

# System Operator Reports

## December 2009

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- Section 2 System Performance Report



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# Operational Performance Report

## to the Electricity Commission

### December 2009

#### Purpose

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



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## 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

### 1.2 GRID EMERGENCIES

There was one grid emergency reported in the period:

Date	Time	Summary Details	Island
30 December 2009	23:48	A Grid Emergency was declared due to EGR N-1 voltage limit being exceeded at Te Kowhai. A grid reconfiguration removing Taumarunui-Te Kowhai 1 circuit and Taumarunui T8 supply transformer alleviated the problem.	North

### 1.3 SYSTEM EVENTS

There was one system event (frequency excursions) during the reporting period:

Date	Time	Summary Details	Island	Freq (Hz)
10 October 2009	11:50	Huntly unit 2 tripped causing a momentary fluctuations in frequency in the both North and South Islands	North South	49.25 49.57

## 1.4 CONNECTION POINT EVENTS

There was one connection point event during the reporting period.

Date	Time	Summary Details	Generation/Load interrupted (MW)	Restoration time (minutes)
14 December 2009	02:16	West Wind T1 generating transformer tripped causing a partial loss of connection to West Wind generation	52	885

## 1.5 SYSTEM OPERATOR COMPLIANCE WITH RULE BOOK: PART C

During December, the System Operator did not self-notify any Part C breaches.

### PARTICIPANT COMPLIANCE

The System Operator notified no alleged Part C breaches against participants in December 2009.

### APPLICATIONS FOR DISPENSATIONS

During December 2009, the System Operator received one application for dispensation, granted six dispensations and received two applications to withdraw dispensations.

## 2 PART G COMPLIANCE

The System Operator notified one Part C breach during the month of December being a breach of Schedule G6 1.3.2.1 for failing to correctly use reserve offers for Aviemore and Roxburgh.

## 3 ANCILLARY SERVICES

### SUMMARY OF PROCURED ANCILLARY SERVICES

The contracts for ancillary services procured for the 2009/10 period came into effect on 1 December 2009.

The System Operator had several meetings during December with a black start provider and the grid owner to prepare for a black start test currently scheduled for mid to late January 2010.

The following is a summary of the contracted ancillary services, as at 1 December 2009:

Ancillary Service Agent	FK	IR	OFR	BS	VS
Contact Energy	√	√	√*	√	√
Counties Power		√			
Energy Response		√*			
Genesis Power	√	√		√	
KCE Mangahao and Todd Mangahao		√*			
Meridian Energy	√*	√*	√	√	
Mighty River Power	√	√		√*	√*
NZ Aluminium Smelters		√*			
NZ Steel		√			
Northpower		√			
Norske Skog		√*			
Powerco		√			
Pan Pac		√*			
TrustPower		√			
Unison		√			
Vector		√*			
WEL Networks		√			
Wellington Electricity Networks		√			
Winstone Pulp International		√*			

\* denotes longer term contract

FK	FREQUENCY KEEPING	IR	INSTANTANEOUS RESERVES
OFR	OVER FREQUENCY RESERVE	VS	VOLTAGE SUPPORT
BS	BLACK START		

## 4. RECOMMENDATIONS FOR CHANGE TO EGRs AND RELATED MATTERS:

### 4.1 RULE CHANGE PROPOSALS

There were no new rule changes proposed by the System Operator during December 2009.

The System Operator has commenced its 2010 review of the Policy Statement. One of the key issues for this year's policy statement review will be the proposed changes to the credible event policies as a result of the credible event review which was undertaken in 2009. The System Operator will be discussing its proposed changes with participants during February and March in addition to seeking participants' views on any other issues that need to be addressed as part of the review.

### 4.2 EXEMPTION APPLICATIONS

There were no exemption applications submitted by the System Operator in December 2009.

## 5. OPERATIONAL UPDATE:

### 5.1 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	Completed initial connection to the Grid. Commissioning is ongoing. First injection into the grid is planned for January 2010.
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	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.

## 6. CONFLICTS OF INTEREST

There were no new conflicts of interest were identified in December 2009. The System Operator continues to manage the conflict of interest identified in its August report relating to the potential under frequency event charges arising from the 1 August 2009 under frequency event.

## 7. DEVELOPMENT AND RESOURCES:

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

- Commencement of policy statement review
- System Operator workshops (Auckland, Christchurch, Wellington)
- Discussions with industry and Commission on short term capacity issues
- Reintroduction of frequency keeping selection process into market tools
- Continuation of technical analysis of AUFLS requirements
- Finalization of credible event review



## 8. REGULATION 50 (4) STATEMENT:

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

## December 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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## 1. SUMMARY OF SYSTEM PERFORMANCE

This system performance report covers the month of December 2009.

### Principal Performance Obligations

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

### Operational Management

A black start test at Tokaanu station was completed on 12 December.

A market systems enhancement was completed on 17 December to reinstate the frequency keeping selection methodology used prior to the go-live of the new market systems.

### System Events

The West Wind T1 generating transformer tripped twice on 14 December causing a partial loss of connection to West Wind generation.

Other noteworthy events occurring during the reporting period include:

- Tripping of Mokai unit G10 on 1 December;
- Tripping of Southdown unit STG103 on 1 December;
- Tripping of Southdown unit GE105 on 4 December;
- Tripping of Rangipo unit G6 on 6 December;
- Trippings of Wairakei units G7, G9 and G14 (twice) on 9 December;
- Tripping of Benmore unit G1 on 9 December;
- Tripping of Huntly unit 3 on 10 December;
- Tripping of Mokai unit G10 on 14 December;
- Tripping of Kawerau geothermal unit on 16 December;
- Tripping of Huntly unit 2 on 21 December;
- Tripping of Kaimai generation on 23 December;
- Tripping of Glenbrook co-gen unit on 24 December; and
- Tripping of Stratford power station on 29 December.



## 2. PRINCIPAL PERFORMANCE OBLIGATIONS

### 2.3 AVOID CASCADE FAILURE

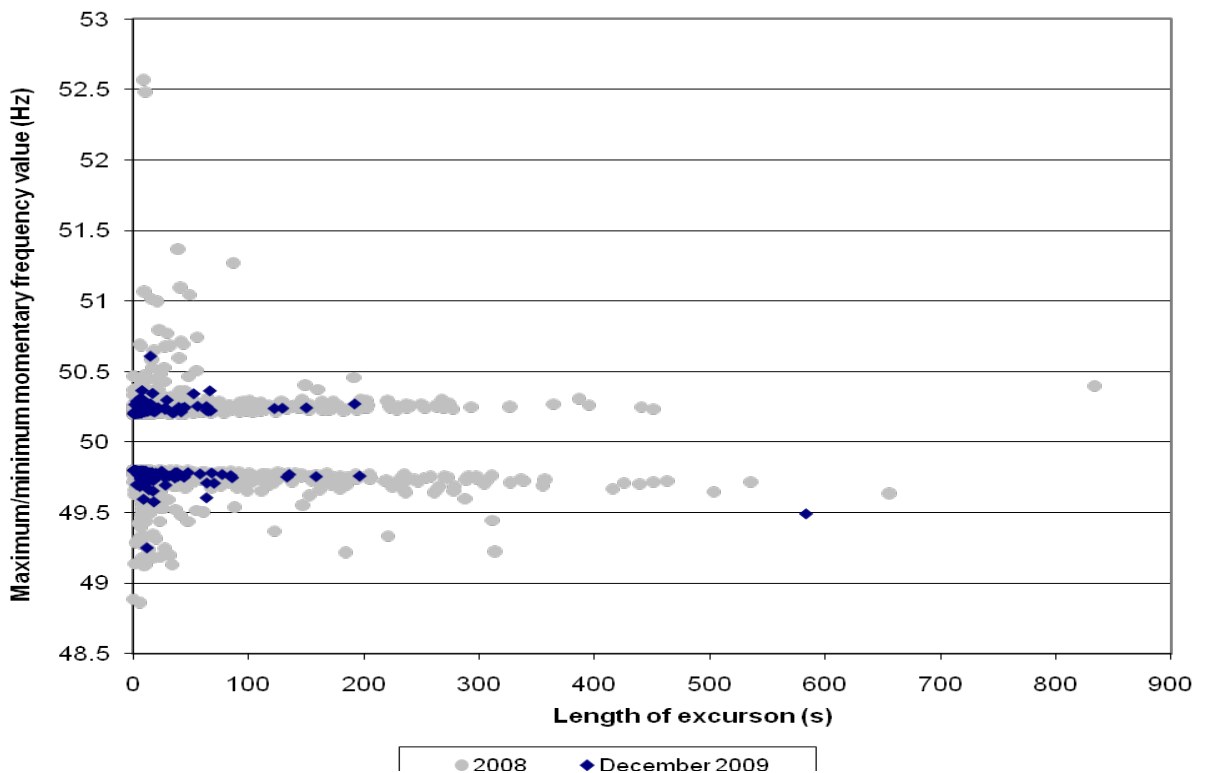
No instances of cascade failure resulting in loss of demand arising from frequency or voltage balances or supply and demand imbalances occurred during the reporting period.

### 2.4 FREQUENCY

#### 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 within 0.4 Hz of the normal band and frequency typically returns to within the normal band within 2 minutes.

December 2009



#### 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	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Annual rate	PPO target
55.00 >= Freq > 52.00				1									1	
52.00 >= Freq > 51.25				1						1			2	7
51.25 >= Freq > 50.50	1	1		2	2		2	2	6	4	1	1	22	50
50.50 >= Freq > 50.20	167	152	241	380	231	267	416	359	292	228	85	148	2966	
50.20 >= Freq > 49.80														
49.80 >= Freq > 49.50	144	129	114	221	181	204	336	257	154	152	98	134	2124	
49.50 >= Freq > 48.75	4	5	4	9	2	1	3	1	3	2		2	36	60
48.75 >= Freq > 48.00				1									1	6
48.00 >= Freq > 47.00								1					1	0.2
47.00 >= Freq > 45.00													0	0.2

Table 1 Summary of number of momentary fluctuations outside the frequency normal band

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		Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09
Time Error Management	NI	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	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

Table 2 Summary of compliance against time error criteria over the last 12 months

### 3. OPERATIONAL MANAGEMENT

#### 3.1 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	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09
Demand Allocation Notice												
Grid Emergency Notice	1	1	4	8	4	4	8		8	6		1
Warning Notice				4	3	9	9		5	3	1	
Customer Advice Notice	2		3	19	23	4	11	6	7	41	16	11

Island	Region	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Total
North Island	Northland													0
	Auckland		1								1			2
	Zone 1													0
	Waikato										1		1	2
	Bay of Plenty			1			1							2
	Hawkes Bay													0
	Taranaki													0
	Bunnythorpe			1	1									2
	Wellington	1			1		2	8		5				17
	North Island (all)					4	1			3	4			12
South Island & HVDC	Nelson Marlborough			1	3									4
	West Coast				1									1
	Christchurch													0
	Canterbury			1										1
	Zone 3													0
	Otago													0
	Southland				2									2
	South Island (all)													0
	HVDC													0



### 3.2 GRID EMERGENCIES

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

Date	Time	Summary Details	Island
30 December 2009	23:48	A Grid Emergency was declared due to EGR N-1 voltage limit being exceeded at Te Kowhai. A grid reconfiguration removing Taumarunui-Te Kowhai 1 circuit and Taumarunui T8 supply transformer alleviated the problem.	North

### 3.3 CUSTOMER ADVICE NOTICES (CANS)

Eleven CANS (Customer Advice Notices) were issued in the reporting period:

- two related to an outage of the messaging environment;
- four related to the market system release which would reinstate the frequency keeping selection methodology used prior to the new market systems go – live;
- one advised of an unplanned outage of the HVDC Electrode Line, limiting Bipole transfer to 460MW;
- three related to Market System issues which occurred on 11 December 2009; and
- one advised of changes in HVDC Pole 1 offer.

### 3.4 STANDBY RESIDUAL CHECK (SRC) NOTICES

Twenty five 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 1<sup>st</sup>, 2<sup>nd</sup>, 4<sup>th</sup>, 7<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup>, 15<sup>th</sup>-17<sup>th</sup> and 22<sup>nd</sup> of December 2009. 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.

### 3.5 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.

No contracted voltage support ancillary services were called upon during the reporting period.

### 3.6 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	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Total
North Island	Northland	7	6	8	11	10	10	1	4	4	8	24	4	97
	Auckland	6	7	10	3	5	7	5	3	15	7	13	8	89
	Waikato	0	5	3	3	5	7	2	2	3	6	7	5	48
	Bay of Plenty	2	1	1	5	3	7	5	3	10	4	5	2	48
	Hawkes Bay	6	3	1	5	2	3	5		1	2	3	1	32
	Taranaki	5	1	1	2	2	2	3			1	3	1	21
	Bunthythorpe	1	5	4	10	6	5	3			5	3	1	43
	Wellington	6	9	3	2	12	3	2	1	7	4	7	6	62
Total		33	37	31	41	45	44	26	13	40	37	65	28	440
South Island	Nelson Marlborough	4	6	6	4	1	0	2	3	10	5	6	2	49
	West Coast	5	2	6	2	7	0	3	4	2	2	4		37
	Christchurch	0	4	1	5	3	0	1	1	4	4	3	4	30
	Canterbury	0		1	4	2	1	3	1		3	3		18
	Otago	9	7	3	2	3	1		3	1	5	2		36
	Southland	7	5	7	5	4	2		3		10	4	2	49
Total		25	24	24	22	20	4	9	15	17	29	22	8	219

Table 3 Outages where operational measures were required to allow the outage to proceed



### 3.7 CONSTRAINTS

#### SUMMARY: SECURITY CONSTRAINTS BINDING DURING THE MONTH

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

Island	Region	Constraint Name	Description
South Island & HVDC	HVDC	DCNPole1Max	The purpose of this constraint is to limit the flow on HVDC Pole 1 to the Asset Owner's offered capability.
		DCNPole1Min	The purpose of this constraint is to limit the flow on HVDC Pole 1 to the Asset Owner's offered capability.
		BEN_HAYP2max	The purpose of this constraint is to limit the flow on HVDC from Benmore to Haywards to the Asset Owner offered capability for Pole 2.
		BEN_HAYP1max	The purpose of this constraint is to limit the flow on HVDC from Benmore to Haywards to the Asset Owner offered capability for Pole 1.
	Otago	NSY_ROX_1_W_P_1_z	The effect of this constraint is to manage flows through Naseby-Roxburgh-1 for a contingency of Clyde-Twizel-1 or 2 during high Southland generation and with all circuits in 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.
	Southland	HWB_T4_S_O_1Aof2_z	The effect of this constraint is to manage flows Edendale - Invercargill 1 for a contingency of Gore - Roxburgh 1 during low Southland generation when Halfway Bush interconnecting transformer T4 is out of service.
		EDN_INV_1_S_P_1	The effect of this constraint is to manage flows through Edendale Invercargill 1 for a contingency of Gore Roxburgh 1 during periods of low Waipori generation when all circuits are in 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.

#### 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	0	0.00%	53	0.30%
South Island & HVDC	Nelson	STK_UTK_1_S_P	0	0.00%	172	0.98%
	West Coast	WEST_COAST_SP_LIT_O_1	0	0.00%	149	0.85%
	Otago	NSY_ROX_1_S_P_z	138	9.27%	220	1.26%
		NSY_ROX_1_W_P_1_z	1	0.07%	100	0.57%
	Southland	BWK_HWB_S_O_z	0	0.00%	104	0.59%
		HWB_T4_S_O_1Ao_f2_z	10	0.67%	0	0.00%
	HVDC	BEN_HAY1.1	0	0.00%	63	0.36%
		BEN_HAY2.1	0	0.00%	58	0.33%
		DCNPole1Max	367	24.66%	992	5.66%
		DCNPole1Min	364	24.46%	932	5.32%
BEN_HAYP1max		28	1.88%	513	2.93%	



## 4. SYSTEM EVENTS

### 4.1 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)
10 October 2009	11:50	Huntly unit 2 tripped causing a momentary fluctuations in frequency in the both North and South Islands	North South	49.25 49.57

#### CONNECTION POINT EVENTS

Date	Time	Summary Details	Generation/Load interrupted (MW)	Restoration time (minutes)
14 December 2009	02:16	West Wind T1 generating transformer tripped causing a partial loss of connection to West Wind generation	52	885

### 4.2 SYSTEM EVENTS DURING REPORTING PERIOD

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

#### CONTINGENT EVENTS

Event	Number	Summary
Loss of single AC transmission circuit	12	These related to loss of <ul style="list-style-type: none"> <li>▪ Bunnythorpe-Tangiwai 1 x 2 (Auto Reclose)</li> <li>▪ Bunnythorpe-Haywards 1 (x 2) &amp; 2 (Both Auto Reclose)</li> <li>▪ Arapuni-Hangatiki 1</li> <li>▪ Islington-Livingstone 1 (Auto Reclose) x 2</li> <li>▪ Ashley-Southbrook 1 (Auto Reclose)</li> <li>▪ Edgecumbe-Kawerau 1</li> <li>▪ Brydone-Edendale 1 (Auto Reclose)</li> <li>▪ Kinleith-Lichfield-Tarukenga 1 (Auto Reclose)</li> </ul>
Loss of HVDC pole	1	These relate to loss of HVDC Pole 2 and arback on HVDC Valve group VG1 on start-up.
Loss of single generation units	15	These related to loss of <ul style="list-style-type: none"> <li>▪ Mokai (x2)</li> <li>▪ Southdown (x 2)</li> <li>▪ Rangipo</li> <li>▪ Wairakei (x 2)</li> <li>▪ Huntly (x 2)</li> <li>▪ West Wind</li> <li>▪ Glenbrook (x 2)</li> <li>▪ Kawerau geothermal station</li> <li>▪ Tauranga</li> <li>▪ Stratford</li> </ul>



Event	Number	Summary
Total during reporting period	28	

#### EXTENDED CONTINGENT EVENTS

Event	Number	Summary
Loss of both HVDC poles	0	

#### OTHER EVENTS

Event	Number	Summary
Loss of multiple AC transmission circuits	1	<ul style="list-style-type: none"> <li>▪ Islington_Livingston 1 (Auto Reclose)</li> </ul>
Loss of bus bar section	1	This event related to trippings of <ul style="list-style-type: none"> <li>▪ Islington</li> </ul>
Loss of interconnecting transformer	1	This event related to trippings of <ul style="list-style-type: none"> <li>▪ Islington T6</li> </ul>
Loss of grid reactive plant	8	This event related to trippings of <ul style="list-style-type: none"> <li>▪ Filter Bank F2</li> <li>▪ Otahuhu GT5 &amp; GT6 (x 2)</li> <li>▪ Benmore G1</li> <li>▪ Islington C4, C5 &amp; C15 (x 2)</li> </ul>
Loss of supply transformer	4	These events related to trippings of <ul style="list-style-type: none"> <li>▪ Tangiwai T2 x 2</li> <li>▪ Te Matai T1</li> <li>▪ Otira T6</li> </ul>
T2Demand change	0	
Loss of multiple generation units	0	
HVDC Start/ Stop	0	
<b>Total during reporting period</b>	<b>15</b>	

#### OTHER DISTURBANCES

Event	Number	Summary
Feeder trippings	60	Various locations
Misc.	0	
<b>Total during reporting period</b>	<b>60</b>	



### 4.3 SYSTEM EVENTS – TREND

	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec 09	Total	Average Events per month
Contingent Event – transmission	22	19	24	23	42	19	16	24	16	22	4	12	<b>243</b>	<b>20.3</b>
Contingent Event – generation	10	7	7	8	15	8	11	9	11	14	13	15	<b>128</b>	<b>10.7</b>
Contingent Event - HVDC	0	0	0	1	0	0	0	1	0	15	2	1	<b>20</b>	<b>1.7</b>
Extended Contingent Event	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>	<b>0.0</b>
Other Event – AC transmission	3	0	1	2	5	2	2	0	1	1	0	1	<b>18</b>	<b>1.5</b>
Other Event – Busbar	1	0	3	2	2	1	0	1	1	0	2	1	<b>14</b>	<b>1.2</b>
Other Event – Demand	0	0	0	4	1	1	5	2	5	4	4	1	<b>27</b>	<b>2.3</b>
Other Event – Generation	0	1	4	0	0	0	0	0	2	0	1	0	<b>8</b>	<b>0.7</b>
Other Event – Interconnecting transformer	0	0	0	0	0	0	0	0	1	0	0	1	<b>2</b>	<b>0.2</b>
Other Event – Reactive plant	3	6	2	9	3	3	0	1	6	10	2	8	<b>53</b>	<b>4.4</b>
Other Event – Supply transformer	8	8	7	3	3	3	6	4	3	3	4	4	<b>56</b>	<b>4.7</b>



# Ancillary Services Procurement Report

## December 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:

- Settlement volumes, prices, costs, and administrative costs where appropriate.
- Any issues arising with respect to cost allocation, liability and disputes.
- 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.



SYSTEM OPERATOR

*Keeping the energy flowing*

TRANSPOWER



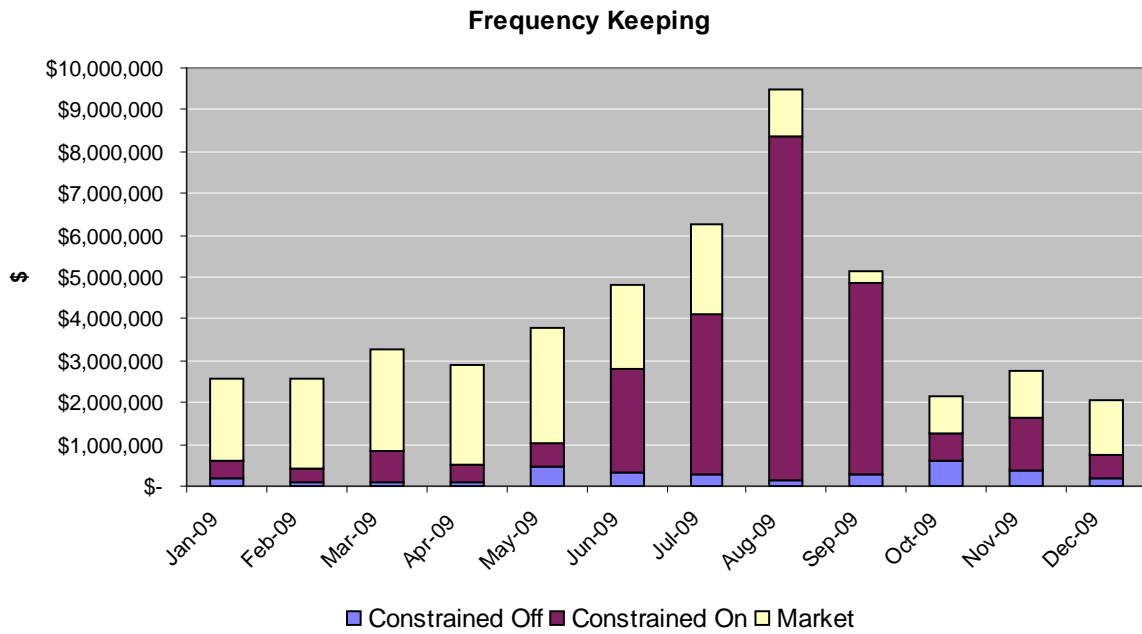
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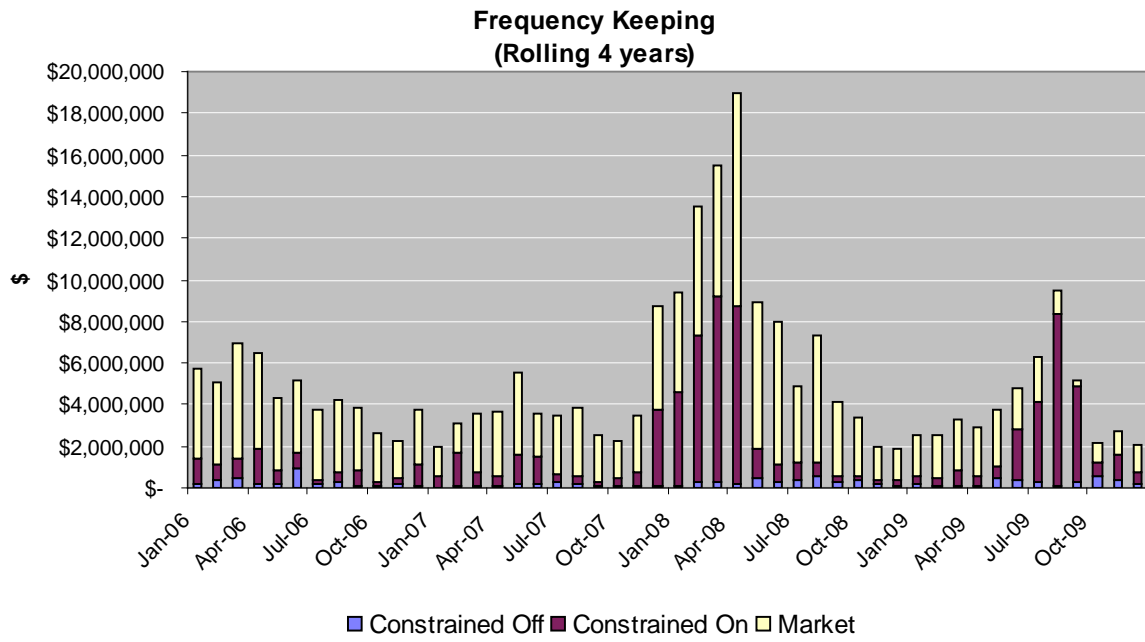
# 1. SUMMARY OF PROCUREMENT COSTS

## 1.1 FREQUENCY KEEPING (FK)

Frequency Keeping	Cost
Constrained Off	\$197,920.83
Constrained On	\$532,484.75
Market offer	\$1,336,572.94
<b>Total monthly frequency keeping cost</b>	<b>\$2,066,978.52</b>



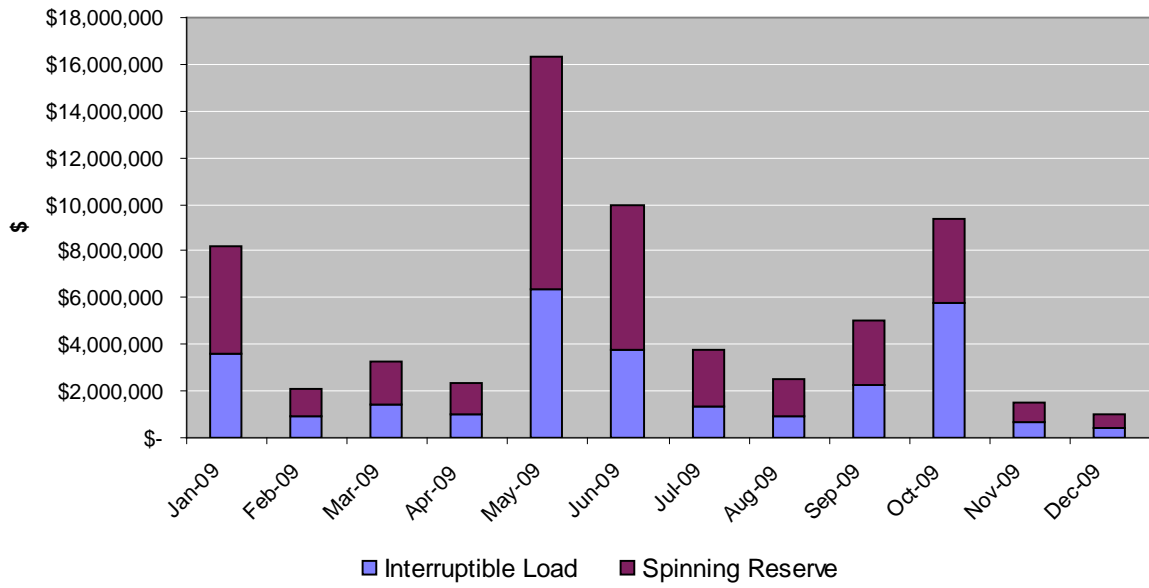




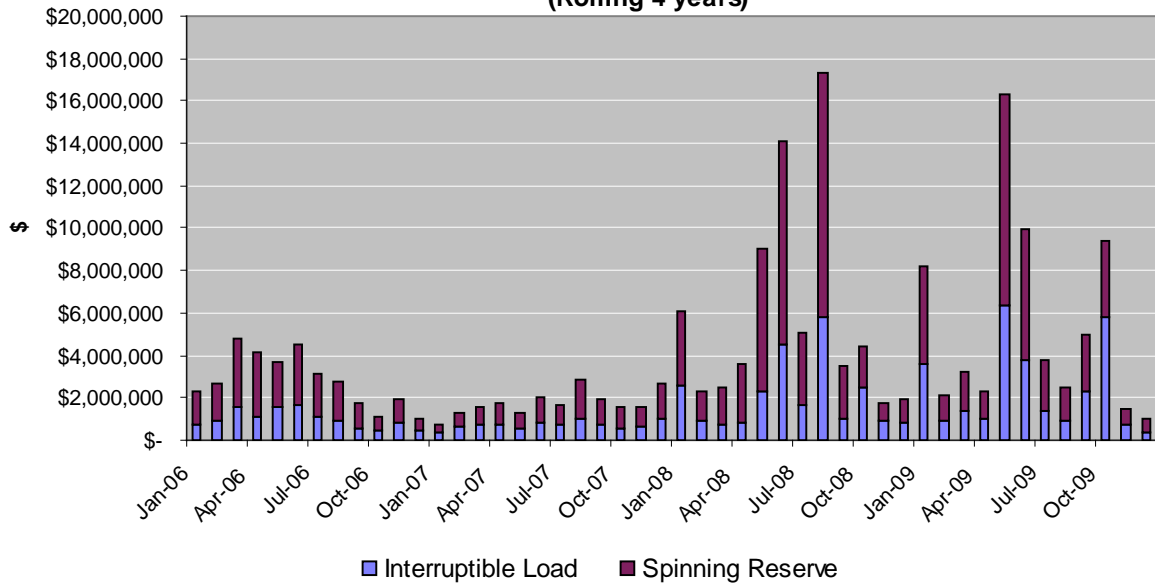
## 1.2 INSTANTANEOUS RESERVE (IR)

<i>Instantaneous Reserve</i>	<i>Cost</i>
<i>Spinning reserve</i>	\$602,748.02
<i>Interruptible Load</i>	\$380,010.21
<b><i>Total monthly Instantaneous Reserve cost</i></b>	<b>\$982,758.23</b>

### Instantaneous Reserve



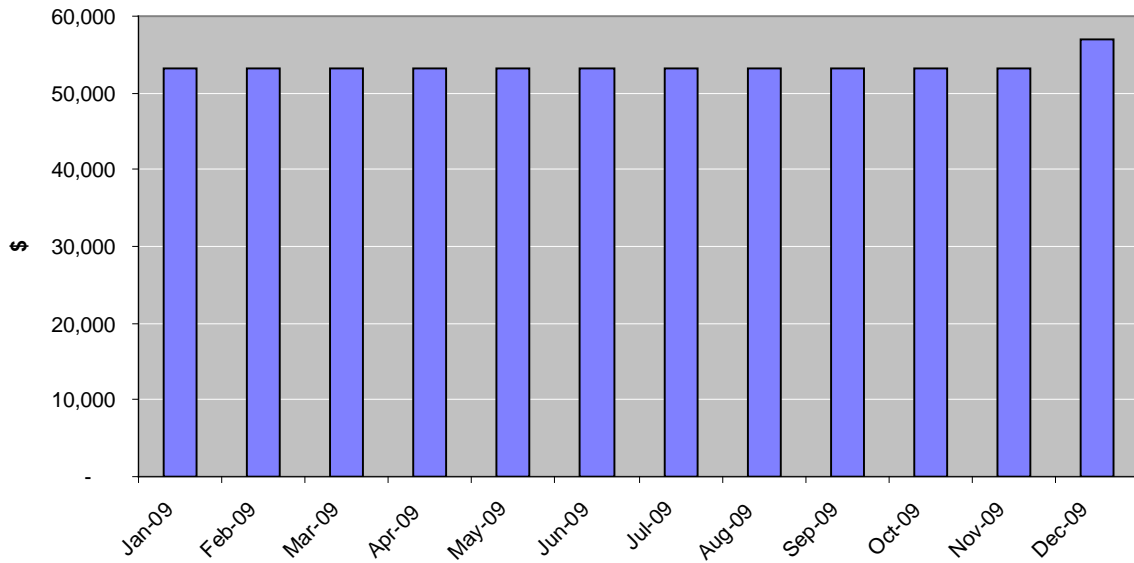
### Instantaneous Reserve (Rolling 4 years)



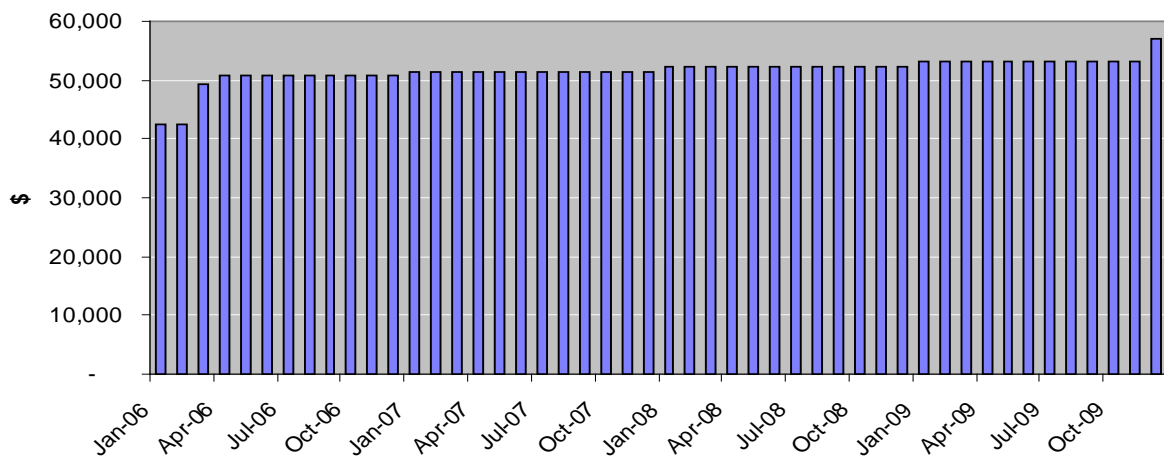
### 1.3 OVER FREQUENCY RESERVE (OFR)

Over Frequency Reserve	Cost
<b>Total monthly Over Frequency Reserve cost</b>	<b>\$57,000.00</b>

Over Frequency Reserve



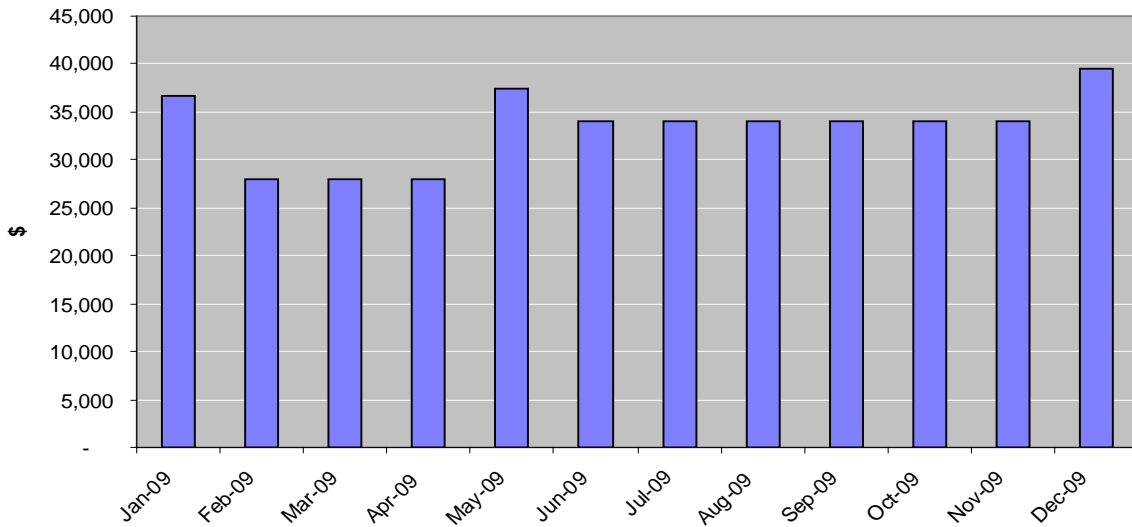
Over Frequency Reserve (Rolling 4 years)



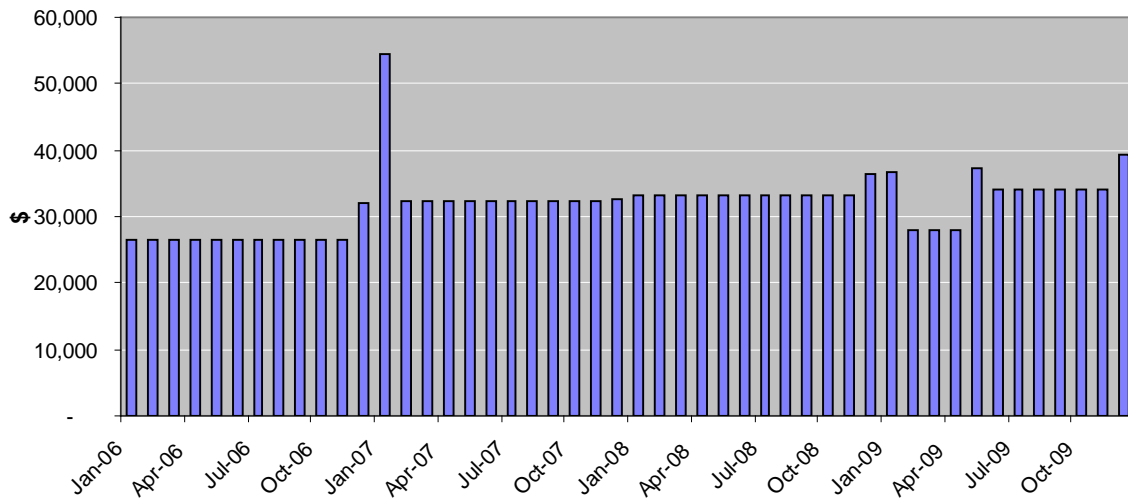
### 1.4 BLACK START (BS)

<i>Black Start</i>	<i>Cost</i>
<b>Total monthly Black Start cost</b>	<b>\$39,439.55</b>

**Black Start**



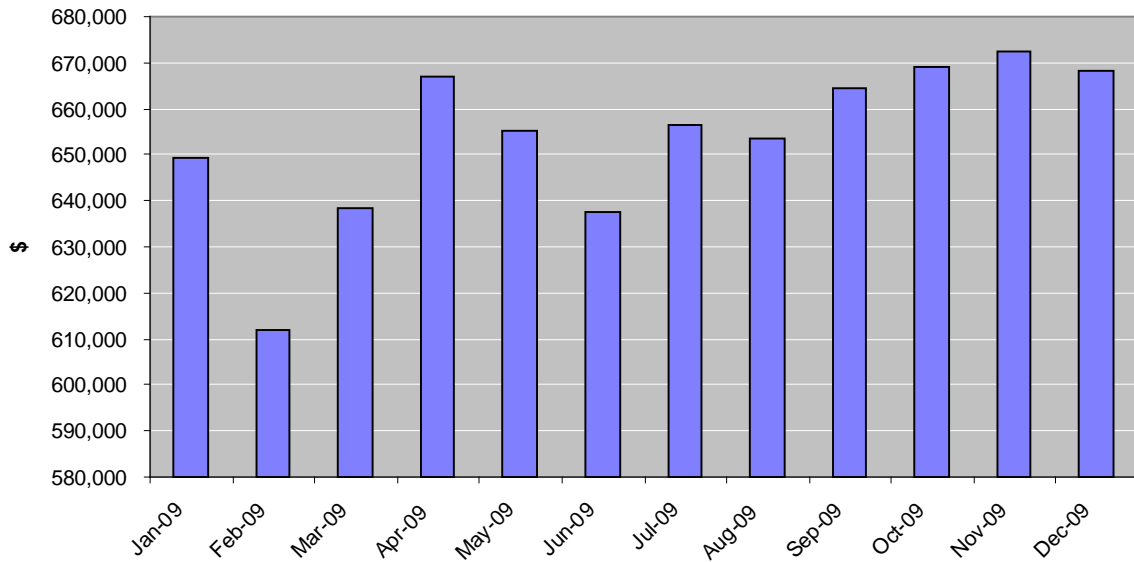
**Black Start  
(Rolling 4 years)**



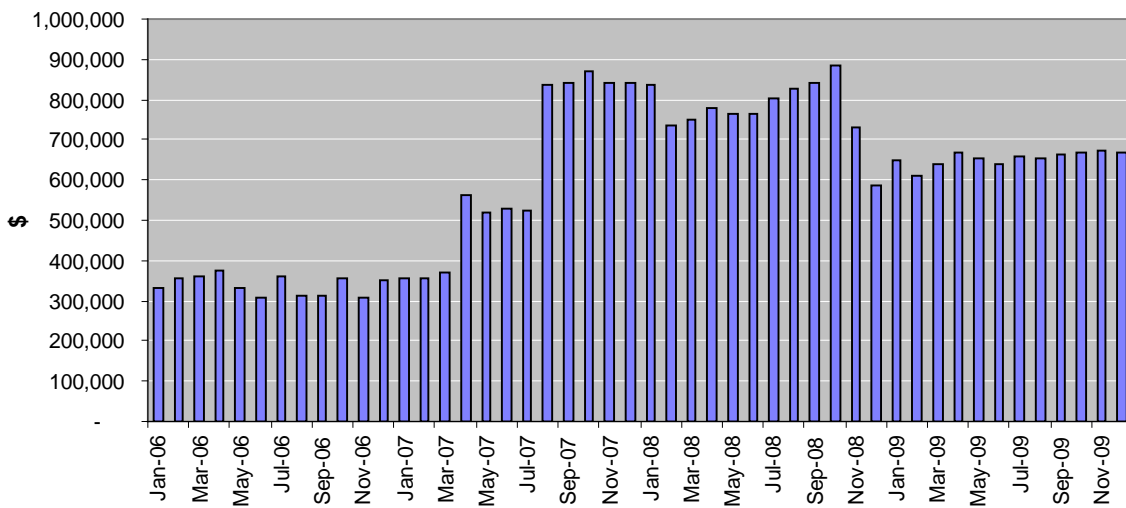
### 1.5 VOLTAGE SUPPORT (VS)

Voltage Support	Cost
<b>Total monthly Voltage Support cost</b>	<b>\$668,187.39</b>

**Voltage Support**



**Voltage Support (Rolling 4 years)**



1.6 **ADMINISTRATIVE COSTS**

Nil

## 2. SUMMARY OF CONTRACTED ANCILLARY SERVICES

The table below provides a summary of contracted ancillary services as at December 2009.

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 09/10**

#### **3.1 PROCUREMENT PLAN**

The contracts for ancillary services procured for the 2009/2010 period came into effect on 1 December 2009.

The System Operator has continued with planning for a North Island black start test in January 2010.

#### **3.2 CHANGES TO ANCILLARY SERVICE PROCUREMENT CONTRACTS**

The System Operator processed several requests for contract schedule changes in the month. All changes were relatively minor, requiring only adjustments to maximum quantities.

### **4. EVENTS REQUIRING FURTHER CONSIDERATION FOR REGULATION AND OR RULE CHANGE**

Nil

**Report Ends**