

## **Hydro Tasmania's Submission on OTTER's Regulation of Raise FCAS in Tasmania**

30 April 2010



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## 1 Executive Summary

Frequency control ancillary services in the broader NEM represent a very small part of the value of the market. In contrast, the Tasmanian context is quite different as a totally different supply demand situation for the fast raise<sup>1</sup> services exists with a shortage of supply in Tasmania. OTTER believes that this creates a significant impact on the market which should be ameliorated by the current regulatory process of declaring the service. There are three key considerations that need to be accommodated in the regulatory outcome for it to be successful:

- (i) The form of regulation should in no way impact the spot or physical offer and dispatch process. It is impossible to fairly regulate a region within a global market by imposing limitation on a single supplier in that competitive environment;
- (ii) The form of regulation should encourage new entrant in markets where there is a more efficient new entrant available; and
- (iii) Hydro Tasmania should not be restricted in recovering a reasonable return on its assets nor subjected to excessive costs or unmanageable risks.

In Hydro Tasmania's view, this can be achieved by the Regulator by:

- Not regulating the physical raise contingency FCAS product
- Approving pricing principles for raise contingency FCAS hedge products in Tasmania
- Approving the contract terms for the regulated product
- Providing a process of review for any participant which disagrees with a quoted price from Hydro Tasmania for raise contingency FCAS
- Setting the period of the price determination for 3 years

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<sup>1</sup> The demand / supply balance of fast raise FCAS (r6) is materially different to the demand / supply balance for slow raise FCAS (R60) and delayed raise FCAS (R5).

The Supply and Demand balance for the relative raise contingency FCAS products varies considerably in Tasmania. It is widely acknowledged there is a very tight supply situation in the fast raise FCAS product relative to slow and delayed products. Thus while it is proposed any regulation of raise contingency FCAS products should be through pricing principles for hedges, there may be sound reasoning for varying principles or benchmarks between raise contingency FCAS products.

Hydro Tasmania's reasoning for this position is elaborated in our submission. The layout of our submission consists of five major sections covering the following:

### **Regulatory Framework**

This section provides a high level view of the regulatory framework within which the Regulator is operating.

### **Hydro Tasmania's Current Pricing Policy Methodology**

This section addresses the approach adopted to date by Hydro Tasmania in pricing fast raise contingency FCAS. The description brings out some key issues including:

- Many of the parameters affecting the cost of supply of raise contingency FCAS are outside the control of Hydro Tasmania and consequently require assumptions to be made in any forward cost estimate.
- Costs are dependent on a wide range of variables which are increasingly difficult to forecast as the time horizon extends.
- Entering into hedge contracts for raise contingency FCAS changes the risk profile of Hydro Tasmania.

## Prices and Price Control Mechanisms

This section discusses the relative merits of possible forms of regulation. The tables below summarise how well regulation of physical dispatch and financial products meet the principles specified by OTTER.

Principles	Physical	Financial
Be consistent with the National Electricity Objective;	✘	✔
Not be unduly onerous on Hydro Tasmania in its application;	✘	☯
Have minimal impact, if any, on the wider National Electricity Market; and	✘	✔
Not require an amendment to the National Electricity Rules nor add complexity to the National Electricity Market dispatch process.	☯	✔

The price control mechanism to be imposed on, and the prices to be charged by, Hydro Tasmania will:

Principle	Physical	Financial
Be fair and reasonable;	✘	✔
Enable Hydro Tasmania to recover its costs for the efficient provision of the declared electrical services;	✘	✔
Provide market signals that promote efficiency and maximise incentives for other parties to supply raise contingency FCAS in the Tasmanian region; and	✔ (if above new entrant)	✔ (if above new entrant)
Not impose significant regulatory costs on the Regulator or Hydro Tasmania.	✘	✔

Fundamentally we see the regulation of financial products for raise contingency FCAS as a more effective and efficient mechanism relative to physical dispatch. Regulation of hedges is vastly more attractive as they:

- Do not interfere with the most efficient dispatch process.
- Minimise the burden on both OTTER and Hydro Tasmania.
- Deliver a product which is useful to participants in managing their FCAS risks.

This submission includes a high level analysis in support of the above. If OTTER form a different view of the approach to regulation, Hydro Tasmania would like the opportunity to provide further information in support of our approach.

Consequently, Hydro Tasmania believes that the best form of regulation in this case is for the Regulator to approve a pricing policy for Hydro Tasmania's raise contingency FCAS hedge products in Tasmania.

This could be enforced by allowing participants to request a specific contract offer by Hydro Tasmania and then requesting a review by OTTER if the participant believes that the price offered is not in line with the pricing policy.

### **Hydro Tasmania Proposal**

This section outlines the form of regulation which Hydro Tasmania proposes will best meet the criteria specified by the Regulator in the Terms of Reference and under the ESI Price Control Regulations.

### **Period for Price Determination**

If the regulation achieves the intention of attracting new entry – competition in Tasmania for the supply of raise contingency FCAS, it is envisaged that the requirement for regulation will be for a period of time less than 3 years.

This topic is very broad and with significant complexity. Hydro Tasmania is happy to provide additional information on any aspects of this topic and to explain a specific issue if this is required.

## 2 Background

The Regulator has determined that there is reason to declare an electrical service which is raise contingency FCAS provided by Hydro Tasmania for Tasmania. This is a very unusual situation as the Regulator is effectively regulating a part of an electrical service (by virtue of regulating only some of the service being supplied and only one supplier of the service). Hydro Tasmania makes offers for raise contingency FCAS which AEMO may dispatch for Tasmanian and/or global requirements. OTTER is proposing to regulate the provision for raise contingency FCAS, the “defined market” by OTTER being “the market for the supply of raise contingency FCAS from within the Tasmanian region to meet the Tasmanian load requirement”. Raise contingency FCAS is part of a co-optimised solution with energy and FCAS throughout the NEM. Consequently, any regulation needs to be very cognisant of any unintended impacts on the physical outcome of all energy and FCAS outcomes, prices and dispatch, throughout the NEM which may be sub optimal.

This regulation of one supplier of a service means that the criterion for regulation needs to be the efficient costs of that supplier. Normally, if regulating a whole service, the efficient costs of a new entrant are used. This means that, if new entrants can provide the service more cheaply, you would expect new entrants to enter the market. If, however, Hydro Tasmania’s costs are below those of a new entrant then there is unlikely to be any entry and one supplier will remain.

Frequency Control Ancillary Services (FCAS) requirements change on a 5 minute basis. The Tasmanian local requirement, as defined by the Regulator, is determined by two National Electricity Market Dispatch Engine (NEMDE) constraints that address the loss of Basslink (import only) and the loss of the maximum generator (MG) event in the region. Whichever one of these two constraints is the highest sets the value for the local requirement.

In simple terms, the calculation of the FCAS requirements for loss of Basslink ensures there is enough local FCAS enabled to allow for the net loss of

energy from the cable after system protection scheme (SPS) operation has tripped the associated loads.

The equation for determining the local requirement for the maximum generation (MG) event is much more complex as it co-optimises energy and FCAS bids from the global market to determine how much global FCAS should be supplied across Basslink. It is very important to understand that Basslink does not have any FCAS capability per se; Basslink simply transports the service from one region to another.

As FCAS is only delivered when the contingency occurs, transfer capability must effectively be reserved for this purpose displacing energy transfer (i.e. it has been deemed more cost effective to reserve capacity for FCAS than transfer energy); when FCAS is being supplied across Basslink, this is commonly referred to as “headroom” on the cable. Available headroom is the difference between the energy target and the relevant hard limit (min/max transfer or no-go zone).

The co-optimisation process makes trade-offs between energy and the eight FCAS services to produce a total outcome consistent with the National Electricity Objective (NEO).

There are a number of options available to generators to manage their FCAS risk. The options available to generators include:

- **Reducing their output to manage exposure.** A generator is able to limit their liability by reducing their output when FCAS prices are high. It does require a monitoring system to ensure that appropriate action is taken quickly. Roaring 40s have indicated that they currently use this approach<sup>2</sup>.
- **Registration as a non-market participant.** Small generators are able to register as a non-market participant; which enables them to avoid all exposure to FCAS. This option would require the participant to sign up with a retailer to sell its energy.

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<sup>2</sup> Roaring 40s submission to the Review of Frequency Operating Standards for Tasmania., 4 August 2008.

- **Hedge with another participant.** A participant is able to pay a fixed fee to another participant who will undertake to pay all of their FCAS charges.
- **Source their own FCAS.** A participant can develop assets which covers their expected exposure. This can be achieved either by configuring their assets or building stand alone assets.
- **Negotiate with a major load.** Under the market rules, customers are able to provide raise services. Participants can access FCAS by contracting with loads although the current market rules are not conducive to this.

### **3 Regulatory Framework**

This section provides an overview of the statutory and regulatory framework within which the regulation of FCAS in Tasmania will be determined.

#### ***3.1 Economic Purpose of Price Regulation:***

The economic purpose of regulation can be summarised, in this case, as being to:

- Eliminate any potential for pricing of FCAS well above the efficient cost of supplying the service (in the limited circumstances where there is only one supplier of the declared services in Tasmania).
- Encourage investment in additional sources of supply of fast raise contingency FCAS within Tasmania to the extent that this is economically efficient.

#### ***3.2 Statutory Framework:***

The Regulator has high level objectives specified under section 6(2) in the ESI Act which are to:

- promote efficiency and competition in the electricity supply industry;
- establish and maintain a safe and efficient system of electricity generation, transmission, distribution and supply;
- establish and enforce proper standards of safety, security, reliability and quality in the electricity supply industry; and
- protect the interests of consumers of electricity.

A national overlay is provided by the National Electricity Objective, which encourages the efficient provision of reliable competitively priced energy services in the long term interest of consumers. In these objectives, the concept of efficiency is an economic one that must include productive, allocative and dynamic dimensions.

The ESI Price Control Regulation 18 provides some guidance on the possible Forms of Price Regulation which we address in our section 5.

Regulation 33(2) is also relevant as it provides a list of *Matters to be considered* in determining the form of price regulation. In Appendix A we have provided our views on the relevance, if any, of these considerations in this specific case.

### **3.3 Broader Regulatory Framework**

There are several features of the operation of the NEM which make regulation of the price of the declared services via a price cap on FCAS bid into the NEM, or a cap on revenue earned from FCAS sold into the NEM, problematic.

- In the NEM the price of FCAS in any region in a particular dispatch interval is an output of the NEMDE dispatch process. That process co-optimises the dispatch of FCAS and energy in the NEM. As a consequence, there is a close interrelationship between the price at which a generator decides to bid energy and FCAS into the NEM.
- Further, despite the market for the declared services defined by OTTER, there is no means by which Hydro Tasmania can distinguish its bids for the supply of FCAS across the NEM as opposed to solely in the Tasmanian region.
- Generators use a variety of methods to manage their risk of exposure to increases in the price of FCAS.
- As a result of the above, regulatory intervention with the spot price for FCAS in the NEM does not achieve the objectives of price regulation of the declared services and is contrary to the public interest because it:
  - does not assist in aligning the price of FCAS more closely with the efficient cost of supplying FCAS in Tasmania;
  - would not provide the necessary incentives for new investment to supply additional FCAS in Tasmania; and
  - could have an unintended impact on the spot price for energy.

- An alternative means of regulating the price of the declared services is through financial products for the supply of FCAS via hedge contracts for FCAS charges (see Section 5.2). This alternative has the following advantages:
  - More transparently identifies the cost of supplying FCAS so that OTTER can be satisfied that the cost is efficient.
  - Provides appropriate incentives for investment.
  - Is easily implemented as a transitional measure of limited duration.
  - Lower regulatory burden on Hydro Tasmania and OTTER than other options.
  - Does not directly interfere with the operation of the physical dispatch of energy and FCAS in the NEM.

## **4 Hydro Tasmania's Current Pricing Policies Methodology**

In this section, Hydro Tasmania's pricing policies for fast raise contingency FCAS hedge contracts and the fast raise contingency FCAS spot offers are described.

### ***4.1 Hedge Contract Pricing Policy Methodology***

Hydro Tasmania's pricing policy on fast raise contingency FCAS, as applied to hedge contracts, focuses on pricing short term contracts and as a result is based on the expected short run marginal cost (SRMC) of supplying raise contingency FCAS for the local region. Any medium to long term contract, or any regulatory framework intended to apply over a similar period, would need to be based on an expected long run marginal cost (LRMC) basis.

The following high level description of the pricing principles explains how Hydro Tasmania has developed a simplified approach to a complex equation that has many variables; many of these variables are uncontrollable by Hydro Tasmania and are difficult to forecast. Precise modelling of future costs is extremely difficult at times due to the range of variables involved, particularly inflows and spot energy prices, and their interdependence. Thus, the results are dependent on the chosen assumptions.

#### **4.1.1 Underlying Principles**

The seasonal dynamics of Hydro Tasmania generation portfolio result in significant variations in its merit order, the order of least cost energy to most expensive energy, of efficient operation dispatch and overall dispatch level. This means that different plant is dispatched in each season. This leads to significant variations for the supply cost of raise contingency services. Hydro Tasmania selects two or three typical dispatches, expected to be dominant over the applicable period, as representative dispatches for the base case calculations.

Hydro Tasmania reserves raise contingency FCAS from its least cost supplies to cover its own requirements, and provides cover to competitor generators with the next cheapest sources up its supply cost curve.

There is a minimum/optimal level of critical inertia in the system that reduces the raise contingency FCAS requirement. The pricing methodology calls for the cost of inertia in FCAS supply to be allocated on a pro-rata basis according to output assumptions for each Tasmanian generator.

The further into the future and the longer the duration of the applicable period erodes the accuracy of assumptions creating additional risk for Hydro Tasmania as the provider of the hedge. Some sensitivity analysis around the base case determines what risks can be priced into the product. Where a risk becomes untenable to Hydro Tasmania, it is specifically excluded in the contract terms and conditions and not included in the price e.g. an unplanned Basslink outage.

#### **4.1.2 Inputs (assumptions)**

There are a number of key inputs that determine the FCAS requirement for any given dispatch interval. These inputs include:

- Tasmanian demand;
- Tasmanian system inertia (net of largest contributor);
- Maximum Generator contingency size; and
- Basslink flow direction.

There are also a number of key inputs that determine the supply cost curve for a given period. These inputs include:

- Expected energy dispatch, including Basslink flow;
- FCAS capability of each generator (i.e. all different);

- Efficiency factors of each generator (foregone energy value = water value<sup>3</sup> \* inefficiency);
- Out of merit order dispatch (“high” water value – “low” water value x volume);
- Availability of generators; and
- Synchronous condenser operation.

The assumptions about competitor generation influence the calculations in a number of ways, and include:

- Both Roaring 40s Woolnorth wind farm and AETV's CCGT have the ability to set the MG size.
- Currently no competitor generator offers FCAS to the market, therefore when they are dispatched to provide energy they displace Hydro Tasmania generators who may be providing FCAS in addition to energy.
- Estimates of energy outputs are used to estimate each generators percentage of liability.

It is assumed that the critical inertia level is always met through the utilisation of generators in synchronous condenser mode. This assumption is based on the conclusion that the cost of providing inertia is lower than substituting higher priced energy or delivering large amounts of additional FCAS raise.

#### **4.1.3 Cost elements**

**Inertia**: the calculation for the cost of supplying inertia via synchronous condenser operation includes: consumed energy; foregone Renewable Energy Certificate (REC) value (probability weighted); start/stop costs; and water consumed.

**Inefficient operation**: the equation calculates the lost energy by comparing the difference in efficiency between low load / high FCAS operation and

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<sup>3</sup> Water value is the present value of the future revenue that could be earned from an increment of water based on a forecast of demand, inflow and price, and within the constraints of prudent storage management and other physical limits

efficient loading. This lost energy is costed using the relative water value and where appropriate foregone Renewable Energy Certificates. It also includes any additional Operation and Maintenance costs associated with the inefficient operation.

**Out of merit operation**: calculates the costs associated with the dispatch of higher valued water relative to lower valued water.

Hydro Tasmania has some key units for supplying FCAS; unavailability of these particular units significantly increases the cost of supply. Note that high inflows or high energy demands that lead to maximum output from generators also erodes the FCAS capability of those generators.

The loss of Basslink is another event that has the potential to severely distort the cost supply curve as all the FCAS requirement is required to be sourced locally, i.e. no global FCAS can be transferred. In addition, significant amount of energy capacity, up to 480 MW, has to be sourced locally and depending on the relative storage levels and the length of Basslink outage there can be a significant impact upon the water values of each storage.

#### **4.1.4 Long run considerations**

The above discussion of pricing policy methodology is based on the short run marginal cost (SRMC) of supplying raise contingency FCAS for the local region. However, in order to provide the necessary price signals to encourage new FCAS investment in Tasmania, and to allow for a reasonable return on Hydro Tasmania's assets, regulated prices should be based on the long run marginal cost (LRMC) of providing these services.

SRMC can be converted to LRMC by including:

- an apportionment of capital costs; and
- a market based risk adjusted return on capital.

## **Capital Costs**

Assessing the capital costs associated with the provision of raise FCAS is not a trivial exercise. This issue will clearly require some further discussions but some indication of the approach needed is outlined here.

In order to assess the capital cost, consideration of the following factors is required:

- (i) the depreciated replacement cost of those assets which are used solely to provide FCAS **plus**
- (ii) the depreciated replacement cost increment for those assets used for FCAS and non-FCAS purposes, but whose capital cost is higher because of the FCAS purpose **plus**
- (iii) a percentage of the capital cost of all other assets (e.g. mechanical and civil) relating to power stations which provide FCAS, where the percentage is the percentage of that station's operation for FCAS purposes.

## **Return on capital**

The market based risk adjusted return on capital should be a weighted average cost of capital (WACC). The WACC should be based on publicly available industry data and calculated in accordance with standard regulatory practice.

### **4.1.5 Hedge Pricing Methodology Summary**

Using a simplified set of assumptions about the inputs that determine the local FCAS requirement and then applying the cost elements of the supply sources, it is possible to determine a price estimate that is representative of Hydro Tasmania's cost of supply for a given period.

The approximate nature of the estimate is difficult to improve on as there are multiple variables that are very difficult to forecast with a high degree of accuracy. Once hedge contracts are exercised, Hydro Tasmania then has an

increased risk profile as it now has a larger exposure to the sometimes volatile FCAS supply. A margin is applied to the final cost calculation to reflect this risk premium and allow for a reasonable return for the provider.

#### ***4.2 Spot Pricing Policy Methodology:***

Hydro Tasmania's pricing policy for spot offers for fast raise contingency service is based on the same principles as for pricing hedge contracts. It utilises the same set of assumptions for a defined short period and calculates:

- A1. an average spot price reflective of the expected short run marginal cost (SRMC) of supplying raise contingency FCAS within the region; and
- A2. a maximum bid price in line with this average.

Given the co-optimisation process, however, it is sometimes optimal from an overall revenue perspective to bid a value other than the maximum due to the benefits associated with the energy outcome in the market.

This co-optimisation effect would result in Hydro Tasmania significantly under-recovering its FCAS costs were the above pricing methodology used for the purpose of regulating spot behaviour. Consequently, the methodology as used by Hydro Tasmania in making spot offers is not appropriate if the Regulator wishes to impose regulatory principles on those offers.

Hydro Tasmania's pricing policy for spot offers for slow and delayed raise contingency product is based on their respective global spot prices and co-optimisation impacts with energy products

## **5 Prices and Price Control Mechanisms**

OTTER has a very challenging task in regulating the local raise contingency FCAS provided by Hydro Tasmania, being a service for the wider market in which it operates. The usual situation is that a whole submarket is regulated and a price is set, typically at the cost of new entrant.

In this case and taking an initial simplistic view, the products being regulated are offered within Tasmania where other participants are free to make offers.

The situation, however, is complicated by two other factors. Firstly, FCAS services are co-optimised with energy. This means that if the form of regulation impacts on the FCAS offers, this will in turn affect the energy price outcomes and flows. Secondly, FCAS offers by most participants are designed to achieve specific energy outcomes and manage risk, not necessarily to recover FCAS costs.

### ***5.1 Forms of Regulation***

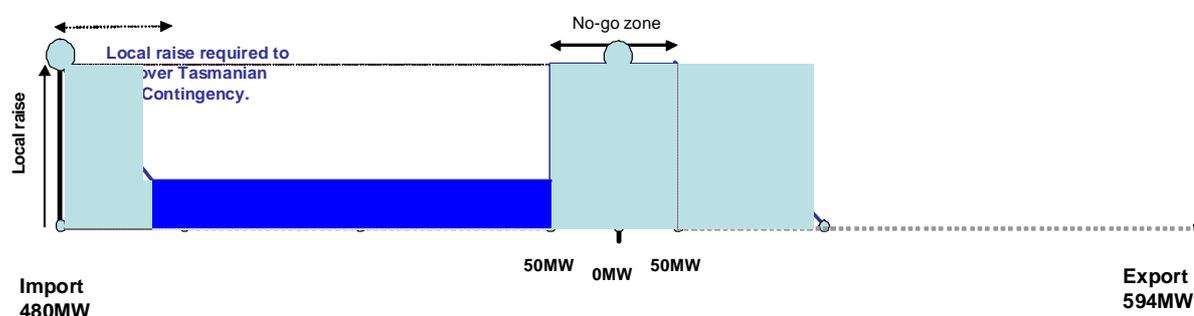
There are broadly two forms of regulation which could be imposed. These are:

- Regulation of physical aspects of the market (eg FCAS offers or FCAS revenues).
- Regulation of the contract prices and conditions for FCAS hedges.

The market defined by OTTER is, “the market for the supply of raise contingency FCAS from within the Tasmanian region to meet the Tasmanian local requirement”.

Hydro Tasmania competes with competitors on the mainland for enablement of raise contingency services at Basslink flows outside the “blue” shaded area in the diagram below, i.e. the local requirement does not need to be supplied locally.

## Local FCAS Requirements for Tasmania Raise Contingencies



As outlined in OTTER's Statement of Reasons, "AEMO will source the necessary FCAS from all interconnected regions in the NEM in a co-optimised manner using its NEM Dispatch Engine (NEMDE) which runs every five minutes to balance supply and demand. That is, NEMDE determines the optimal dispatch of energy and FCAS, based on the energy and FCAS bids and offers in the energy and eight FCAS spot markets, to minimise the total cost of energy and FCAS across the NEM".

Hydro Tasmania's dispatch by NEMDE, and resultant Basslink flows and consequently the need or otherwise for local supply of raise contingency FCAS, will be dependent upon its energy and FCAS bids relative to other NEM participants. Hydro Tasmania can not separate its bids of FCAS or energy between local supply and global supply.

Thus, it quickly becomes evident that any intervention in the ability of Hydro Tasmania to make spot offers has the ability to lead to sub-optimal outcomes in the NEM. This is clearly at odds with the following principles of:

- being consistent with the National Electricity Market Objective; and
- having minimal impact, if any, on the wider National Electricity Market outlined by the Regulator.

The impact on these principles is not immaterial given prices in each of the three contingency raise services have exceeded \$9,999 per MWh in each of the last three calendar years.

Price outcomes arising from NEMDE dispatch are not necessarily a reflection of participants' price offers in a particular FCAS service as the dispatch outcomes searches for the least cost solution across all markets products. This is particularly evident in the fast raise contingency services given the tight supply conditions in Tasmania, where prices "spike" as a result of the co-optimisation process. There are also occasions where constraints in the system can increase the requirement or constrain delivery leading to significant price "spikes" in raise contingency FCAS prices, particularly the fast service.

A number of fast raise contingency FCAS price "spike" instances that were not a direct reflection of FCAS bids are highlighted in the table below with a greater description in Appendix B.

<b>Event Date</b>	<b>Description</b>	<b>R6 Price</b>
i) 3 Feb 2010	Energy and FCAS co-optimised	\$10,000 MWh
ii) 16 Jan 2010	Energy and FCAS co-optimised	\$3,813 MWh
iii) 8 Jan 2010	Energy and FCAS co-optimised	\$4,100 MWh \$1,989 MWh
iv) 31 Dec 2009	Constraints - lightning	\$10,000 MWh
v) 30 Oct 2009	Constraint violation	\$5,000 MWh
vi) 17 March 2010	Basslink non conformance	\$4,000 MWh

## ***5.2 Regulation of the contract prices and conditions for FCAS hedges***

Hydro Tasmania believes the only effective manner to achieve the stated objective of price regulation is through the utilisation of financial hedge pricing principles. The Regulator could approve the principles for deriving the prices and provide an avenue for appeal should a customer believe the principles have not been followed when pricing a hedge. The Regulator may also consider providing Hydro Tasmania with an acceptable price range before independent verification is required.

This form of regulation would be an effective and efficient mechanism because:

- there is no impact on the market dispatch outcome;
- it allows participants to know and manage their exposure in advance; and
- there are likely to be a small number of transactions keeping administrative overheads low.

Given the complexity and volatility of costs, Hydro Tasmania believes the regulation of principles would provide an effective means of regulation that can accommodate the complexity and volatility without introducing unmanageable risks and onerous processes.

The pricing policy or principles may vary for each of the services being regulated given the different demand and supply balance of each, particularly given the acknowledged short supply of fast raise contingency service. Average historic spot prices for Victorian r5 and r60 may offer a relevant benchmark for financial derivatives offered by Hydro Tasmania for these services in Tasmania.

Hydro Tasmania's proposed form of regulation is to have a pricing policy approved for FCAS hedges. This will allow the prices to vary, up and down, as the market evolves and circumstances change. We propose that any counter party could ask the Regulator to review an offer from Hydro Tasmania for compliance with the policy. Although some of the inputs are commercially

sensitive, Hydro Tasmania would be able to provide these to OTTER if required.

### 5.3 Principles for Price Control

Under the ToR, OTTER’s objectives are to make a determination that will promote efficiency and competition in the Tasmanian electricity supply industry. OTTER outlines the principles that he will apply in order to achieve those objectives and the following tables reflects the outcomes based on regulation of physical offers compared with the outcomes from regulating contract prices.

This section discusses the relative merits of possible forms of regulation. The tables below summarise how well regulation of physical offers and financial products meet the principles specified by OTTER.

Principles	Physical	Financial
Be consistent with the National Electricity Objective;	✘	✔
Not be unduly onerous on Hydro Tasmania in its application;	✘	☯
Have minimal impact, if any, on the wider National Electricity Market; and	✘	✔
Not require an amendment to the National Electricity Rules nor add complexity to the National Electricity Market dispatch process.	☯	✔

The price control mechanism to be imposed on, and the prices to be charged by, Hydro Tasmania will:

Principle	Physical	Financial
Be fair and reasonable;	✘	✔
Enable Hydro Tasmania to recover its costs for the efficient provision of the declared electrical services;	✘	✔
Provide market signals that promote efficiency and maximise incentives for other parties to supply raise contingency FCAS in the Tasmanian region; and	✔ (if above new entrant)	✔ (if above new entrant)
Not impose significant regulatory costs on the Regulator or Hydro Tasmania.	✘	✔

The following tables provide some discussion of the reasons for the scoring. We can provide further information or clarification if required.

<b>Principles</b>	<b>Discussion</b>
Be consistent with the National Electricity Objective;	Restrictions on physical offers will impact on economic efficiency and consequently not meet the NEO.  See section 5.1
Not be unduly onerous on Hydro Tasmania in its application;	Regulation of physical transactions will lead to thousands of relevant transactions to be monitored. It is likely that there will only be a small number of hedges annually making compliance monitoring much less onerous.  See section 5.2
Have minimal impact, if any, on the wider National Electricity Market; and	Regulation of physical offers will impact dispatch outcomes across the NEM potentially. Regulation of financial hedges will have no impact outside Tasmania.  See section 5.1
Not require an amendment to the National Electricity Rules nor add complexity to the National Electricity Market dispatch process.	No rule change or complexity is added with either physical offers or hedges unless there is a requirement for the dispatch engine to be changed to accommodate OTTER's requirements.  See section 5.3

<b>Principle</b>	<b>Physical</b>
Be fair and reasonable;	<p>Limiting the physical offers of one participant in a national market will never lead to fair and reasonable outcomes since competition happens across energy and FCAS products and all regions.</p> <p>See section 4.1</p>
Enable Hydro Tasmania to recover its costs for the efficient provision of the declared electrical services;	<p>The co-optimisation and complex interactions can make it difficult if not impossible for Hydro Tasmania to recover its costs when physical offers are regulated.</p> <p>See section 4.2</p>
Provide market signals that promote efficiency and maximise incentives for other parties to supply raise contingency FCAS in the Tasmanian region; and	<p>Both regulation forms meet this criteria but the regulation of financial hedges will provide less volatile signals</p> <p>See A4 and A6 in Appendix A</p>
Not impose significant regulatory costs on the Regulator or Hydro Tasmania.	<p>The high transaction volumes will cause significant costs for regulation of physical offers. There is also a problem in how to enforce this approach in real time. Financial contracts are significantly more attractive in this criteria as they can be assessed before they are entered into and there is no retrospectivity problem.</p> <p>See section 5.2.</p>

The previous section discusses how to estimate costs for the purpose of pricing a hedge contract. Reflecting these costs in spot offers is not

necessarily optimal for a participant as the co-optimisation process makes trade-offs between energy and FCAS prices. Participants generally structure their bids allowing for the interaction across these markets products. As a result it is not always possible or desired to reflect the costs of each individual service.

#### **5.4 Relevance of Interstate Benchmarks**

Global raise contingency FCAS prices may be relevant to the extent Basslink can transfer the services and at certain times the service can be provided either locally or globally. In particular, global prices pertaining to those experienced in the Victorian region have been considered here, acknowledging the Victorian prices can separate from other parts of the NEM under various scenarios / events.

#### **Fast Raise Contingency Prices – Victorian region**

OTTER’s Statement of Reasons paper states and acknowledges, “fast raise FCAS is in short supply in Tasmania”. Given there is generally an excess of supply in the global energy market and the costs are much lower, global prices do not provide any relevant signal or benchmark for local supply of Fast Raise FCAS supply in Tasmanian.

#### **Slow and Delayed Raise Contingency Prices – Victorian region**

There is generally an adequate supply of capability in Tasmania for Slow and Delayed Raise Contingency Services and those global prices in the Victorian region do provide a relevant benchmark for prices on average in the Tasmania region.

#### **Average Slow and Delayed Raise Contingency Prices (\$/MW)**

	Vic Region		NSW region	
	r5	r60	r5	r60
<b>2005</b>	1.01	0.76	1.01	0.76
<b>2006</b>	0.85	0.25	0.85	0.25
<b>2007</b>	4.99	1.70	2.25	0.67
<b>2008</b>	5.03	3.58	5.03	3.58
<b>2009</b>	1.26	0.89	0.85	0.36

It can be seen in the table above, that averages are higher in Victoria relative to NSW in some years, a result of significantly higher prices during particular market/system events where spot prices went to \$10,000 per MWh in Victoria and the region was separated from NSW.

The table below highlights the volatility present in the price of each of the raise contingency products including fast raise.

### **Maximum Fast, Slow and Delayed Raise Contingency Prices (\$/MW)**

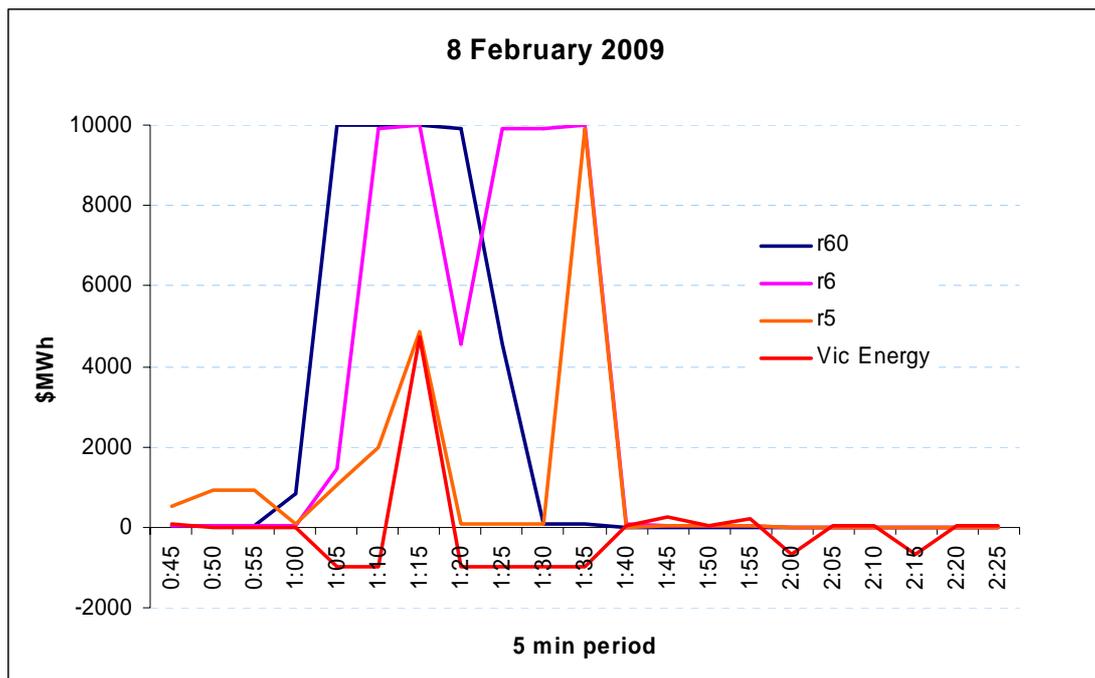
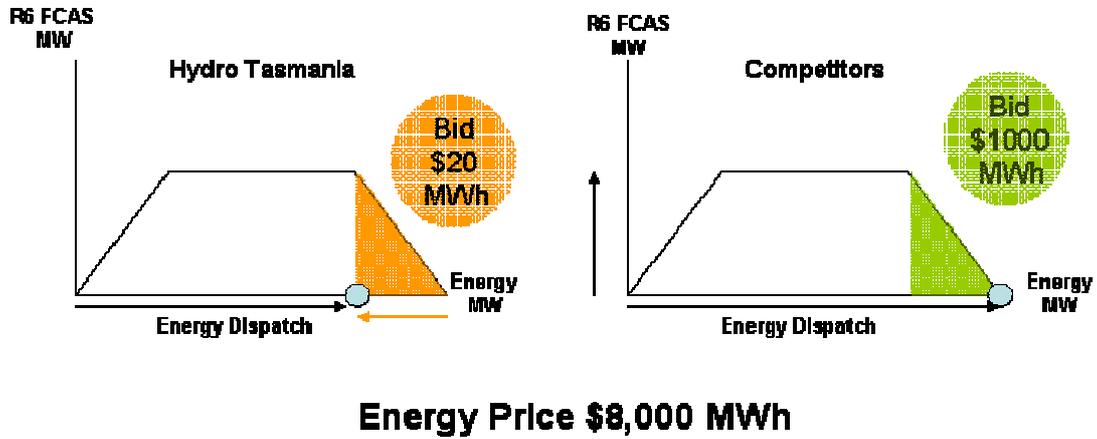
	Vic Region			NSW region		
	r5	r60	r6	r5	r60	r6
<b>2005</b>	15	10	650	15	10	650
<b>2006</b>	68	4	38	68	4	38
<b>2007</b>	10,000	9,999	9,999	1,000	4,953	3,998
<b>2008</b>	10,000	10,000	10,000	10,000	10,000	10,000
<b>2009</b>	10,000	10,000	10,000	16	36	300

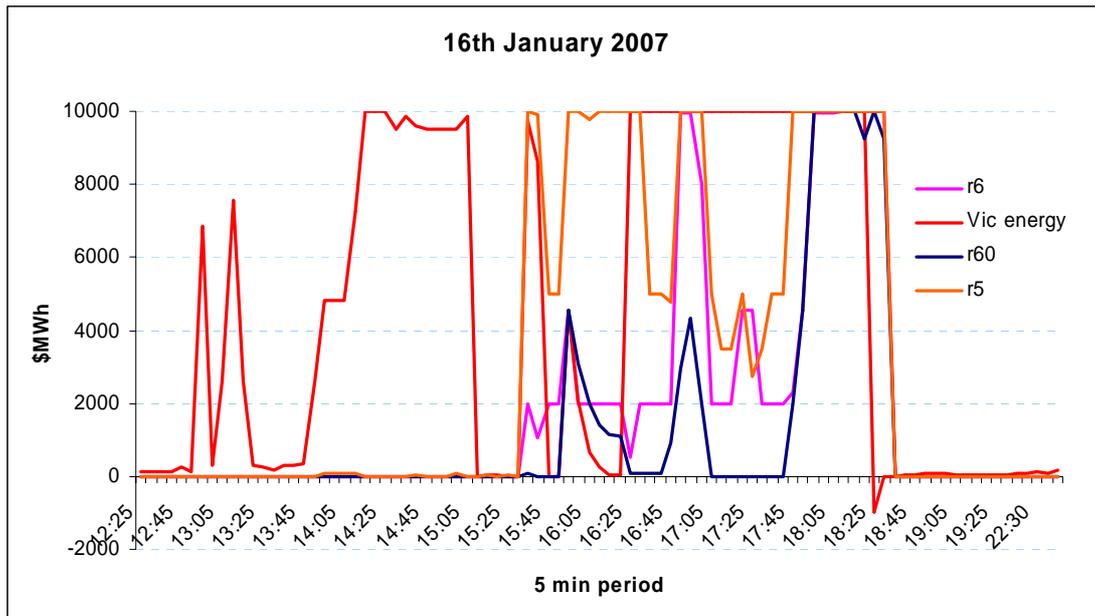
It can be seen from the two respective days, 8th February 2009 and 16th January 2007, when Victorian raise contingency FCAS prices were volatile and separated from NSW prices, there was volatility in the Victorian energy spot price. It is clear any limitations on Hydro Tasmania's bidding of raise contingency FCAS services will place it at a competitive disadvantage to its "mainland" (and Tasmanian) competitors; given Basslink was in an export situation and spot price outcomes were being determined in a manner that is not intended to be regulated by OTTER, leading to "non market" driven outcomes in the NEM dispatch.

If Hydro Tasmania is required to bid its raise contingency FCAS at or below a "capped" level, it may be sacrificing energy capacity, which may be extremely valuable, relative to its competitors who may bid their raise contingency high to preserve their capability in energy.

If the form of regulation for FCAS were to result in circumstances where Hydro Tasmania did end up being forced to provide FCAS beyond the local requirement, rather than energy, and this resulted in a loss of energy revenue, then the regulation mechanism would need to compensate Hydro Tasmania for this loss of revenue.

In the example below, the market dispatch would source Hydro Tasmania's fast raise (and r5 and r60 if similar concept) at the cost of generating into \$8,000 MWh energy prices.





## **6 Hydro Tasmania's Proposal**

Based on our analysis of the Regulator's criteria and our experience in providing hedges for FCAS in Tasmania, Hydro Tasmania proposes the following approach. We believe that this approach best satisfies the Regulator's criteria.

- Not regulating the physical raise contingency FCAS product.
- Approving pricing principles for raise contingency FCAS hedge products in Tasmania.
- Approving the contract terms for the regulated product.
- Providing a process of review for any participant which disagrees with a quoted price from Hydro Tasmania for raise contingency FCAS.
- Setting the period of the price determination for 3 years.

Each of the above dot points are discussed in detail below. This discussion is followed by a section which assesses how Hydro Tasmania's proposal meets the Regulator's principles and the "Matters to be Considered" from the ESI Pricing Regulations.

### ***6.1 Not Regulating the Physical Raise Contingency FCAS Product***

The analysis supporting this part of our proposal is shown in section 5.3.

### ***6.2 Approve Pricing Principles for Raise Contingency FCAS Hedge Products in Tasmania***

It is proposed that the pricing approach outlined in section 4 for fast raise contingency FCAS Hedge contracts would form the basis for this approach. The methodology would need to be enhanced to capture the LRMC by including the marginal costs of capital which are not currently included in the SRMC approach.

It is also proposed that the pricing approach utilises global benchmarks for slow and delayed raise contingency FCAS Hedge contracts.

### **6.3 Approving the Contract Terms for the Regulated Product**

It is proposed that a standard contract would be approved by the Regulator. This contract would cover a participant for all their raise contingency FCAS liability for the particular raise contingency product requested for a fixed fee. There would need to be the flexibility to include some exclusions (e.g. when Basslink or Gordon Power Station is unexpectedly unavailable) as these contingencies have the potential to increase the price significantly. A participant seeking cover can reduce their costs significantly by accepting some conditions or risks. This is a feature of existing hedges.

Contract exclusions are not intended to deprive participants of contract cover during the relevant contingencies. Rather, they are intended to reflect the difficulty of pricing these contingencies and avoid imposing unnecessary contingent costs on the purchasers of contracts or an unquantifiable risk on Hydro Tasmania. Hydro Tasmania envisages that the form of regulation would require it to provide contract cover during contingent events, but that it would have an opportunity to reprice that cover once the nature of the event is known.

The contract term may require flexibility as shorter contracts reduce the uncertainty in key parameters and consequently reduce the costs for customers.

There are some issues which will need addressing when there is a second supplier of raise FCAS in Tasmania around the potential risks for Hydro Tasmania.

### **6.4 Providing a Process of Review for any Participant Which Disagrees With a Quoted Price from Hydro Tasmania for Raise FCAS**

The process for calculating the price of an FCAS contract depends on a variety of variables which are commercially sensitive. We propose that, if a participant is dissatisfied with an offer from Hydro Tasmania, then they would be able to take the offer to the Regulator who would be able to review the

commercially confidential information used by Hydro Tasmania to develop the offer.

The Regulator would then be able to arbitrate and nominate what it considers a fair price, having regard to the information provided by Hydro Tasmania. There would need to be some appeal process.

We believe that this proposal is quite workable given the small number of likely transactions each year.

### ***6.5 Setting the Period of the Price Determination for 3 Years***

In setting a period for the determination, there is a balance to be struck between the ability to foresee the future and the additional costs of an earlier review. Under Hydro Tasmania's proposal to use pricing principles, the process will be relatively robust to changed circumstances (eg drought, significant additional wind generation). We consequently believe that 3 years is a reasonable compromise. The Regulator is able to terminate the declaration at any time if circumstances make declaration unnecessary.

### ***6.6 Proposal Meets the Regulators Requirements***

Section 5.3 contains detailed analysis of how the proposal meets the Regulators principles which are contained in the Terms of Reference. In addition, the ESI Pricing Regulations contain matters which must be considered by the Regulator. The relevant matters are shown in the table below for the fast raise contingency FCAS product with how this proposal meets those matters.

<b>Matter to be considered</b>	<b>How addressed by Hydro Tasmania's Proposal</b>
(a) the cost of providing the declared electrical service	The pricing methodology proposed will reflect the LRMC of the efficient provision of the service
(f) the principle that there is a need for a reasonable return (including payment of dividends) on the assets of an electricity entity	The LRMC approach proposed includes a return on relevant assets
(g) the principle that there is a need for efficiency in the provision of the declared electrical service for the purpose of benefiting the public interest through a reduction in the cost of providing the electrical service	The LRMC approach will only allow efficient costs. The use of pricing principles will allow the price of a specific contract to reflect the costs of that particular period and any negotiated exclusions which reduce the price
(i) the principle that there is a need for the electricity entity to be financially viable	An LRMC approach will ensure Hydro Tasmania recovers its costs. The monitoring regime proposed will minimise the costs of regulation.
(o) the public interest	The public interest is served by not interfering with the physical dispatch by regulating hedges and by minimising monitoring costs. See also Appendix A.

## **7 Period for price determination**

If the regulation achieves the intention of attracting new entry – competition in the Tasmanian FCAS services, it is envisaged that the requirement for regulation will be for a period of time less than 3 years.

## **Appendix A: Response to specific issues**

This Appendix covers the matters which the Regulator is required to consider in accordance with Regulation 33(2) of the *Electricity Supply Industry (Price Control) Regulations 2003*. There are several references back to the main body as these issues were covered there.

### **“Matters to be considered”**

The regulations prescribe a series of generic issues which the Regulator should consider. This Appendix presents our views on the relevance, if any, of these considerations in this specific case.

#### **A1. the cost of providing the declared electrical service**

Please refer to comments contained in Section 5.

#### **A2. any interstate or international benchmarks for prices, costs, revenues and return on assets in bodies providing a service similar to the declared electrical service**

Please refer to comments contained in Section 5.3.

#### **A3. the principles that consumers of the declared electrical service should be protected from the adverse effects of the exercise of substantial market power by an electricity entity in relation to prices, pricing policies and standards of service in respect of the provision of the declared electrical service**

We make no submission on this principle at this time.

#### **A4. the degree of competition in the electricity supply industry that is relevant to the provision of the declared electrical service**

Hydro Tasmania is a participant in the NEM and competes in a market where energy and the eight FCAS services are co-optimised in real time to produce the least cost dispatch solution. AEMO's Market

Ancillary Service Specification sets out the technical standards for ancillary services in the NEM.

The Regulator has defined the market as, “the supply of raise contingency FCAS from within the Tasmanian region to meet the Tasmanian local requirement”. Based on this market definition, Hydro Tasmania is considered the only supplier in Tasmania. Even though Hydro Tasmania is considered the sole supplier, there are no barriers to entry which would impede other generators supplying this service. There is the potential, therefore, that other generators could supply raise contingency FCAS in Tasmania.

Regulation should encourage efficient new entrants. Regulation needs to send a signal for more efficient suppliers of the defined services to enter the market. If the price is too low, it will discourage new entrants entering the market. As noted in our submission, regulation which seeks to insulate market participants from having to manage normal market risks does not promote competition and is not in the public interest.

**A5. the principle that there is a need for a reasonable return (including the payment of dividends) on the assets of an electrical entity**

As a Government Business Enterprise (GBE), Hydro Tasmania is subject to the Government Business Enterprises Act 1995 (Tas)(GBE Act), and is required to conduct its business in a manner consistent with its Ministerial Charter<sup>4</sup>.

Under the GBE Act, a principle objective of Hydro Tasmania is to perform its functions “so as to be a successful business by:

- (i) operating in accordance with sound commercial practice and as efficiently as possible; and

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<sup>4</sup> See section 38 of the GBE Act.

- (ii) achieving a sustainable commercial rate of return that maximises value for the State in accordance with its corporate plan and having regard to the economic and social objectives of the State.”<sup>5</sup> (emphasis added)

The Ministerial Charter applicable to Hydro Tasmanian contains an expectation for the provision to the state of an ordinary dividend together with a special dividend.

Given these legislative obligations, it is an important consideration for the Regulator to ensure Hydro Tasmania is able to operate as efficiently as possible and achieve an acceptable rate of return for the provision of raise contingency FCAS.

**A6. the principle that there is a need for efficiency in the provision of the declared electrical service for the purpose of benefiting the public interest through a reduction in the cost of providing the declared electrical service**

As a participant in the National Electricity Market (NEM), Hydro Tasmania competes in an environment where the nine NEM spot products (energy and the eight types of FCAS) are co-optimised in real time to produce the least cost solution to meet demand across all regions.

The costs of raise contingency services are attributed to generators at the beneficiaries of the service. This effectively makes the cost a part of the cost to produce energy. Where FCAS costs become a significant burden on generators they will be incentivised to seek lower cost solutions. Hydro Tasmania has already invested significant capital to reduce its FCAS exposure and is likely to continue to do so while the economic drivers persist. In considering regulation of the declared electrical service, the Regulator needs to ensure generators are not insulated from their own cost of energy supply. Appropriate market

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<sup>5</sup> Section 7(1)(a) of the GBE Act.

signals should create the incentive for investment in new FCAS supplies where they are warranted. Our current pricing policy allows true costs to be reflected in the market for others to reference in their investment decisions.

The economic cost of fast raise contingency FCAS supply is relatively high for Hydro Tasmania due to the technical nature of hydroelectric plant.

**A7. the effects of inflation**

Under our pricing methodology inflation is included. This would only be material for longer term hedges.

**A8. the principle that there is a need for the electricity entity to be financially viable**

As a GBE, Hydro Tasmania is expected to operate in a commercially sustainable manner and to implement financial strategies that create value for the Government as owner.<sup>6</sup> See also, A6 comments.

**A9. the impact on pricing policies of any borrowing, capital, dividend and taxation or tax equivalent obligations of the electricity entity, including obligations to renew or increase assets**

This is not expected to be material.

**A10. the quality of the provision of the declared electrical service**

Not relevant. Not expected that any form of regulation would affect the 'quality' of service.

**A11. any ministerial charter, licence or obligation under the Act or the regulations that applies, or is likely to apply, to the electrical entity**

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<sup>6</sup> See for example Part 5 of the Ministerial Charter.

There are no ministerial charters, licences or obligations under the Act (being the Electricity Supply Industry (Price Control) Regulations 2003) or the regulations (being the Electricity Supply Industry (Price Control) Regulations 2003) that are relevant for the purposes of this FCAS pricing determination.

**A12. the Tasmanian Electricity Code**

The Tasmania Electricity Code is not relevant to our pricing methodology.

**A13. any costs (including capital expenditure) incurred by the electricity entity at the direction of the Regulator**

No explicit directions were made by the Regulator; administrative costs incurred as a result of this regulation should be recoverable by Hydro Tasmania.

**A14. the public interest**

The public interest can be recognised as the promotion of efficiency and competition to protect the interests of consumers. Hydro Tasmania is a participant in the NEM and competes in a market where energy and the eight FCAS services are co-optimised in real time to produce the least cost dispatch solution. Efficiency is promoted through competition, which is inherent in the NEM co-optimising process.

The public interest, therefore, would not be served through restricting the NEM co-optimising process. Instead the public interest is served through allowing the normal NEM dispatch process to continue unrestricted and regulating the local requirement using a mechanism that can apply to a sub-market independently. Contract pricing principles are the most appropriate mechanism identified by Hydro Tasmania to enable this.

## **Appendix B: Fast Raise Contingency FCAS price “spikes”**

**i) 31 Jan 2010 – 6 February 2010** “On 3 February 2010 at 1:05 am the 5 minute price for local 6 second ancillary services in Tasmania reached \$10,000/MWh caused by the interaction of energy and ancillary service markets.”

**ii) 10 January 2010 – 16 January 2010** “On Saturday 16 January, the interaction of Energy and FCAS markets saw the raise 6 second price in Tasmania increase significantly from \$16/MWh at 10.05 pm to \$3813/MWh at 10.10 pm and remained at this level until 10.20 pm.”

**iii) 3 January 2010 – 9 January 2010** “On Friday 8 January, the interaction of the Energy and FCAS markets saw the Raise six second price gradually increase from around \$0.30/MWh before reaching around \$4100/MWh for the 7.00 pm and 7.05 pm dispatch intervals. Prices then gradually fell to around \$16/MWh by 7.15 pm and remained at that level until 10.30 pm. However, again due to the interaction of the Energy and FCAS markets, the Raise 6 second price spiked to \$1989/MWh at 10.35 pm, before returning to \$16/MWh in the next dispatch interval.”

Another significant issue with outcomes in the physical dispatch are the unexpected physical constraints that can suddenly occur increasing the requirement and resultant price outcomes. A few examples are highlighted below:

**iv) AER weekly market report for 27 December 2009 – 2 January 2010** “On 31 December prices for raise 6 second FCAS reached \$10 000/MWh from the 7.40 pm to 8.40 pm dispatch intervals (inclusive), dropping to around \$4000/MWh from 8.45 pm to 9 pm and then returned to \$10 000/MWh from the 9.05 pm to 9.10 pm dispatch intervals (inclusive). As a result of lightning storms in Tasmania in the evening of 31 December, AEMO declared the trip of several transmission lines as credible contingency events from 7.30 pm to 9.40 pm. At 8.22 pm AEMO issued a direction to a generator to supply raise 6 second FCAS.”

**v) AER weekly market report for 25 October 2009 – 31 October 2009** “On Friday, at 9.10 am, the loss of both Farrell to Sheffield 220 kV lines in Tasmania was declared a credible contingency. This restricted a number of Tasmanian generators from providing ancillary services as they would have been disconnected in the event of the loss of the contingent lines. At 10.25 am, a constraint used to manage the reclassification was violated and caused a spike in the Raise 6 second service price to around \$5000/MWh for two dispatch intervals.”

**vi) On 17 March 2010** AEMO issued a non conformance on Basslink leading to the non transfer of FCAS and the raise 6 requirement jumping from 52.8 MW to in excess of 103 MW and the price spiking to greater than \$4000 per MWh for 2 DI's.