DECLARED ELECTRICAL SERVICES PRICING DETERMINATION

RAISE CONTINGENCY FREQUENCY CONTROL ANCILLARY SERVICES

Issued

28 January 2011

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The Tasmanian Economic Regulator –

a. having undertaken an investigation under the *Electricity Supply Industry (Price Control) Regulations 2003* of the pricing policies of ***Hydro Tasmania*** for the supply of ***raise contingency FCAS*** to meet the ***Tasmanian local requirement***; and

b. having complied with Regulation 30 of those Regulations;

makes the following Determination under Regulation 31 of those Regulations.

Dated: 28 January 2011

Glenn Appleyard
CHAIRMAN
TASMANIAN ECONOMIC REGULATOR

PART 1 – PRELIMINARY

1 Commencement of the Determination

This Determination takes effect from 1 February 2011.

2 Expiry of the Determination

This Determination ceases to have effect on 31 January 2016.

3 Administration of the Determination

This Determination is administrated by the ***Regulator***.

4 Interpretation

1. Any question arising from the interpretation of this Determination shall be determined by the ***Regulator***.

2. In this Determination –

actual liability	means, for a ***raise contingency FCAS***, for a ***dispatch interval***, **a** x **c** / **b** where: **a** is equal to the amount of generation (in MW) dispatched from units owned or controlled by the ***eligible generator*** in Tasmania for the ***dispatch interval***; **b** is equal to the total amount of generation (in MW) dispatched within Tasmania for the ***dispatch interval***; and **c** is equal to the ***Tasmanian local requirement*** (in MW) for the ***raise contingency FCAS*** for the ***dispatch interval.***
AEMO	Australian Energy Market Operator Limited (ABN 94 072 010 327) or its successor.
calculation date	means: • 15 January or 15 July where these dates fall on a business day; or • the business day immediately preceding 15 January or 15 July where 15 January or 15 July respectively does not fall on a business day. However, the ***calculation date*** does not include 15 January 2016.

capped quantity	means: • for six second raise contingency ***FCAS***, the ***eligible generator****'s* nominated maximum requirement (N) in MW; • for sixty second raise contingency ***FCAS***, 1.75 x N (in MW); and • for five minute raise contingency ***FCAS***, 2.0 x N (in MW).
dispatch interval	has the same meaning as in the ***National Electricity Rules***.
eligible generator	means a Tasmanian generator, or a person who is selling the output of a Tasmanian generator to the ***NEM***, that has a potential liability under the ***National Electricity Rules*** to make payments to ***AEMO*** for ***raise contingency FCAS*** when there is a ***Tasmanian local requirement***.
enabled	has the same meaning as in the ***National Electricity Rules***.
ESI Act	means the *Electricity Supply Industry Act 1995*.
FCAS	means frequency control ancillary service.
FCAS fixed opportunity cost	means the value as calculated in accordance with the methodology in Part B of schedule 1 of this Determination.
FCAS hedge quantity	means, for each ***raise contingency FCAS,*** the minimum of **X** and **W** where: **X** is equal to zero (0) MW if **Z** is less than zero (0) MW otherwise **X** is equal to **Z**; **W** is the ***eligible generator****'s* ***capped quantity*** for the ***raise contingency FCAS*** (in MW); and **Z** is the ***eligible generator****'s* ***actual liability*** for the ***raise contingency FCAS*** (in MW) based on the ***eligible generator****'s* output for a ***dispatch interval*** (less any amount of the ***raise contingency FCAS*** for which the ***eligible generator*** is ***enabled*** to meet the ***Tasmanian local requirement*** and any amount of the ***raise contingency FCAS*** hedged by contract with an alternative provider to meet the ***Tasmanian local requirement***, for the ***dispatch interval***).
FCAS variable opportunity cost	means the value as calculated in accordance with the methodology in Part C of schedule 1 of this Determination.
Hydro Tasmania	means Hydro-Electric Corporation (ARBN 072 377 158) or its successor.
ISDA Master Agreement	means: • the 2002 ISDA Master Agreement or its substitution, including all relevant schedules, addendums and documentation, published by the International Swaps and Derivatives Association, Inc; and • ***Hydro Tasmania***'s standard schedule to the 2002 ISDA Master Agreement.

Large-scale generation certificate (LGC)	has the same meaning as in the *Renewable Energy (Electricity) Act 2000* (Cwth)
National Electricity Law	means the National Electricity Law contained in the schedule to the *National Electricity (South Australia) Act 1996* of South Australia.
National Electricity Market (NEM)	has the same meaning as in the ***National Electricity Law***.
National Electricity Rules	has the same meaning as in the ***National Electricity Law***.
raise contingency FCAS	means: • six second raise contingency ***FCAS***; • sixty second raise contingency ***FCAS***; and • five minute raise contingency ***FCAS***.
Regulator	has the same meaning as in the ***ESI Act***.
relevant period	means: • the calendar year immediately prior to 15 January if the ***calculation date*** is 15 January; or • the financial year immediately prior to 15 July if the ***calculation date*** is 15 July.
Tasmanian local requirement	means ***AEMO's*** required quantity of ***raise contingency FCAS*** that can only be sourced from the Tasmanian region.

PART 2 – FCAS safety net contract

5. Obligation to offer a FCAS safety net contract

Hydro Tasmania, at the request of an ***eligible generator*** must:

1. offer to enter into a contract with the ***eligible generator*** for ***raise contingency FCAS*** to meet the ***Tasmanian local requirement*** on the terms and conditions set out in clause 6; and

2. enter into such a contract with the ***eligible generator***.

6. Terms and conditions of the FCAS safety net contract

1. The terms and conditions of the contract under clause 5 must:

   a. be based on the ***ISDA Master Agreement***; and

   b. include conditions such that:

      i. for the purpose of determining the ***FCAS hedge quantity*** for each ***dispatch interval*** under the contract, the ***eligible generator*** is required to disclose to ***Hydro Tasmania*** the relevant details of ***raise contingency FCAS*** dispatched by the ***eligible generator*** to meet the ***Tasmanian local requirement*** and of any contracts that the ***eligible generator*** holds with other parties for the provision of ***raise contingency FCAS*** to meet the ***Tasmanian local requirement***; and

      ii. the ***capped quantity*** for six second raise contingency ***FCAS*** in the contract specified in clause 5 must be nominated by the ***eligible generator***.

2. The price of ***raise contingency FCAS*** under the contract specified in clause 5 must be determined in accordance with Part 3 and schedule 1 of this Determination.

7 Publication of pricing data and contract documentation

Hydro Tasmania must publish on its website within one business day after the ***calculation date*** unless otherwise approved by the ***Regulator*** in writing:

1. the input parameters contained in Schedule 1 (except for N) and their corresponding values as at the ***calculation date***;

2. the application of the methodology contained in this Determination using the input parameters and their corresponding values as at the ***calculation date***;

3. its procedure for calculating the estimated Tasmanian local requirement (parameter E); and

4. a pro-forma contract confirmation of which the terms and conditions must be based on the ***ISDA Master Agreement***.

8 Access to contract documentation

Hydro Tasmania, if requested by an ***eligible generator***, must provide the ***eligible generator*** with a copy of the ***ISDA Master Agreement***.

PART 3 – Pricing methodology

9 FCAS safety net contract price

The price of ***raise contingency FCAS*** to meet the ***Tasmanian local requirement*** under the contract as specified in clause 5, for a ***dispatch interval***, is to be equal to the sum of:

1. the ***FCAS fixed opportunity cost***; and

2. the ***FCAS variable opportunity cost***.

Schedule 1 Part A - Input parameters and corresponding values

The following input parameters and their corresponding values in this Part A apply to both Part B and Part C of this schedule 1.

Input parameters	John Butters power station providing six second raise contingency *FCAS* jointly with Gordon	Gordon power station providing six second raise contingency *FCAS* alone	Parameter value
Proportion of time that the power station is providing six second raise contingency ***FCAS*** when there is a ***Tasmanian local requirement***	A	1-A[1]	Average of the historical ***NEM*** dispatch data for the ***relevant period*** where John Butters is providing six second raise contingency ***FCAS*** when there is a ***Tasmanian local requirement***.
Proportion of the time that the power station is required to operate to meet environmental flow requirements[2]	0.0	C	C = 0.25 based on existing environmental flow requirements of 10 m^3/s in summer and 20 m^3/s in winter. This value is to be updated if ***Hydro Tasmania***'s environmental flow commitments change and C ≤ 0.15 or C ≥ 0.25.

Input parameter		Parameter value
Energy price ($/MWh)	B	Price for a one year Victorian flat swap contract for the 12 month period commencing 1 January if the ***calculation date*** is 15 January, or 1

1 If a power station other than John Butters provides six second raise contingency ***FCAS***, it is to be assumed that Gordon power station is providing the total amount.

2 Environmental flow requirements are specified in ***Hydro Tasmania***'s special licence issued under the *Water Management Act 1999*.

Input parameter		Parameter value
		July if the ***calculation date*** is 15 July. The price will be calculated as the average for the 12 month period of the Victorian flat swap contract prices quoted by d-cypha Trade on each day of the week containing or nearest to 15 December, if the ***calculation date*** is 15 January, or the week containing or nearest to 15 June, if the ***calculation date*** is 15 July.
Large-scale generation certificate (***LGC***) price ($)	D	The average weekly ***LGC*** price for the week containing or nearest to 15 December if the ***calculation date*** is 15 January or the week containing or nearest to 15 June if the ***calculation date*** is 15 July. The source of the average weekly ***LGC*** price is to be the Australian Financial Markets Association, a source mutually agreed between the contracting parties, or other source considered appropriate by the ***Regulator***.
The probability of a power station generating ***LGC***s	L	L = 0.5
Estimated Tasmanian local requirement (MW)	E	The 90th percentile MW requirement for six second raise contingency ***FCAS*** that must be sourced from within Tasmania for the ***relevant period***.
Capped quantity for six second raise contingency ***FCAS*** (MW)	N	***Eligible generator***'s nominated maximum requirement for six second raise contingency ***FCAS*** (in MW).

Input parameter		Parameter value
Cap-related supply capability for six second raise contingency FCAS (MW)	Y	Y = 81 MW
The amount of six second raise contingency ***FCAS*** that can be provided by John Butters (MW)	F	F = 31 MW
The amount of six second raise contingency ***FCAS*** that can be provided by Gordon power station (MW)	G	G = E - F
Estimate of ***Hydro Tasmania***'s fixed costs of providing six second raise contingency ***FCAS*** (MW)	K	K = 2.6 MW
Proportion of time that the ***Tasmanian local requirement*** for six second raise contingency ***FCAS*** exceeds 40 MW	M	Average proportion calculated using the ***NEM*** dispatch data for the ***relevant period***.

Input parameter	John Butters power station	Gordon power station	Parameter value
Average amount of generation (in MW) foregone per MW of six second raise contingency ***FCAS*** for each generating unit	H	J	H = 0.24 MW J = 0.26 MW (Note that if C is updated, then the value of J will be reviewed by the ***Regulator***).

Schedule 1 Part B – Methodology for calculating FCAS fixed opportunity cost

An ***eligible generator***'s ***FCAS fixed opportunity cost*** for a ***dispatch interval*** equals:

[(N/Y) x annual fixed opportunity cost]/105,120 where the annual fixed opportunity cost is calculated in accordance with the following table.

	John Butters power station	**Gordon power station**	**Total**
Average amount of generation (in MW) foregone due to fixed losses once environmental flows are taken into account	A x K	(1-A) x K x (1 – C)	
Price per MWh foregone generation ($/MWh)	B+(L x D)	B+(L x D)	
Opportunity cost (price) for fixed losses ($/h)	A x K x [B+(L x D)]	[(1-A) x K x (1 – C)] x [B+(L x D)]	{(A x K) + [(1-A) x K x (1 – C)]} x [B+(L x D)]
Annual fixed opportunity cost ($)	{A x K x [B+(L x D)]} x 8760 x M	[(1-A) x K x (1 – C)] x [B+(L x D)] x 8760 x M	{[(A x K) + [(1-A) x K x (1 – C)]} x [B+(L x D)] x 8760 x M

Schedule 1 Part C – Methodology for calculating FCAS variable opportunity cost

An ***eligible generator***'s ***FCAS variable opportunity cost*** for sixty second raise contingency ***FCAS*** and five minute raise contingency ***FCAS*** for each ***dispatch interval*** equals $0.

An ***eligible generator***'s ***FCAS variable opportunity cost*** for six second raise contingency ***FCAS*** for each ***dispatch interval*** equals:

(the ***eligible generator***'s ***FCAS hedge quantity*** *for* six second raise contingency ***FCAS***) x (opportunity cost (price) for provision of six second raise contingency ***FCAS***)/12

where the opportunity cost (price) for provision of six second raise contingency ***FCAS*** is calculated in accordance with the tables below.

Estimated average MW provision of six second raise contingency *FCAS* for an estimated Tasmanian local requirement (E)

	John Butters power station	**Gordon power station**
Priority is given to John Butters to provide six second raise contingency ***FCAS*** (MW)	F	E-F
Priority is given to Gordon power station to provide six second raise contingency ***FCAS*** (MW)	0	E
Weighted average amount (in MW) of six second raise contingency ***FCAS*** provided by John Butters and Gordon power stations combined	A x F	[A x (E-F)] + [(1-A) x E]

Estimated foregone generation (MW) per MW of six second raise contingency *FCAS* provided

	John Butters power station	**Gordon power station**
Amount of generation (in MW) foregone per MW of six second raise contingency ***FCAS*** on average for the portfolio of John Butters and Gordon power stations combined	(A x F x H)/E	{[A x (E-F)] + [(1-A) x E]} x J/E

Variable opportunity cost per MW six second raise contingency *FCAS* ($/MWh)

	John Butters power station	**Gordon power station**	**Total**
Average amount of generation (in MW) foregone per MW six second raise contingency ***FCAS*** once environmental flows are taken into account	(A x F x H)/E	{[A x (E-F)] + [(1-A) x E]} x J/E x (1-C)	[(A x F x H)/E] + {[A x (E-F)] + [(1-A) x E]} x J/E x (1-C)
Price per MWh of foregone generation ($/MWh)	B+(L x D)	B+(L x D)	
Opportunity cost (price) for provision of six second raise contingency ***FCAS*** where the ***Tasmanian local requirement*** for six second raise contingency ***FCAS*** is less than 40 MW ($/MWh)	0	0	0
Opportunity cost (price) for provision of six second raise contingency ***FCAS*** where the ***Tasmanian local requirement*** for six second raise contingency ***FCAS*** is greater than or equal to 40 MW ($/MWh)	[(A x F x H)/E] x [B+(L x D)]	{[A x (E-F)] + [(1-A) x E]} x J/E x (1-C) x [B+(L x D)]	[(A x F x H)/E] x [B+(L x D)] + {[A x (E-F)] + [(1-A) x E]} x J/E x (1-C) x [B+(L x D)]