

System Operator Reports
March 2009

CONTENTS

**Section 1 System Operator Monthly Operational
Performance Report**

Section 2 System Performance Report



System Operator
Monthly Operational Performance Report
to the Electricity Commission
For the month ended 31 March 2009

This report summarises the results of the System Operator self review of its performance for the above month, as required under Regulation 45 of the EGR's. An additional Operational Update is also provided for the information of the Commission.

Table of Contents

1	Compliance with Rule Book, Part C	2
2	Compliance with Rule Book, Part C & G	4
3	Recommendations for change to EGR's and Related matters	4
4	Operational Update	5
5	Conflict of Interest.....	5
6	Development and Resource.....	5
7	Regulation 50 (4) Statement	6

1 Compliance with Rule Book, Part C and Regulations:

1.1 Principal Performance Obligations (PPOs)

The Principal Performance Obligations (PPOs) of the System Operator are to act as a reasonable and prudent operator with the objective of meeting certain PPO outcomes. The System Operator's performance against the PPO outcomes, during the month was as follows:

PPO No.	Description	PPO Outcome
2.1	Avoid cascade failure	Met
2.2.1	Maintain frequency in the normal band	Met
2.2.2	Manage frequency during momentary fluctuation	Met
2.2.3	Limit rate of occurrences of momentary fluctuations	Met
2.2.4	Recover quickly from a fluctuation	Met
2.2.5	Manage time error	Met
2.2.6	Eliminate time error once a day	Met
2.3	Maintain other standards	Met
5.0	Restoration objective	Met

Grid Emergencies

There were 4 grid emergencies reported in the period.

Date	Time	Summary Details	Island
3 March 2009	11:13	Bunnythorpe T3 transformer would exceed its advised rating for the loss of the Hawera-Stratford circuit. Demand management at Mataroa, Waverly, Wanganui and Marton alleviated the problem.	North
7 March 2009	17:40	A Grid Emergency was declared for increased transmission offers in the Bay of Plenty following multiple circuit trippings in the region.	North
17 March 2009	13:14	A Grid Emergency was declared for the restoration of supply to Greymouth, Dobson and Atarau following the tripping of Atarau-Reefton-Inangahua 1 circuit.	South
17 March 2009	16:27	A Grid Emergency was declared for the restoration of supply to Timaru, Temuka, Albury and Tekapo A following the tripping of Timaru 110kV bus.	South

1.2 System Events

There were 4 system events (frequency excursions) during the reporting period:

Significant Frequency excursions				
Date	Time	Summary Details	Island	Freq (Hz)
2 March 2009	09:25	Huntly Unit 4 tripped causing under frequency excursion in the North Island.	North	49.31 Hz
7 March 2009	17:21	The loss of load (approx. 127MW) following multiple circuit trippings in the Bay of Plenty caused a momentary rise in frequency in both the North and South	North South	50.35Hz 50.31Hz

Significant Frequency excursions				
		Islands.		
20 March 2009	21:04	The System Operator is investigating the under frequency excursion resulting from the loss of generation and transmission assets in the Whakamaru region.	North	49.248 Hz
23 March 2009	05:41	Huntly Unit 4 tripped causing under frequency excursion in the North Island.	North	49.42 Hz

1.3 Connection Point Events

There were 4 connection point incidents during the reporting period.

Connection Point Events				
Date	Time	Summary Details	Generation /Load interrupted (MW)	Restoration time (minutes)
7 March 2009	17:21	A fault in the Bay of Plenty 110kV network caused multiple circuit trippings, resulting in loss of generation at Kaimai as well as loss of load at Tauranga, Mt Maunganui, Te Matai, Owkata, Waiotahi and Te Kaha.	Kaimai generation: 30 MW Load: Approx. 127 MW	Between 23 – 107 minutes with load gradually restored
17 March 2009	12:45	A fault on Atarau-Reefton-Inangahua 1 circuit, which occurred during a planned outage on Greymouth-Kumara 1 circuit, resulted in loss of load at Greymouth, Dobson and Atarau.	14	Between 56 – 87
17 March 2009	16:14	A fault on Timaru T5 interconnecting transformer, which occurred during a planned outage on Timaru T8, resulted in loss of load at Timaru, Temuka, Albury, Tekapo A.	Tekapo A generation: 4MW Load: Approx. 75 MW	Between 75 – 102
21 March 2009	07:20	A fault on Albury-Tekapo A 1 circuit resulted in loss of load at Tekapo A.	Tekapo A generation: 24MW Load: 2 MW	72

1.4 System Operator Compliance with Rule Book: Part C

The System Operator did not self-notify any Part C breaches in March 2009.

1.5 Participant Compliance

The System Operator did not notify any Part C breaches by other participants in March 2009.

1.6 Applications for Dispensations

March	
Applications received	
Granted in draft	
Granted	1
Withdrawn	
Not granted	
Revoked	
Total	1

1.7 Ancillary Services

The System Operator has commenced its internal review of the procurement plan for the 2009 year. To date, the System Operator has met informally with two ancillary service providers to discuss any potential issues to be addressed in the review. The System Operator will send out a draft procurement plan for consultation at the end of April with a finalised draft to be submitted to the Commission by 1 June.

The System Operator and Meridian repeated the Manapouri black start capability test after the first test was abandoned due to technical difficulties at Manapouri. The revised scope of test successfully demonstrated the enlivening of a section of grid using Manapouri generation units. The System Operator and Meridian will continue to work together on implementing a number of corrective steps identified during the initial testing.

2 Compliance with Rule Book: Part G

2.1 System Operator Compliance

The System Operator notified one Part G breach during March 2009 for failing to incorporate the correct output level of a generator in the dispatch schedule. This was a breach of Part G Schedule G6 1.3.4.6.

3 Recommendations for Change to EGRs and Related Matters:

3.1. Rule change proposals

During March 2009, the System Operator requested that the Commission review the under frequency event charge rules on a “first principles” basis. There are an increasing number of under frequency events where the System Operator has encountered difficulties in fulfilling its obligations to advise the Clearing Manager of the causer of the event. These difficulties primarily relate to the event charge rules not clearly defining when an event charge should apply and to whom it should apply.

3.2. Policy Statement Review

The System Operator submitted a draft policy statement to the Commission on 31 March 2009 in accordance with its obligations under the rules. Relatively few issues were identified by both the System Operator and participants as part of this year’s review. The changes proposed in the draft policy statement can be categorised as follows:

- Changes to the constraint policy to reflect what will be delivered under the new market systems.
- Minor changes to the formal notices provisions as a result of an internal review of emergency notices.
- Changes to reflect exemptions which have been sought over the last two years.
- Minor wording changes.

3.2. Exemption applications

The System Operator submitted an exemption application in respect of the policy statement requirement to notify participants of temporary security constraints. The proposed exemption, if granted, would apply until the proposed change to the Policy Statement is implemented and would:

- (a) exempt the System Operator from notifying temporary security constraints below the constraint percentage threshold; and
- (b) exempt the System Operator from meeting the following provisions of Rule 22.4 with respect to temporary security constraints that have reached or exceeded the constraint percentage threshold:
 - i. using reasonable endeavours to deliver the notification within ten minutes of the constraint application time; and
 - ii. notifying (at any time) the duration of the constraint, including the start and end date/times and the constraint application time.

4 Operational Update:

4.1 Commissioning of generation assets

The following table is a summary of active, publicly disclosed commissioning projects where the System Operator is involved:

Summary of generator commissioning			
Generator name	Asset Owner	Description	Status
Nga Awa Purua	Mighty River Power	A second geothermal power station at Rotokawa	Commissioning planning.
Te Rere Hau	NZ Windfarms	A new wind farm development located in the Tararua Ranges	Commissioning activities commenced and will continue in 2009 as new turbines are connected.
West Wind	Meridian Energy	A new wind farm development located close to Wellington	The first enlivening of grid connection was completed in Dec 08. First turbines were connected in early March 09. Commissioning is ongoing.
Stratford peaking plant	Contact Energy	Two 100MW gas fired peaking units to be located close to the existing Stratford power plant.	Commissioning planning.

The System Operator is also assisting with commissioning queries relating to uncommitted, non-publicly disclosed new generation developments.

5 Conflict of Interest

During March 2009, the System Operator continued to manage the process for determining the causers of three under frequency events which resulted in potential under frequency event charges. In each of these events Transpower as grid owner was a potential causer. The System Operator has managed these issues using the processes set out in the Policy Statement's conflict of interest section.

6 Development and Resources:

6.1 Resources

During March, in addition to routine operations, System Operator resources were applied to:

- Continued work on market system project including shadow operations.
- Policy statement review.
- Commencement of the security review (required by CI13 of the Policy Statement).

We expect these tasks to use all available resources until the end of April.

6.2 Market Systems Project (MSP)

Major MSP achievements in March included:

- commenced shadow operations on 30 March
- continued instructor-led training of the system operator staff
- completed formal training of IST support staff
- delivery and deployment of new code release from AREVA
- continued data and interface setup
- testing the code release

Planned work for April includes:

- continue shadow operations
- delivery and deployment of small code patches
- continue testing in final go live configuration
- continue training
- gain confidence in the new system running as a shadow of the existing system

7 Regulation 50 (4) Statement:

In performing its role as System Operator, Transpower New Zealand Limited (Transpower) has not been materially affected by any other role or capacity Transpower has under the Electricity Governance Regulations 2003 or the Rules or under any agreement.

System Performance Report

March 2009

Purpose

This System Performance Report summarises power system performance each month. The detailed reporting of system events is intended to provide an understanding of the nature of system events that occur in the normal course of the real time co-ordination of security and to identify emerging issues in system operation.

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SYSTEM OPERATOR

Keeping the energy flowing

TABLE OF CONTENTS

SUMMARY OF SYSTEM PERFORMANCE.....	3
1 PRINCIPAL PERFORMANCE OBLIGATIONS	4
1.1 Avoid Cascade Failure.....	4
1.2 Frequency.....	4
2 OPERATIONAL MANAGEMENT	6
2.1 Security Notices.....	6
2.2 Grid Emergencies	6
2.3 Customer Advice Notices (CANs).....	7
2.4 Standby Residual Check (SRC) notices	7
2.5 Voltage Management.....	8
2.6 Outage Management.....	8
2.7 Constraints	9
3 SYSTEM EVENTS.....	11
3.1 Significant System Events	11
3.2 System Events during reporting period.....	12
3.3 System Events – Trend	13

Summary of System Performance

This system performance report covers the month of March 2009.

[Principal Performance Obligations](#)

The System Operator met the Principal Performance Obligations during the reporting period.

[Operational Management](#)

Significant generation outages continued during March. An industry meeting was called by the system operator to co-ordinate these and a planned HVDC Pole 2 outage that had to be cancelled four times. The outage was subsequently successfully held. Currently it is expected that large volumes of generation will continue on outages until early May.

The system splits on Hepburn Road-Mt Roskill 1 and 2 circuits were closed on 24 March 2009. The splits are now permanently closed.

A black start test at Manapouri station was completed on 28 March 2008. During the test Invercargill-Manapouri 2, Manapouri-North Makarewa 3 and Invercargill-North Makarewa 1 circuits were removed from service.

[System Events](#)

Multiple circuit trippings in the Bay of Plenty on 7 March resulted in momentary rise in frequency nationwide and widespread loss of supply in the region of approximately 127 MW.

Timaru T5 interconnecting transformer tripped on 17 March while T8 interconnecting transformer was removed from service on a planned outage. This resulted in a loss of supply in the South Canterbury region of approximately 85 MW.

Other noteworthy events occurring during the reporting period include:

- The tripping of Huntly Unit 4 on 2 March and 23 March;
- The tripping of Wairakei units G15 and G16 on 2 March;
- The tripping of Matahina units G1 and G2 (twice) on 16 March;
- The tripping of Atarau-Reefton-Inangahua 1 circuit on 17 March during a planned outage on Greymouth-Kumara 1 circuit, resulting in loss of supply in the West Coast region;
- A bus fault at Maraetai resulting in loss of generation at Maraetai and Waipapa on 20 March; and
- The tripping of Cobb units G1, G2, G3 and G4 on 20 March.

1 Principal Performance Obligations

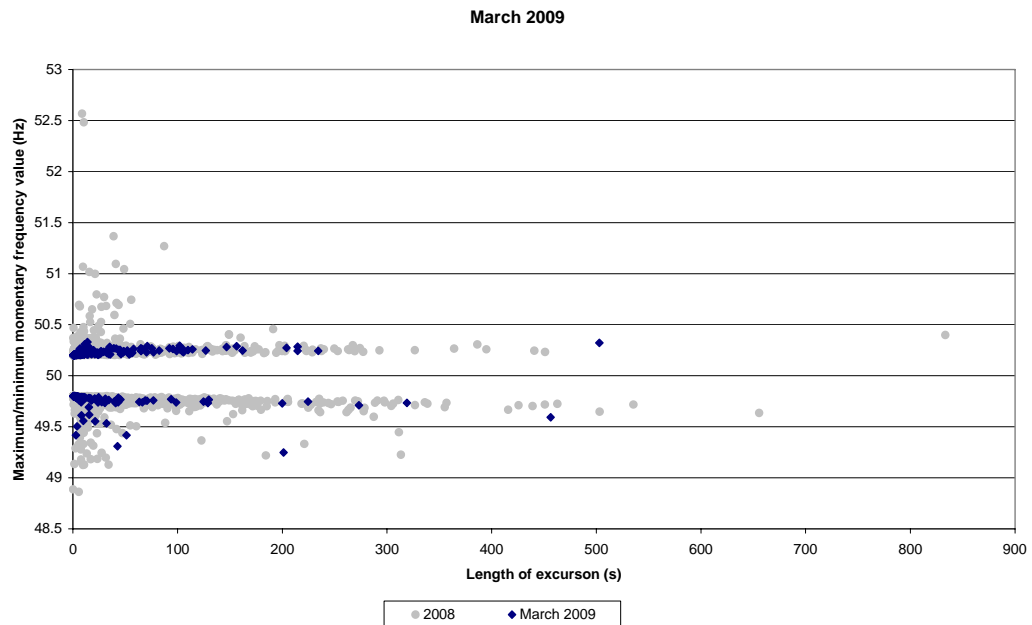
1.1 Avoid Cascade Failure

No instances of cascade failure resulting in loss of demand arising from frequency or voltage balances or supply and demand imbalances occurred during the reporting period.

1.2 Frequency

1.2.1 *Maintain frequency in normal band and recover quickly from a fluctuation*

The chart below shows the number, maximum or minimum frequency reached and length of frequency excursions outside the normal band (49.8 to 50.2 Hz) during the reporting period. The majority of excursions are with 0.4 Hz of the normal band and frequency typically returns to within the normal band within 2 minutes.



1.2.2 *Manage Frequency and limit rate of occurrences during momentary fluctuations*

The table below shows the total number of momentary fluctuations outside the frequency normal band, recorded in both Islands, over the last 12 months. The 12 month cumulative totals, grouped by frequency band, are compared to the frequency performance objective (PPO).

Frequency Band	Month												Annual rate	PPO target	
	Apr-08	May-08	June-08	July-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09			
55.00 >= Freq > 52.50															
52.50 >= Freq > 51.25							1	1						2	7
51.25 >= Freq > 50.50	1		3			7	1	3	1	1	1		18	50	
50.50 >= Freq > 50.20	108	205	147	104	82	128	210	182	132	167	152	241	1858		
50.20 >= Freq > 49.80															
49.80 >= Freq > 49.50	180	200	136	122	91	138	153	170	100	144	129	114	1677		
49.50 >= Freq > 48.75	1	2			2	1	3	7	2	4	5	4	31	60	
48.75 >= Freq > 48.00													0	6	
48.00 >= Freq > 47.00													0	0.2	
47.00 >= Freq > 45.00													0	0.2	

Summary of number of momentary fluctuations outside the frequency normal band

1.2.3 Manage time error and eliminate time error once per day

The time error performance criteria are:

- Time error must be managed within +/- 5 seconds.
- Time error must be eliminated at least once every day.

Time Error Compliance Table	Month												
	Apr-08	May-08	June-08	July-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	
Time Error Management	NI	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SI	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Error Elimination	NI	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SI	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Summary of compliance against time error criteria over the last 12 months

2 Operational Management

2.1 Security Notices

The following table shows the number of Warning Notices, Grid Emergency Notices, Customer Advice Notices and Demand Allocation Notices issued over the last 12 months.

Notices issued	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09
Demand Allocation Notice												
Grid Emergency Notice	1	3	2	1						1	1	4
Warning Notice		4				1	2					
Customer Advice Notice		8		8	9	11	11	3	4	2		3

2.2 Grid Emergencies

The following table shows grid emergencies declared by the System Operator in the reporting period.

Date	Time	Summary Details	Island
3 March 2009	11:13	Bunnythorpe T3 transformer would exceed its advised rating for the loss of the Hawera-Stratford circuit. Demand management at Mataroa, Waverly, Wanganui and Marton alleviated the problem.	North
7 March 2009	17:40	A Grid Emergency was declared for increased transmission offers in the Bay of Plenty following multiple circuit trippings in the region.	North
17 March 2009	13:14	A Grid Emergency was declared for the restoration of supply to Greymouth, Dobson and Atarau following the tripping of Atarau-Reefton-Inangahua 1 circuit.	South
17 March 2009	16:27	A Grid Emergency was declared for the restoration of supply to Timaru, Temuka, Albury and Tekapo A following the tripping of Timaru 110kV bus.	South

A summary of grid emergencies that have occurred in the last 12 months is shown in the following table:

Island	Region	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Total
North Island	Northland													0
	Auckland		1	1								1		3
	Zone 1													0
	Waikato													0
	Bay of Plenty												1	1
	Hawkes Bay													0
	Taranaki													0
	Bunnethorpe												1	1
	Wellington										1			1
	North Island (all)													0
South Island & HVDC	Nelson Marlborough			1									1	2
	West Coast	1	1											2
	Christchurch													0
	Canterbury		1		1								1	3
	Zone 3													0
	Otago													0
	Southland													0
	South Island (all)													0
HVDC													0	

2.3 Customer Advice Notices (CANs)

Three CANs (Customer Advice Notices) were issued in the reporting period:

- two advising participants of a teleconference being held to discuss the planned outage of HVDC pole 2 on 1 April; and
- one advising of the permanent closing of Hepburn Road-Mt Roskill 1 and 2 circuits on 24 March.

2.4 Standby Residual Check (SRC) notices

Forty three SRC notices were issued during the reporting period. SRC notices reported here are those issued based on the SDS (System Operator's own load forecasting tool). Other SRC notices were issued based on the PDS (based on participants demand bids), these notices are not summarised below.

The SRC notices applied to trading periods on the following days: 3, 10, 12, 13, 16-18, 20-26 and 31 March. The SRC notices identified energy and capacity shortfalls in the North Island. A Capacity Shortfall indicates that there would be insufficient generation and reserve offers remaining after the tripping of the largest risk (Generator or HVDC Pole) to restore reserves for a subsequent event within 30 minutes. An Energy Shortfall indicates that there would be insufficient generation remaining after the tripping of the largest risk (Generator or HVDC Pole) to release reserves after the event and that the unplanned disconnection of demand would likely be required following the loss of the largest risk.

2.5 Voltage Management

Grid voltages did not exceed the EGR voltage ranges during the reporting period. There were some occasions when post contingency voltages could have exceeded the grid voltage range (had the contingency occurred) but these were managed through re-dispatch of generation and reactive devices.

Transmission outages required the dispatch of generation at Cobb and Berwick to manage post contingency steady state voltages.

The Islington-Kikiwa 1 circuit was removed from service in the early hours of 4 March to help manage Upper South Island voltages within the quality targets.

The Hepburn-Mt Roskill system splits were closed in the early hours of 16 March to help manage Auckland voltages within the quality targets. Note that the splits were permanently closed on 24 March.

No contracted voltage support ancillary services were called upon during the reporting period. This is expected for this time of year.

2.6 Outage Management

The following table shows the number of outages over the last 12 months where operational measures (generation agreements, load management agreements or grid re-configurations) were required to allow the outage to proceed. Load agreements generally require the distributor to manage load at one or more grid exit points. Generation agreements are required to ensure that sufficient regional generation is available to provide energy or reactive support during the outage to maintain security standards. Grid re-configurations typically involve splitting the network during the outage to manage post contingency power flows. Security of supply is sometimes reduced by grid re-configuration.

Island	Region	Dec-08	Jan-09	Feb-09	Mar-09	Total
North Island	Northland	4	7	6	8	25
	Auckland	4	6	7	10	27
	Waikato	2	0	5	3	10
	Bay of Plenty	3	2	1	1	7
	Hawkes Bay	0	6	3	1	10
	Taranaki	0	5	1	1	7
	Bunynthorpe	8	1	5	4	18
	Wellington	6	6	9	3	24
Total		27	33	37	31	128
South Island	Nelson Marlborough	3	4	6	6	19
	West Coast	3	5	2	6	16
	Christchurch	2	0	4	1	7
	Canterbury	1	0	0	1	2
	Otago	2	9	7	3	21
	Southland	3	7	5	7	22
Total		14	25	24	24	87

Outages where operational measures were required to allow the outage to proceed – data will be filled in over time

2.7 Constraints

2.7.1 Summary: Security Constraints Binding During the Month

The following table shows the constraints binding during the reporting period.

Constraint Name	Description
WEST_COAST_SPLIT_O_1	The effect of this constraint is to manage voltage stability on the West Coast during low West Coast generation and high West Coast load when one of the following is out of service: Greymouth-Kumara, Dobson-Greymouth, Atarau-Dobson or Atarau-Reefton-Inangahu
STK_UTK_1_S_P	The effect of this constraint is to manage flows through STK_UTK_1 for a contingency of COB_STK_2 during low COB generation.
FHL_RDF_1&2_S_P_1_z	The effect of this constraint is to manage flows through Fernhill-Redclyffe 2 for a contingency of Fernhill-Redclyffe 1 during low Tuai generation and high Hawkes Bay load.
CYD_TWZ_1_S_O_1_z	The effect of this constraint is to manage flows through Naseby-Roxburgh for a contingency of Clyde-Twizel-2 during northwards power flow when Clyde-Twizel-1 is out of service.
NSY_ROX_1_S_P_z	The effect of this constraint is to manage flows through Naseby-Roxburgh-1 for a contingency of Clyde-Twizel-1 during high Southland generation when all circuits are in service
BEN_HAY2.1	The purpose of this constraint is to limit the flow on HVDC to the Asset Owner's offered capability
ARI_67_77_117_S_O_1	The effect of this constraint is to manage flows through Arapuni - Hamilton 1 for a contingency of Arapuni - Pakuranga when Arapuni bus section 67 77 117 is out of service.
ARI_BOB_1_S_O_30F3_z	The effect of this constraint is to manage flows through Arapuni-Hamilton 1 for a contingency of Arapuni-Pakuranga 1 when Arapuni-Bombay 1 is out of service.
EDN_INV_1_BAL_GOR_1_SPLIT_ROX_TMH_1_S_O_1	The effect of this constraint is to manage flows through Roxburgh T10 for a contingency of Roxburgh-Three Mile Hill-2 during a Balclutha-Gore-1 system split when both Edendale-Invercargill-1 and Roxburgh-Three Mile Hill-1 are out of service.
ROX_T10_S_P_1	The effect of this constraint is to manage flows through Roxburgh T10 for a contingency of Gore-Roxburgh 1 during north transfer or high ROX 110kV generation.
ROX_TMH_1&ROX_TMH_2_S_O_1of2_z	The effect of this constraint is to manage flows through Roxburgh T10 for a contingency of Invercargill_Roxburgh_1 or Invercargill_Roxburgh_2 when Roxburgh-Three Mile Hill 1 and Roxburgh-Three Mile Hill 2 are out of service.
ROX_TMH_2_S_O_1of2_z	The effect of this constraint is to manage flows through Roxburgh T10 for a contingency of Roxburgh-Three Mile Hill 1 when Roxburgh-Three Mile Hill 2 is out of service.

Additional information on security constraints can be found on the following website address: <http://www.transpower.co.nz/?id=5979>. This information includes constraint equations and a brief summary of their purpose.

2.7.2 Constraints binding during last 12 months

The following table shows the constraints binding during the reporting period for more than 4 trading periods and during the previous 12 months for more the 48 trading periods.

Island	Region	Constraint	Reporting period		Previous 12 months	
			Number of trading periods that constraint bound	Percentage of trading periods	Number of trading periods that constraint bound	Percentage of Trading periods
North Island	Hawkes Bay	FHL_RDF_1&2_S_P_1_z	8	0.54%	39	0.22%
	Bunneythorpe	BPE_TKU_1&2_W_P_2of2	0	0.00%	556	3.17%
		MGM_MST_1_or_MGM_WDV_1_WELLINGTON_STABILITY_O_1_z	0	0.00%	366	2.09%
South Island & HVDC	Nelson Marlborough	STK_UTK_1_S_P	13	0.87%	41	0.23%
	West Coast	WEST_COAST_SPLIT_O_1	5	0.34%	163	0.93%
		West Coast Split_S_O_1	0	0.00%	55	0.31%
	Otago	LIV_WTK_1_W_P_2A	0	0.00%	126	0.72%
		CYD_TWZ_1_S_O_1_z	19	1.28%	0	0.00%
		NSY_ROX_1_S_P_z	9	0.60%	408	2.33%
		NSY_ROX_1_W_P_1_z	0	0.00%	52	0.30%
	Southland	BWK_HWB_S_O_z	0	0.00%	125	0.71%
	HVDC	BEN_HAY2.1	8	0.54%	1	0.01%

3 System Events

3.1 Significant System Events

The following table shows significant events (frequency excursions and connection point events) which occurred during the reporting period.

Significant Frequency excursions				
Date	Time	Summary Details	Island	Freq (Hz)
2 March 2009	09:25	Huntly Unit 4 tripped causing under frequency excursion in the North Island.	North	49.31 Hz
7 March 2009	17:21	The loss of load (approx. 127MW) following multiple circuit trippings in the Bay of Plenty caused a momentary rise in frequency in both the North and South Islands.	North South	50.35Hz 50.31Hz
20 March 2009	21:04	The System Operator is investigating the under frequency excursion resulting from the loss of generation and transmission assets in the Whakamaru region.	North	49.248 Hz
23 March 2009	05:41	Huntly Unit 4 tripped causing under frequency excursion in the North Island.	North	49.42 Hz
Connection Point Events				
Date	Time	Summary Details	Generation /Load interrupted (MW)	Restoration time (minutes)
7 March 2009	17:21	A fault in the Bay of Plenty 110kV network caused multiple circuit trippings, resulting in loss of generation at Kaimai as well as loss of load at Tauranga, Mt Maunganui, Te Matai, Owkata, Waiotahi and Te Kaha.	Kaimai generation: 30 MW Load: Approx. 127 MW	Between 23 – 107 minutes with load gradually restored
17 March 2009	12:45	A fault on Atarau-Reefton-Inangahua 1 circuit, which occurred during a planned outage on Greymouth-Kumara 1 circuit, resulted in loss of load at Greymouth, Dobson and Atarau.	14	Between 56 – 87
17 March 2009	16:14	A fault on Timaru T5 interconnecting transformer, which occurred during a planned outage on Timaru T8, resulted in loss of load at Timaru, Temuka, Albury, Tekapo A.	Tekapo A generation: 4MW Load: Approx. 75 MW	Between 75 – 102
21 March 2009	07:20	A fault on Albury-Tekapo A 1 circuit resulted in loss of load at Tekapo A.	Tekapo A generation: 24MW Load: 2 MW	72

3.2 System Events during reporting period

System events that occurred during the reporting period are summarised below.

Contingent Events		
<i>Event</i>	<i>Number</i>	<i>Summary</i>
Loss of single AC transmission circuit	24	These related to loss of <ul style="list-style-type: none"> • Studholme-Timaru 1 (x2); • Otahuhu-Whakamaru 2; • Blenheim-Kikiwa 1; • Fernhill-Redclyffe 1 (successful auto-reclose); • Kumara-Otira 1; • Islington-Livingstone 1 (successful auto-reclose); • Inangahua-Murchison-Kikiwa 1 (successful auto-reclose); • Halfway Bush-Roxburgh 1 (successful auto-reclose); • Arapuni-Hangatiki-Ongarue 1; • Fernhill-Tuai 1 (successful auto-reclose); • Atarau-Reefton-Inangahua 1; • Kaitimako-Te Matai 1; • Woodville-Dannevirke-Waipawa 1; • Albury-Tekapo A; • Timaru-Temuka 1; • Arapuni-Bombay 1; • Oamaru-Blackpoint-Waitaki 1; • Halfway Bush-Palmerston 1; • Taumarunui-Te Kowhai 1; • Otahuhu-Whakamaru 1; • Arapuni-Hangatiki 1; • Central Park-West Wind-Wilton 2 (x2).
Loss of HVDC pole	0	
Loss of single generation units	7	These related to loss of <ul style="list-style-type: none"> • Huntly U4 (x2); • Southdown GE102; • Waitaki G4; • Tararua wind farm; • Matahina G2; • Poihipi.
Total during reporting period	31	

Extended Contingent Events		
<i>Event</i>	<i>Number</i>	<i>Summary</i>
Loss of both HVDC poles	0	

Other Events		
<i>Event</i>	<i>Number</i>	<i>Summary</i>
Loss of multiple AC transmission circuits	1	Kaitimako-Mt Maunganui-Tauranga 2, Kaitimako-Te Matai 1, Kaitimako-Tauranga 1, Kaitimako-Mt Maunganui 1, Kaitimako Tarukenga 1 and 2, Owhata-Te Matai-Tarukenga 1, Edgecumbe-Owhata 1 and Edgecumbe-Kawerau 1 and 2 all tripped.
Loss of bus bar section	3	These events related to bus trippings of <ul style="list-style-type: none"> • Timaru 110 kV; • Kaitimako 110 kV; • Maraetai 220 kV
Loss of interconnecting transformer	0	
Loss of grid reactive plant	2	These events related to trippings of

<i>Other Events</i>		
		<ul style="list-style-type: none"> • Haywards SC3 • Otahuhu GT2.
Loss of supply transformer	7	These events related to trippings of <ul style="list-style-type: none"> • Tangiwai T2 (x2); • Kinleith T4 (x2); • Dargaville T2; • Tangiwai T3 (x2).
Demand change	0	
Loss of multiple generation units	4	These events related to trippings of <ul style="list-style-type: none"> • Wairakei G15 and G16; • Matahina G1 and G2 (x2); • Cobb G1-G4.
HVDC Start/ Stop	0	
Total during reporting period	16	

<i>Other disturbances</i>		
<i>Event</i>	<i>Number</i>	<i>Summary</i>
Feeder trippings	58	Various locations
Misc.	0	
Total during reporting period	58	

3.3 System Events – Trend

	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Total	Average Events per month
Contingent Event – transmission	25	26	36	38	6	13	25	26	17	22	19	24	277	23.1
Contingent Event – generation	9	4	4	5	1	8	16	13	5	10	7	7	89	7.4
Contingent Event - HVDC	0	0	0	3	0	1	0	1	6	0	0	0	11	0.9
Extended Contingent Event	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Other Event – AC transmission	1	1	4	2	6	2	1	2	1	3	0	1	24	2.0
Other Event – Busbar	1	2	0	1	0	1	0	3	0	1	0	3	12	1.0
Other Event – Demand	1	0	4	0	0	3	1	3	0	0	0	0	12	1.0
Other Event – Generation	1	0	0	0	1	0	0	0	0	0	1	4	7	0.6
Other Event – Interconnecting transformer	1	0	1	0	1	2	1	1	0	0	0	0	7	0.6
Other Event – Reactive plant	11	1	2	4	10	4	0	4	4	3	6	2	51	4.3
Other Event – Supply transformer	3	6	4	5	11	3	3	4	1	8	8	7	63	5.3

System Operator

Ancillary Services Procurement Report

March 2009

Purpose

This Ancillary Service Procurement Report is required to be provided to the Board in accordance with the Procurement Plan – Part C Schedule C5. The report is designed to summarise the procurement of ancillary services as follows:

1. Settlement volumes, prices, costs, and administrative costs where appropriate.
2. Any issues arising with respect to cost allocation, liability and disputes.
3. Other general procurement issues to be contained within the System Operator Monthly Report provided in accordance with Regulation 45.

The System Operator expects the ancillary service procurement reporting to evolve and develop to reflect feedback from the Commission and Participants.

Table of Contents

1	Summary of Procurement Costs.....	1
2	Summary of Contracted Ancillary Services	8
3	System Operator Compliance to Procurement Plan 07/08	9
4	Events Requiring Further Consideration for Regulation and or Rule Change	9

1.1 Frequency Keeping (FK)

Frequency Keeping	Cost
Constrained Off	\$84,215.01
Constrained On	\$759,159.38
Market offer	\$2,411,851.20
Total monthly frequency keeping cost	\$3,255,225.59

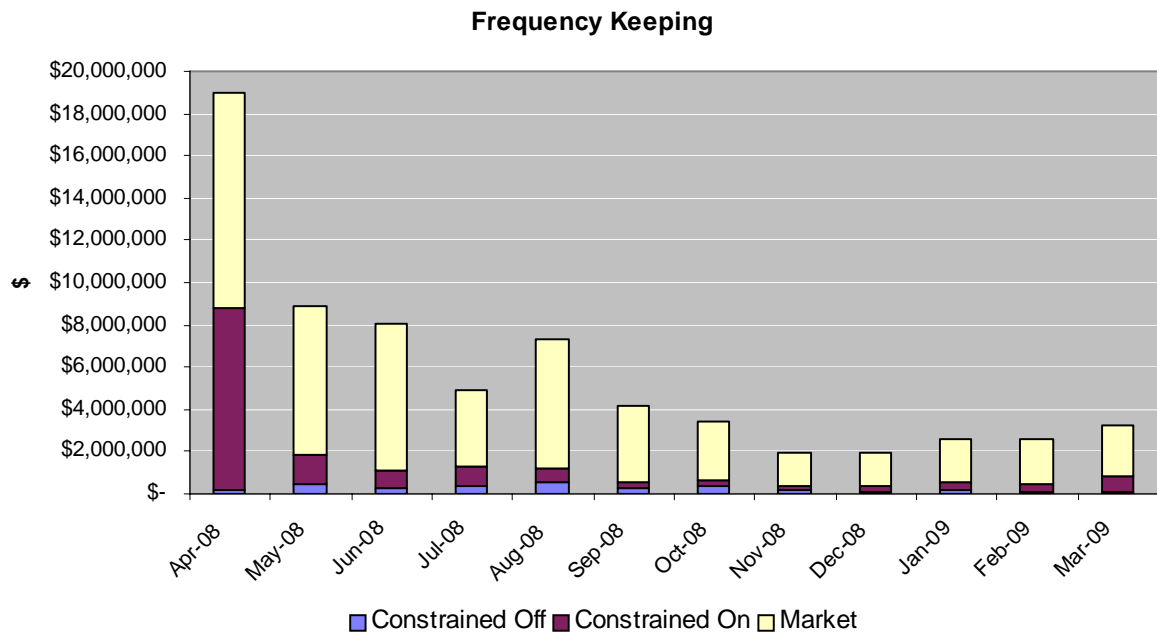


Chart 1.1(a): FK costs – 12 months

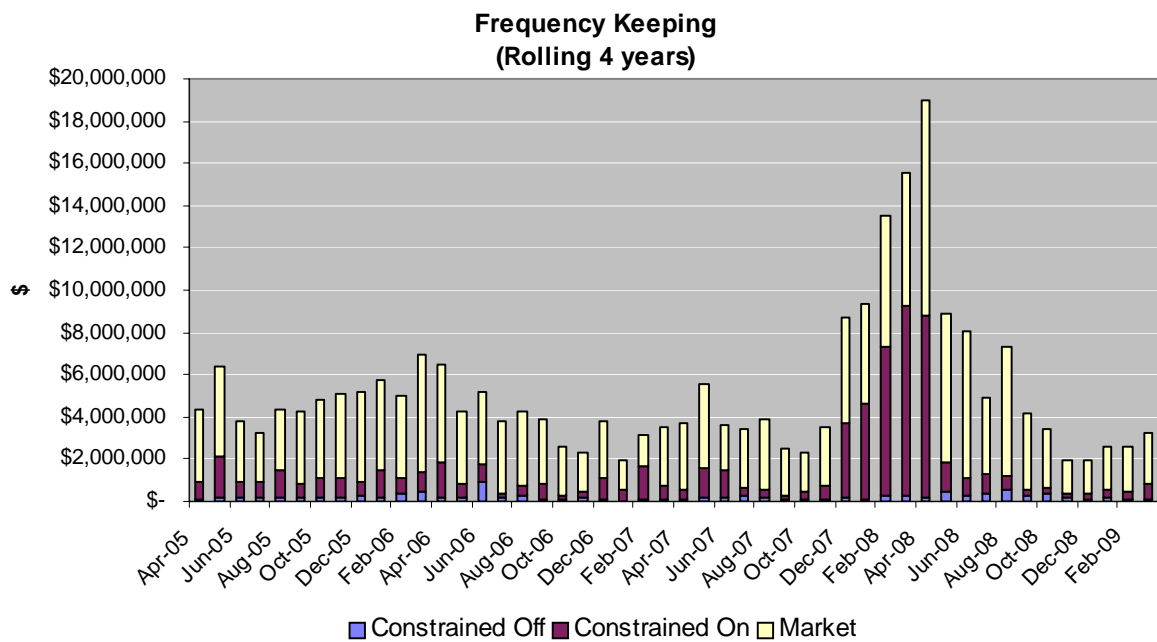


Chart 1.1(b): Historical cost of FK

1.2 Instantaneous Reserve (IR)

Instantaneous Reserve	Cost
Spinning reserve	\$1,857,866.21
Interruptible Load	\$1,388,937.74
Total monthly Instantaneous Reserve cost	\$3,246,803.95

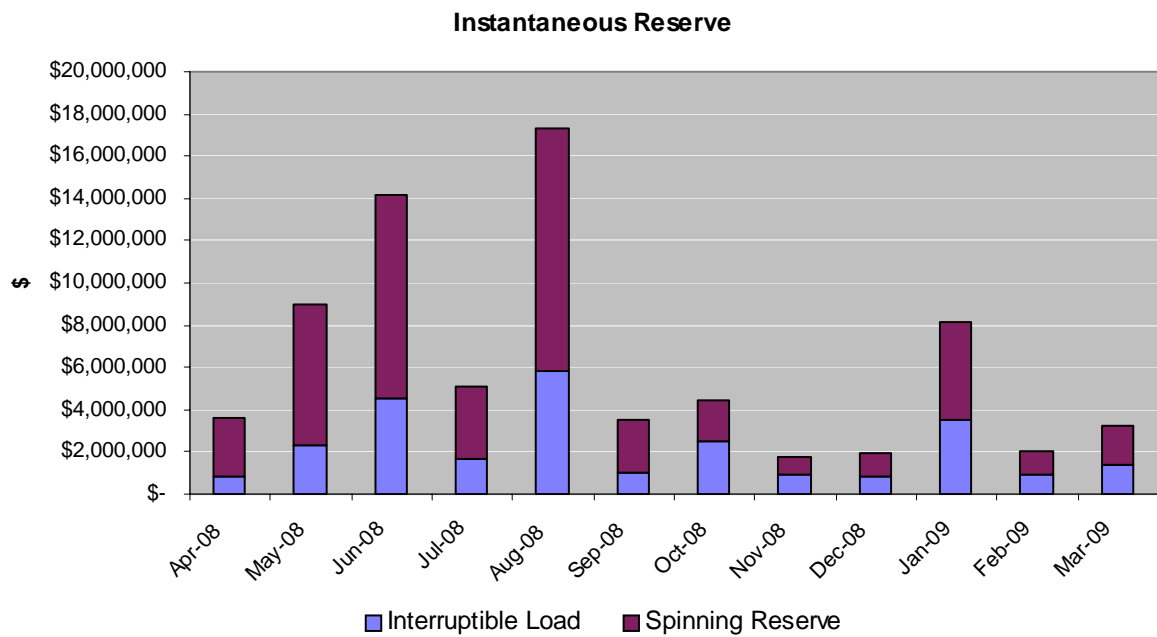


Chart 1.2(a): IR cost – 12 months

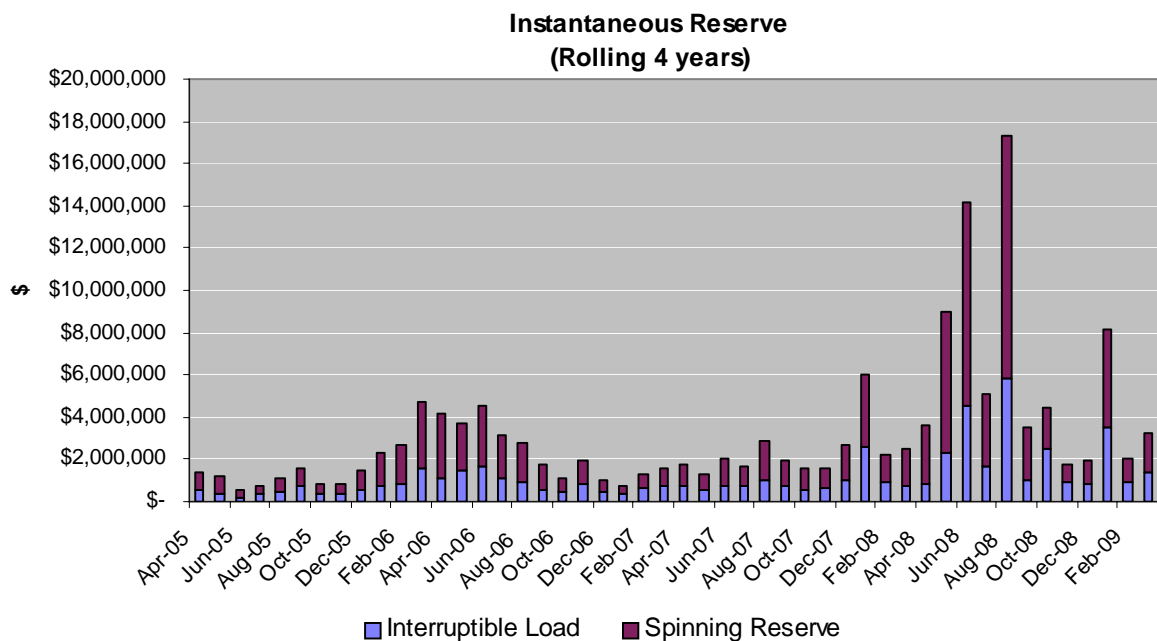


Chart 1.2(b): Historical cost of instantaneous reserves

1.3 Over Frequency Reserve (OFR)

Over Frequency Reserve	Cost
Total monthly Over Frequency Reserve cost	\$53,284.86

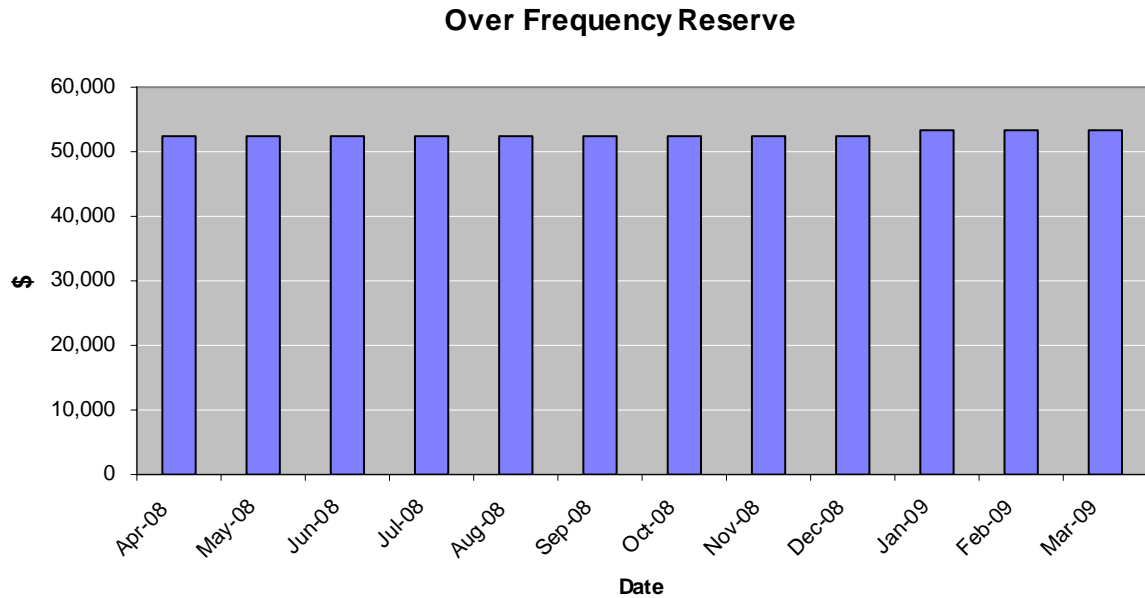


Chart 1.3(a): Monthly OFR cost – 12 months

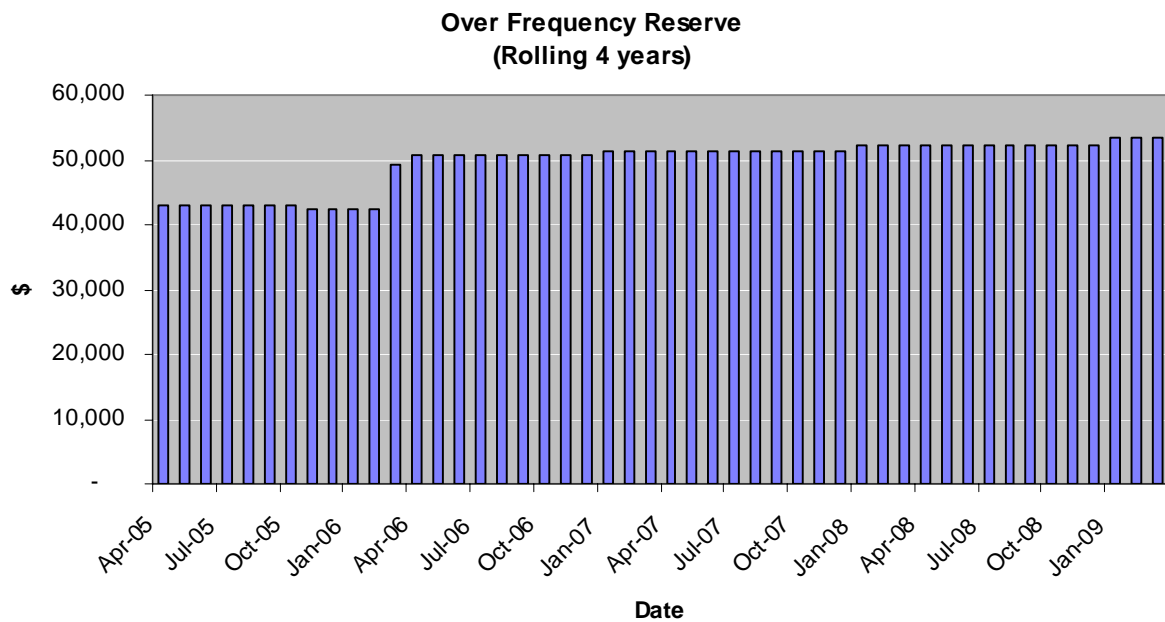


Chart 1.3(b): Historical cost of OFR

1.4 Black Start (BS)

Black Start	Cost
Total monthly Black Start cost	\$27,897.43

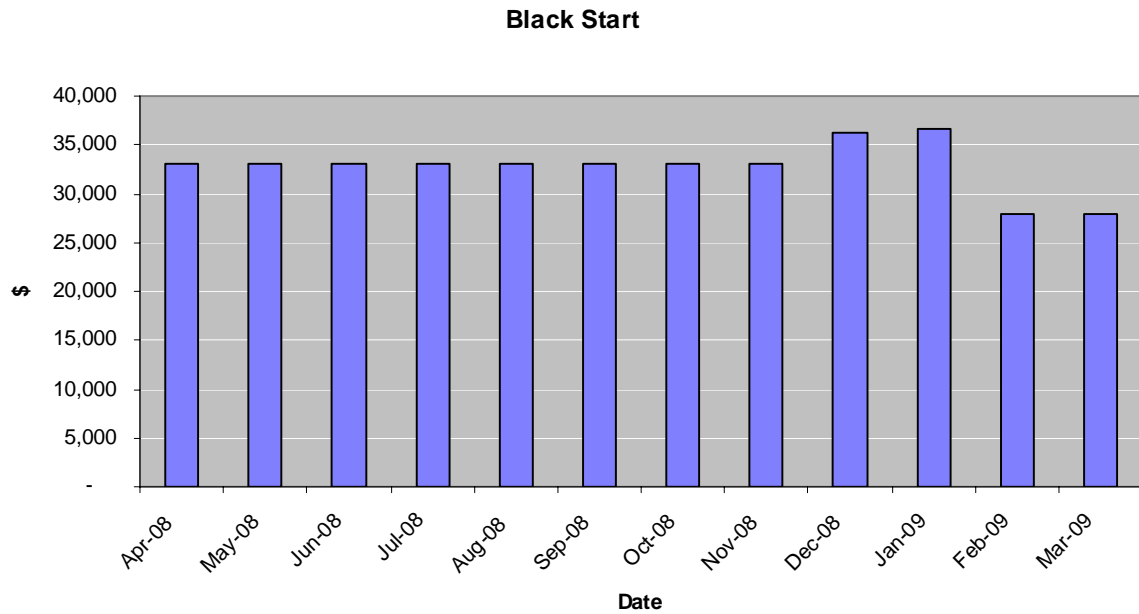


Chart 1.4(a): Monthly BS cost – 12 months

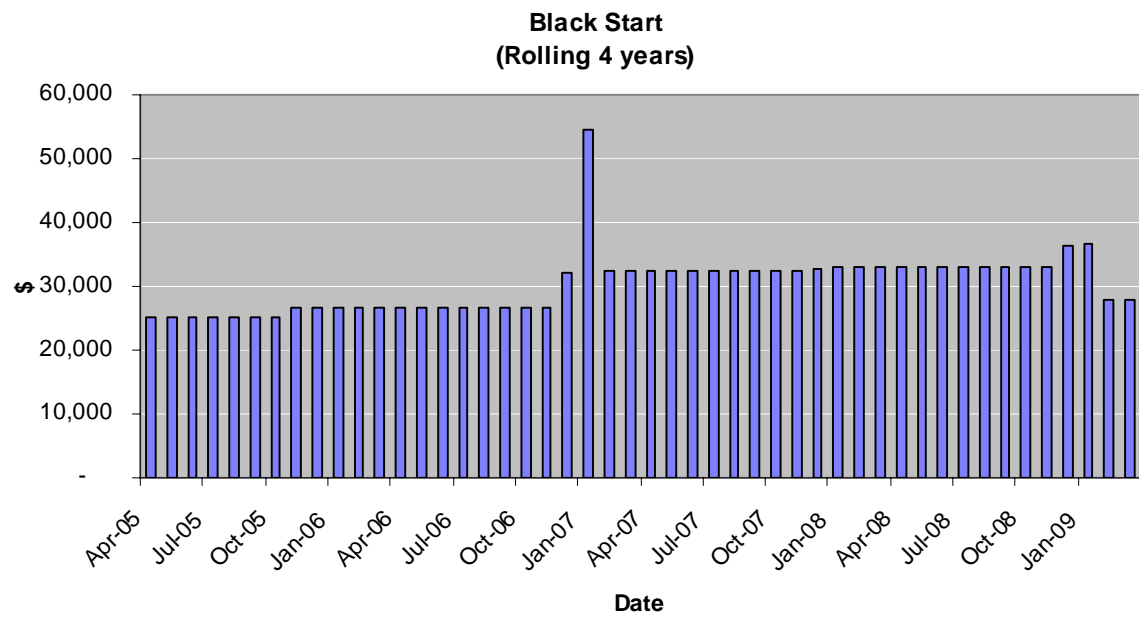


Chart 1.4(b): Historical cost of BS

1.5 Voltage Support (VS)

Voltage Support	Cost
Total monthly Voltage Support cost	\$638,341.47

Voltage Support

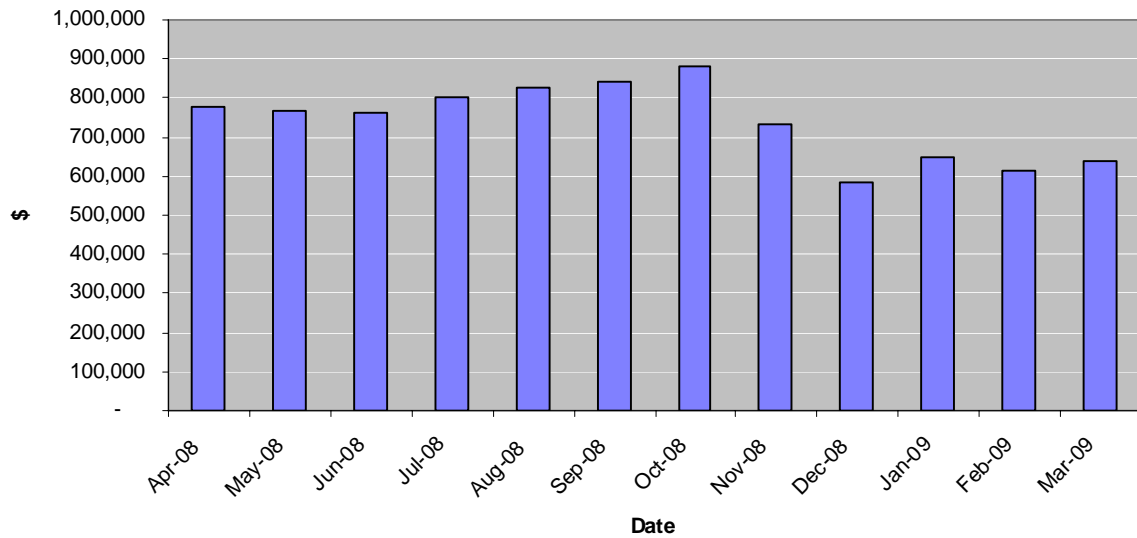


Chart 1.5(a): Monthly VS cost – 12 months

Voltage Support
(Rolling 4 years)

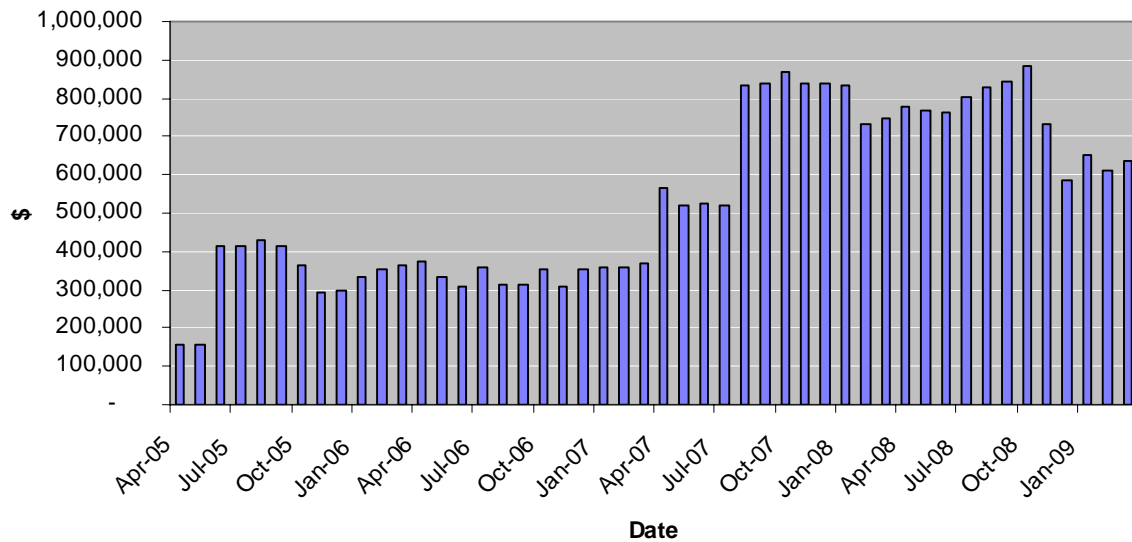


Chart 1.5(b): Historical cost of VS

1.6 Administrative Costs

Nil

2 Summary of Contracted Ancillary Services

The table 2.1 below provides a summary of contracted ancillary services as at 31 March 2009.

Table 2.1 Summary of contracted ancillary services

Ancillary Service Agent	(1)FK	(2)IR	(3)OFR	(4)BS	(5)VS
Meridian Energy	√	√	√*	√*	
Contact Energy	√*	√*	√*		√*
Mighty River Power	√	√		√*	√*
Genesis Power	√	√		√	
TrustPower		√*			
Vector		√			
Northpower		√			
Powerco		√*			
Unison		√			
WELNetworks		√			
CountiesPower		√			
NZ Steel		√*			
Pan Pac		√			
Winstone Pulp International		√*			
KCE Mangahao and Todd Mangahao		√*			
Norske Skog		√*			
Energy Response		√			
NZ Aluminium Smelters		√*			

⁽¹⁾ FK - Frequency Keeping

⁽²⁾ IR - Instantaneous Reserves

⁽³⁾ OFR - Over Frequency Reserve

⁽⁴⁾ BS - Black Start

⁽⁵⁾ VS - Voltage Support

*Longer term contract

3 System Operator Compliance to Procurement Plan 08/09

The System Operator is preparing the draft Procurement Plan for the 2009/10 period commencing 1 December 2009. The draft procurement plan will be circulated to Participants for comment before being submitted to the Commission by 1 June.

The black start capability test at Manapouri was repeated after the initial test was abandoned due to technical issues at Manapouri. The revised scope of test was successfully demonstrated with the enlivening of a section of grid using Manapouri units. The System Operator and ancillary service agent will continue to work through the issues indentified during initial testing.

4 Events Requiring Further Consideration for Regulation and or Rule Change

Nil

Report Ends