opportunity Cost of Water

The decision paper states that the “opportunity cost of water is zero for a spilling generator” although it is noted that this does not imply a zero offer price because of other costs; for example, the TPM currently requires SI generators to pay \$5.35/MWh for injection on the SI grid.

By definition, opportunity cost is the value of the next-best alternative¹.

The UTS claimants also expressed the view that opportunity cost of water is zero while spilling, adding the “short-run marginal cost (SRMC) is near zero”. Without providing any background or explanation, the decision paper appears to have taken this statement at face value.

However, the concept of opportunity cost does not have to relate just to the short-run. It is, for example, entirely valid to assess the opportunity cost of a medium or long-term business strategy, and in this case the opportunity cost could equally be established by the value of the best alternative medium or long-term strategy.

By failing to consider the opportunity cost in the context of SI generators’ longer term strategy for managing hydro storage, we suggest the decision paper has a weakness which calls the preliminary decision into question.

This is particularly the case for Meridian Energy because it is Meridian that has the most storage, and therefore the greatest responsibility, above all others, for ensuring there is adequate hydro capacity available. As a result, Meridian also carries the greatest risks and costs associated with achieving secure supply.

It is our observation that relative to when ECNZ managed hydro storage², Meridian provides a significantly higher level of supply security³. Consumers benefit from this high level of supply security during dry periods when inflows are below average and hydro storage falls below what might otherwise be expected given the time of year.

For example, if Meridian decided to run its lakes lower to avoid spilling, then shortages would be more likely if all other things were held equal.

The opportunity cost of higher dry year security can only be measured over the longer term, probably over at least two years, because of the non-zero probability of a succession of dry years, combined with the non-zero probability of a dry period which could be significantly drier than seen in the historical records back to around 1930⁴.

¹ Wikipedia mentions “the highest value option forgone”.

² Both before and after the spot market was established on 1st October 1996.

³ In 1992 it was discovered that ECNZ had operated its storage lakes to a 1-in-20 standard but after 1992 this was raised to 1-in-60 in response to the finding of an inquiry. We observed that when ECNZ was finally split in 1999 that the standard was raised even higher.

⁴ New records for dry periods were set in 2012 and 2017, indicating that the current sample set of roughly 89 inflow years is insufficient to fully characterize the inflows distribution.

It may be that a wet period is so wet that spill cannot be avoided even if the lakes were initially at very low levels, but the decision paper does not consider whether this was the case, or not, late last year. If, for example, spilling was inevitable given any credible storage scenario, then that would provide a stronger base for the assertion that the opportunity cost of water was zero while spilling during the period in question.

Nor does the decision paper consider whether, by upholding the UTS decision, there is a risk that the lakes will be managed less conservatively in future with the objective of reducing the probability of spill. If offer prices are regulated, or effectively regulated by virtue of the UTS decision being upheld, then the value of Meridian's current long-term storage management strategy might fall below its opportunity cost, which could trigger a move to a lower level of supply security.

At present, having to spill at various times is a consequence of managing the storage lakes to a particular level of security, and may be justified as such. If decisions made by the Authority remove that justification, then it will be possible for Meridian to argue that operating the lakes at a lower level of security is justified by the reduced likelihood of spill.

Put another way, in the longer term there are trade-offs between spill and security, and these are taken into account by market participants when formulating strategies and operating according to those strategies. It is essential that these trade-offs are considered, to reduce the potential for unintended consequences. For example, we could end up with a uniquely Kiwi take on the 'missing money' problem⁵ that is well known in competitive energy-only electricity markets.

Consumers certainly want cheap power, but as we know, the vast majority of consumers also place a high value on having a secure supply.

The differences between storage management strategies with significantly different storage outcomes, are surprisingly small, which is the result of the temporal connection between storage states over time. Reaching the point of spill today, for example, is partly the result of inflows, but also partly the result of storage being close to full yesterday. Being close to full yesterday is the result of inflows the day before, along with the previous day's decisions about how much to offer into the spot market at any particular price; suffice to say, offer quantity and price are a function of water values along with other factors.

If we follow this chain of causality backward in time, then we can see that a small change in storage management strategy can accumulate over time to make a big difference to the probability of spill today, but also to the likelihood of shortage at some point along the way, depending on whether the small change reflects a more or less conservative strategy, respectively. That being the case, we acknowledge that it may not be an easy task to determine how much the spilling late last year was the result of choices made in the past about storage management. Nevertheless, we believe this should be considered before confirming the UTS decision.

3 Other Costs of Securing Supply and Maintaining Retail Competition

It is in the public domain that Meridian has a swaption with Genesis which gives it the right to call a swap⁶ for 100 MW year-round and an additional 50 MW from April to October. The premium paid

⁵ This can occur when the regulator places a cap on prices which is too low to incentivise sufficient generation to provide security of supply to a specified level.

⁶ Which may or may not have the form of an industry-standard CFD.

by Meridian is \$19 million per annum which equates to \$16.74/MWh. This supports Genesis in keeping the Rankine units in the market, and it helps to manage Meridian's risk of being short on generation during an extended dry period.

For a price-taking market participant, a typical hedge contract is a fixed cost, in economic terms, because its settlement amounts do not depend on production. For a market participant with some market power, but particularly with the right but not the obligation⁷ to call a hedge like Meridian's swaption, there can be an element of variable cost associated with a hedge.

The event in question was during a period of low prices in both islands, and hence there would be no need for Meridian to call on the swaption. However, the swaption became a necessary component of Meridian's overall strategy after the reforms of 2010 when virtual asset swaps (large, 15-year hedge contracts) were put in place between Meridian and Genesis and Meridian and Mercury, which we assume has increased Meridian's exposure to high spot prices⁸ during periods when it is short on generation, i.e. the hydro lakes are low and it has to reduce generation to conserve storage.

Historically, Meridian, and ECNZ before them, maintained lower levels of hedge cover to avoid becoming short on generation during dry periods, but this strategy could no longer be sustained after the reforms.

Consumers benefited from the reforms by an increase in competition between the large gentailers right across the country.

The link between the wet period which is the subject of the UTS, and the swaption is not obvious, but the swaption, and the high level of retail competition, will no doubt be factored into Meridian's storage management strategy, and we suggest this should be considered along with our suggestions above.

As above, this is all about avoiding unintended consequences.

⁷ Meridian appears to have a high degree of flexibility in when and how often it can call on the swaption.

⁸ Meridian had to sell these contracts in the South Is, thus increasing exposure to high spot prices in the South Is.