System Operator Reports

November 2009

Contents

SYSTEM OPERATOR

TRANSPOWER

Keeping the energy flowing

Operational Performance Report

to the Electricity Commission

November 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 were no grid emergencies reported in the period.

1.3 System Events

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

Date	Time	Summary Details	Island	Freq (Hz)
11 Nov 2009	09:01	A ripple control fault in Orion's network caused momentary rise in frequency in the South Island	South	50.59
25 Nov 2009	13:18	An unplanned line reduction at Tiwai caused a momentary rise in frequency in the South Island	South	50.64
29 Nov 2009	09:54	Huntly Unit 5 tripped.	National	N 49.16 S 49.42
30 Nov 2009	21:37	Tiwai Line 1 emergency line reduction.	South	50.58

1.4 Connection Point Events

There were 2 connection point events during the reporting period.

Date	Time	Summary Details	Generation/Load interrupted (MW)	Restoration time (minutes)
21 Nov 2009	21:22	Karapiro-Te Awamutu 1 tripped causing loss of supply to Te Awamutu.	25	215
24 Nov 2009	08:55	A fault in Timaru 11 kV network caused trippings of all three supply transformers T2, T3 and T4 and loss of supply to Timaru.	28	247

1.5 System Operator Compliance with Rule Book: Part C

During November, 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 November 2009.

Applications for Dispensations

During November 2009, the System Operator received 2 applications for dispensations.

2 Part G Compliance

The System Operator notified 7 Part G breaches during the month of November. In summary, the notified breaches related to the following:

- Three breaches related to the failure to incorporate information regarding the HVDC configuration;
- One breach related to the failure to publish the Schedule of Dispatch Prices and Quantities (SDPQ) when completed;
- One breach related to the failure to use a reasonable estimate of demand at WAA in calculating real time prices (RTP) at Whareroa;
- One breach related to the failure to incorporate correction information in the schedule regarding Wilton T8;
- One breach related to the failure to incorporate AC transmission system configuration information regarding WGN WVY 1 from the grid owner in formulating dispatch.

3 Ancillary Services

The System Operator has awarded contracts to ten ancillary service agents for the provision of ancillary services commencing 1 December 2009. The term of the contracts ranges from 1 to 5 years.

The System Operator tendered for Instantaneous Reserve, Over Frequency Reserve, Frequency Keeping and Black Start services. Tenders were received for all tendered services.

SUMMARY OF PROCURED ANCILLARY SERVICES

Frequency keeping

The System Operator received three offers to provide frequency keeping services.

Two of the frequency keeping service providers were contracted for a term of one year. The other provider was contracted for a term of four years. The remaining frequency keeping service provider remains on a longer term contract to 2010.

Instantaneous Reserve

The System Operator awarded nine contracts for the provision of instantaneous reserves, with contract terms ranging from one to five years.

Black Start

The System Operator contracted the services of one black start provider in each island. The System Operator has contracts for two black start service providers in each island.

Over frequency reserve

The System Operator awarded two contracts for over frequency services, one for a term of one year and one for a term of 5 years.

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
OFR – Over Frequency Reserve
BS - Black Start

IR – INSTANTANEOUS RESERVES
VS – Voltage Support

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 November 2009.

4.2 Exemption applications

There were no exemption applications submitted by the System Operator in November 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
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

No new conflicts of interest were identified in November 2009.

7. Development and Resources:

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

- Ancillary services tender evaluation and contract preparation;
- Finalise the development of the reintroduction of frequency keeping selection process into Market Tools (December release)

- Commencement of technical aspects of the substantive review of AUFLS
- Analysis of Credible Event review submissions
- Wind Integration studies – fault ride through
- Consultation papers
- Undertaking System Operator workshops – 1 Dec (AKL), 2 Dec (CHC), 3 Dec (WGN)

8. 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

November 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 November 2009.

Principal Performance Obligations

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

Operational Management

November saw the return to service of a number of key generators relieving the pressure on the remaining of the system and permitting the HVDC Bipole outage to go ahead as planned. In conjunction with this outage Meridian took the opportunity to dewater the Ohau canals to perform remedial work.

Note that no Grid emergencies were declared for the month.

System Events

A tripping of Karapiro – Te Awamutu 1 circuit on 21 November resulted in a loss of supply to Te Awamutu of approximately 25 MW.

A feeder fault at Timaru on 24 November caused trippings of all three supply transformers; T2, T3 and T4, resulting in a loss of supply to Timaru of approximately 28 MW

Other noteworthy events occurring during the reporting period include:

- Tripping of Benmore unit 6 on 2 November
- Bus Fault at Springston on 3 November resulting in loss of supply of approx 22 MW
- Tripping of Kapuni unit 1 on 4 and 20 of November
- Tripping of Kinleith unit 1 on 4 November
- HVDC Pole two tripped on north transfer on 9 November
- Tripping of Tokaanu unit 4 on 17 November
- Tripping of Tiwai potline on 18, 25 and 30 November
- Tripping of Clyde unit 4 on 19 November
- Tripping of Mokai unit 10 on 19 November
- Tripping of Huntly unit 4 on start up on 23 November
- Ohaaki unit 1 and 2 tripped on 28 November
- Huntly unit 5 tripped on 29 November

2 PRINCIPAL PERFORMANCE OBLIGATIONS

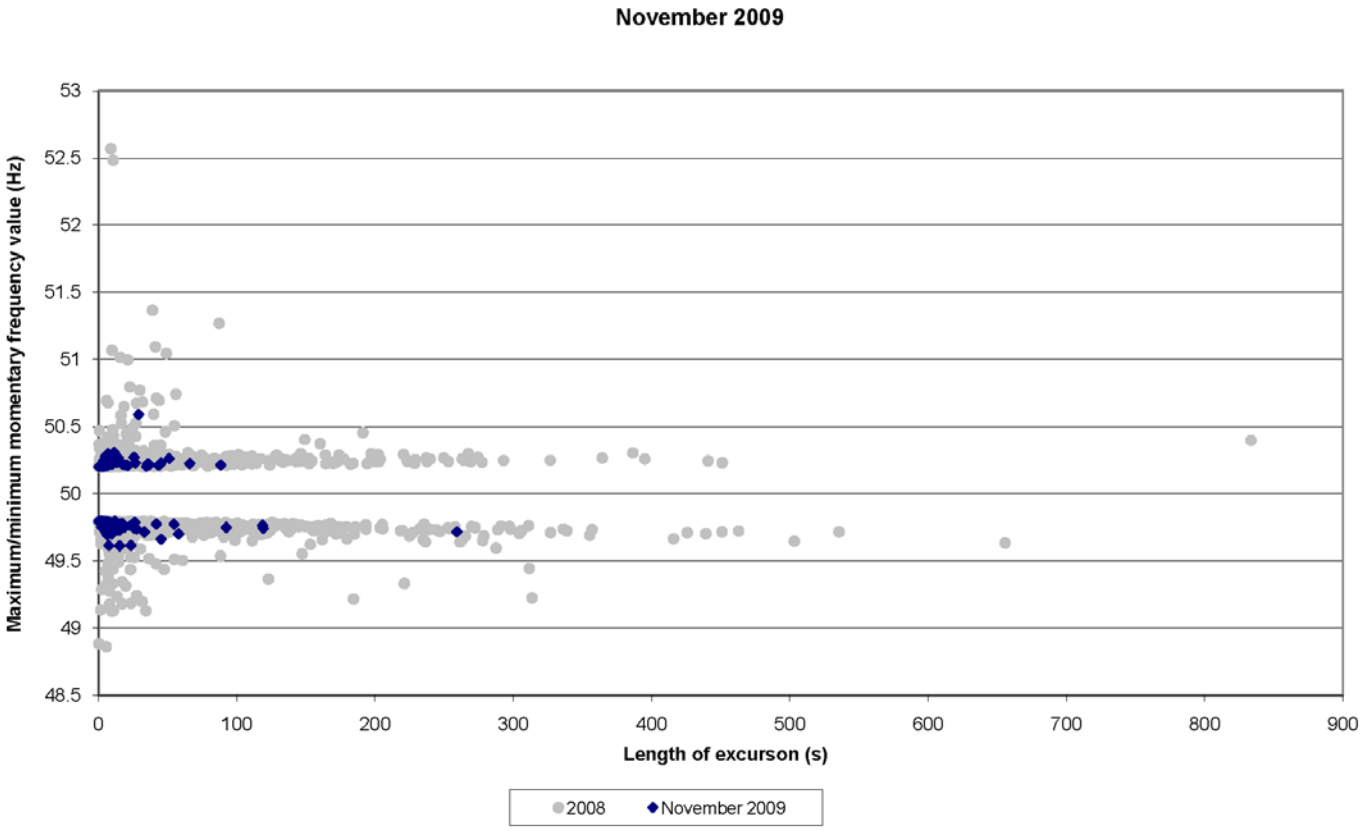
2.1 AVOID CASCADE FAILURE

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.

2.2 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.



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	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-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	1		2	2		2	2	6	4	1	**22**	**50**
50.50 >= Freq > 50.20	132	167	152	241	380	231	267	416	359	292	228	85	**2950**	
50.20 >= Freq > 49.80														
49.80 >= Freq > 49.50	100	144	129	114	221	181	204	336	257	154	152	98	**2090**	
49.50 >= Freq > 48.75	2	4	5	4	9	2	1	3	1	3	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		Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09
Time Error Management	NI	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	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	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09
Demand Allocation Notice												
Grid Emergency Notice		1	1	4	8	4	4	8		8	6	
Warning Notice					4	3	9	9		5	3	1
Customer Advice Notice	4	2		3	19	23	4	11	6	7	41	16

3.2 GRID EMERGENCIES

There were no grid emergencies declared by the System Operator in the reporting period.

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

Island	Region	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Total
North Island	Northland													**0**
	Auckland			1								1		**2**
	Zone 1													**0**
	Waikato											1		**1**
	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**

3.3 CUSTOMER ADVICE NOTICES (CANS)

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

- Three notices related to problems with publishing Real Time Pricing;
- One related to errors in publishing Special Winter Schedule (SWS) and Pre-Dispatch Schedule (PDS);
- Ten related to an unplanned outage of HVDC Pole 2.
- One was to advise of the early return of the planned HVDC Bipole outage.
- One was to advise that during the planned Bunnythorpe - Wilton circuit outage the HVDC south transfer was limited to 330MW

3.4 STANDBY RESIDUAL CHECK (SRC) NOTICES

Seventy 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 2nd-6th, 9th-12th, 27th and 29th of November 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.

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

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	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Total
North Island	Northland	4	7	6	8	11	10	10	1	4	4	8	24	**97**
	Auckland	4	6	7	10	3	5	7	5	3	15	7	13	**85**
	Waikato	2	0	5	3	3	5	7	2	2	3	6	7	**45**
	Bay of Plenty	3	2	1	1	5	3	7	5	3	10	4	5	**49**
	Hawkes Bay	0	6	3	1	5	2	3	5	0	1	2	3	**31**
	Taranaki	0	5	1	1	2	2	2	3	0		1	3	**20**
	Bunnythorpe	8	1	5	4	10	6	5	3	0		5	3	**50**
	Wellington	6	6	9	3	2	12	3	2	1	7	4	7	**62**
Total		27	33	37	31	41	45	44	26	13	40	37	65	**439**
South Island	Nelson Marlborough	3	4	6	6	4	1	0	2	3	10	5	6	**50**
	West Coast	3	5	2	6	2	7	0	3	4	2	2	4	**40**
	Christchurch	2	0	4	1	5	3	0	1	1	4	4	3	**28**
	Canterbury	1	0	0	1	4	2	1	3	1		3	3	**19**
	Otago	2	9	7	3	2	3	1	0	3	1	5	2	**38**
	Southland	3	7	5	7	5	4	2	0	3		10	4	**50**
Total		14	25	24	24	22	20	4	9	15	17	29	22	**225**

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
North Island	Hamilton	KIN_TRK_1_S_P_2A	The effect of this constraint is to manage flows through Kinleith - Tarukenga 1 for a contingency of Kinleith - Tarukenga 2 during low generation at Auckland, Huntly and Arapuni with all circuits in service.
		KIN_TRK_1_S_P_1A	The effect of this constraint is to manage flows through Kinleith Tarukenga1 for a contingency of Hamilton-Whakamaru 1 when Auckland generation is low.
		ARI_PAK_1_S_O_1of2	The effect of this constraint is to manage flows through an Arapuni -Hamilton circuit for a contingency of an Arapuni - Hamilton circuit when Arapuni - Pakuranga 1 is out of service.
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.
	Southland	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_T10_W_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.

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	Hamilton	KIN_TRK_1_S_P_1A	5	0.35%	17	0.10%
		KIN_TRK_1_S_P_2A	4	0.28%	3	0.02%
	Hawkes Bay	FHL_RDF_1&2_S_P_1_z	0	0.00%	76	0.43%
South Island & HVDC	Nelson	STK_UTK_1_S_P	0	0.00%	172	0.98%
	West Coast	WEST_COAST_SPLIT_O_1	0	0.00%	149	0.85%
	Otago	NSY_ROX_1_S_P_z	0	0.00%	314	1.79%
		NSY_ROX_1_W_P_1_z	0	0.00%	113	0.64%
	Southland	BWK_HWB_S_O_z	0	0.00%	104	0.59%
		ROX_T10_S_P_1	8	0.56%	3	0.02%
	HVDC	BEN_HAY1.1	0	0.00%	63	0.36%
		BEN_HAY2.1	0	0.00%	58	0.33%
		DCNPole1Max	279	19.38%	713	4.07%
		DCNPole1Min	277	19.24%	655	3.74%
		BEN_HAYP1max	0	0.00%	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)
11 Nov 2009	09:01	A ripple control fault in Orion's network caused momentary rise in frequency in the South Island	South	50.59
25 Nov 2009	13:18	An unplanned line reduction at Tiwai caused a momentary rise in frequency in the South Island	South	50.64
29 Nov 2009	09:54	Huntly Unit 5 tripped.	National	N 49.16 S 49.42
30 Nov 2009	21:37	Tiwai Line 1 emergency line reduction.	South	50.58

Connection Point Events

Date	Time	Summary Details	Generation/Load interrupted (MW)	Restoration time (minutes)
21 Nov 2009	21:22	Karapiro-Te Awamutu 1 tripped causing loss of supply to Te Awamutu.	25	215
24 Nov 2009	08:55	A fault in Timaru 11 kV network caused trippings of all three supply transformers T2, T3 and T4 and loss of supply to Timaru.	28	247

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	4	These related to loss of ▪ Henderson - Otahuhu (Auto Reclose) ▪ Arapuni - Kinleith 1 (Auto Reclose) ▪ Karapiro - Te Awamutu 1 ▪ Bunnythorpe – Mangahao 1 & Mangahao T3
Loss of HVDC pole	2	These relate to loss of HVDC Pole 2 and arcback on HVDC Valve group VG1 on start-up.
Loss of single generation units	13	These related to loss of ▪ Benmore G6 (x1) ▪ Kapuni GT1 x 2 ▪ Kinleith G1 ▪ Rotokawa x 2 ▪ Tokaanu G4 ▪ Clyde G4 ▪ Mokai G10 ▪ Huntly U4 & U5 ▪ Ohaaki G2 & G1
Total during reporting period	**19**	

Extended Contingent Events

Event	Number	Summary
Loss of both HVDC poles	0	

Other Events

Event	Number	Summary
Loss of multiple AC transmission circuits	0	
Loss of bus bar section	2	This event related to trippings of ▪ Springston ▪ Timaru
Loss of interconnecting transformer	0	
Loss of grid reactive plant	2	This event related to trippings of ▪ Henderson C1 ▪ Islington C15
Loss of supply transformer	4	These events related to trippings of ▪ Timaru T2 ▪ Tangiwai T2 (x 3) ▪
T2Demand change	4	This event related to trippings of ▪ Tiwai potline 1 (x 3) ▪ Orion ripple control system

Event	Number	Summary
Loss of multiple generation units	1	This event related to trippings of ▪ Mangahao
HVDC Start/ Stop	2	This event related to trippings of • Benmore T23
Total during reporting period	**23**	

OTHER DISTURBANCES

Event	Number	Summary
Feeder trippings	67	Various locations
Misc.	0	
Total during reporting period	**67**	

4.3 SYSTEM EVENTS – TREND

	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Total	Average Events per month
Contingent Event – transmission	17	22	19	24	23	42	19	16	24	16	22	4	248	20.7
Contingent Event – generation	5	10	7	7	8	15	8	11	9	11	14	13	118	9.8
Contingent Event - HVDC	6	0	0	0	1	0	0	0	1	0	15	2	25	2.1
Extended Contingent Event	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Other Event – AC transmission	1	3	0	1	2	5	2	2	0	1	1	0	18	1.5
Other Event – Busbar	0	1	0	3	2	2	1	0	1	1	0	2	13	1.1
Other Event – Demand	0	0	0	0	4	1	1	5	2	5	4	4	26	2.2
Other Event – Generation	0	0	1	4	0	0	0	0	0	2	0	1	8	0.7
Other Event – Interconnecting transformer	0	0	0	0	0	0	0	0	0	1	0	0	1	0.1
Other Event – Reactive plant	4	3	6	2	9	3	3	0	1	6	10	2	49	4.1
Other Event – Supply transformer	1	8	8	7	3	3	3	6	4	3	3	4	53	4.4

Ancillary Services Procurement Report

November 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.

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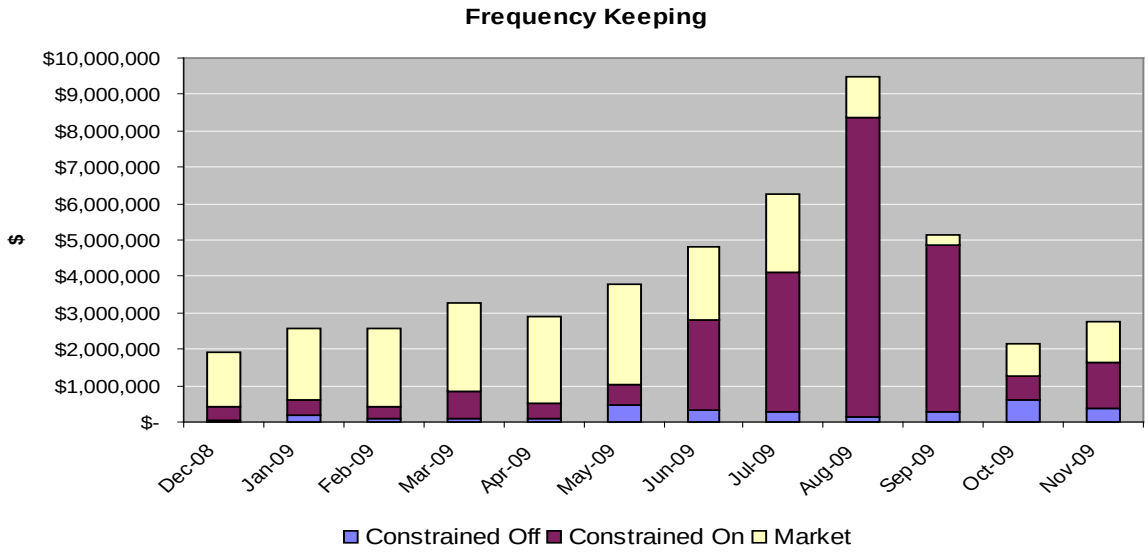
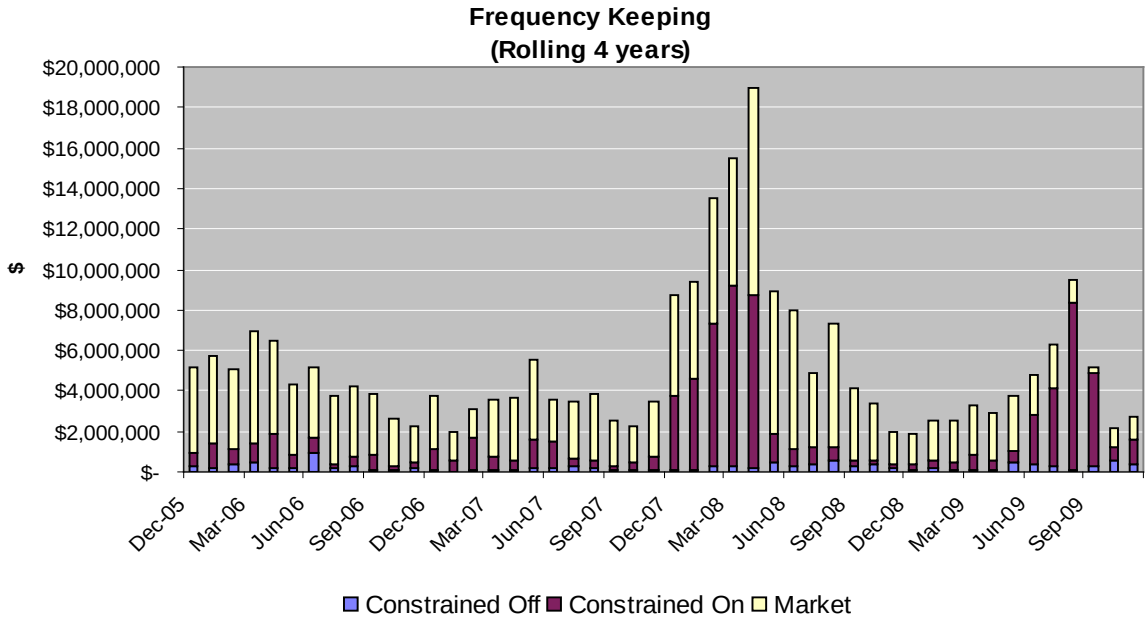
1. Summary of Procurement Costs

1.1 Frequency Keeping (FK)

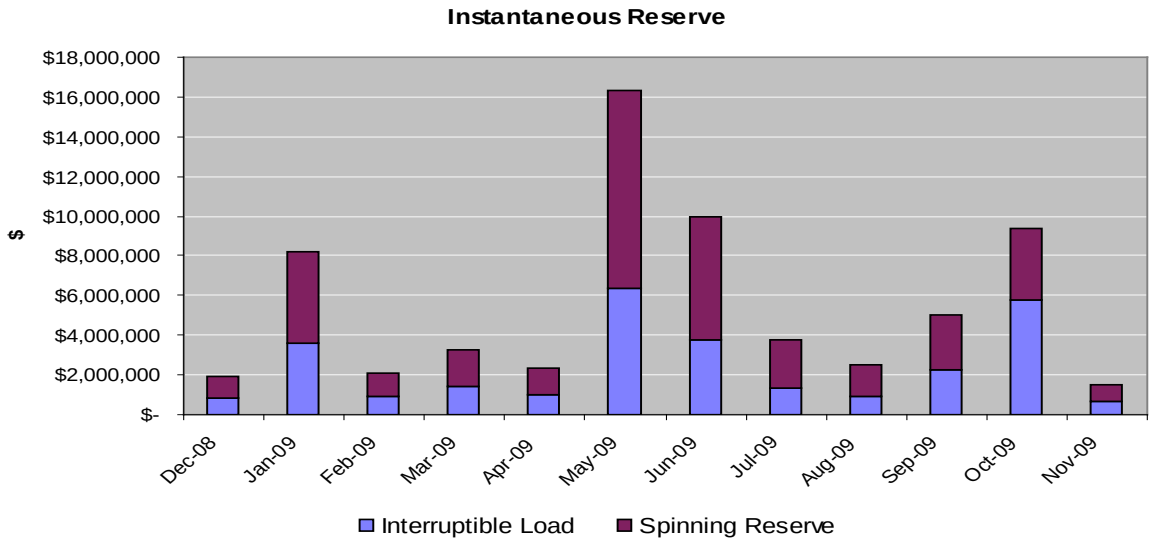
Frequency Keeping	Cost
Constrained Off	$352,213.85
Constrained On	$1,261,887.26
Market offer	$1,140,820.86
Total monthly frequency keeping cost	**$2,754,921.97**

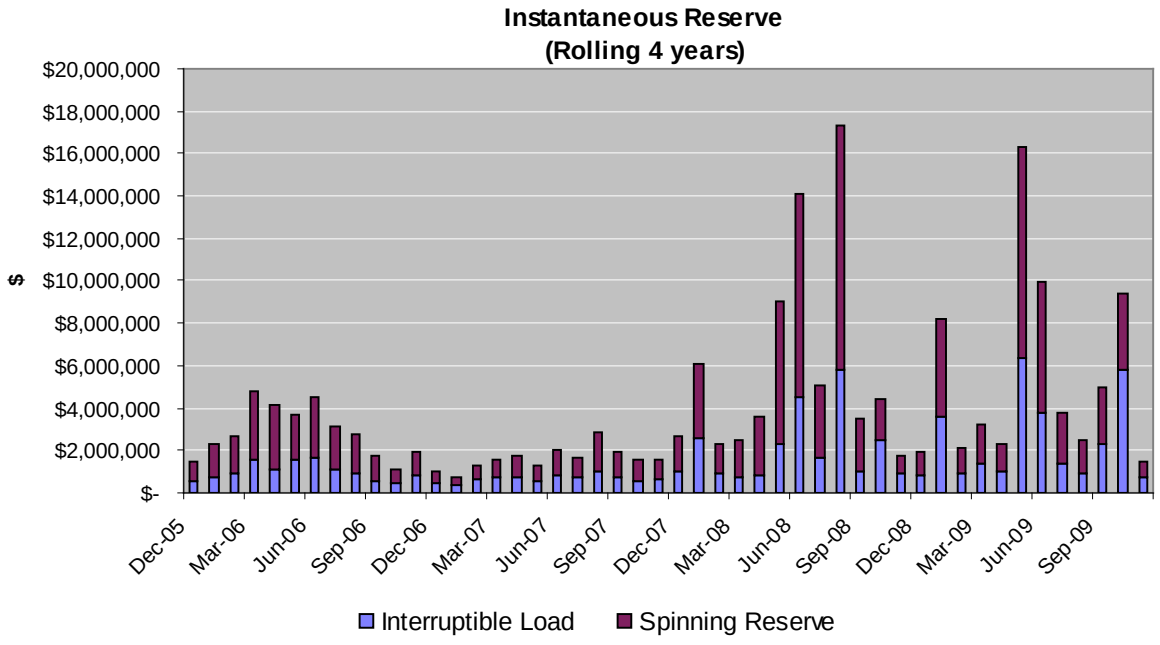




1.2 INSTANTANEOUS RESERVE (IR)

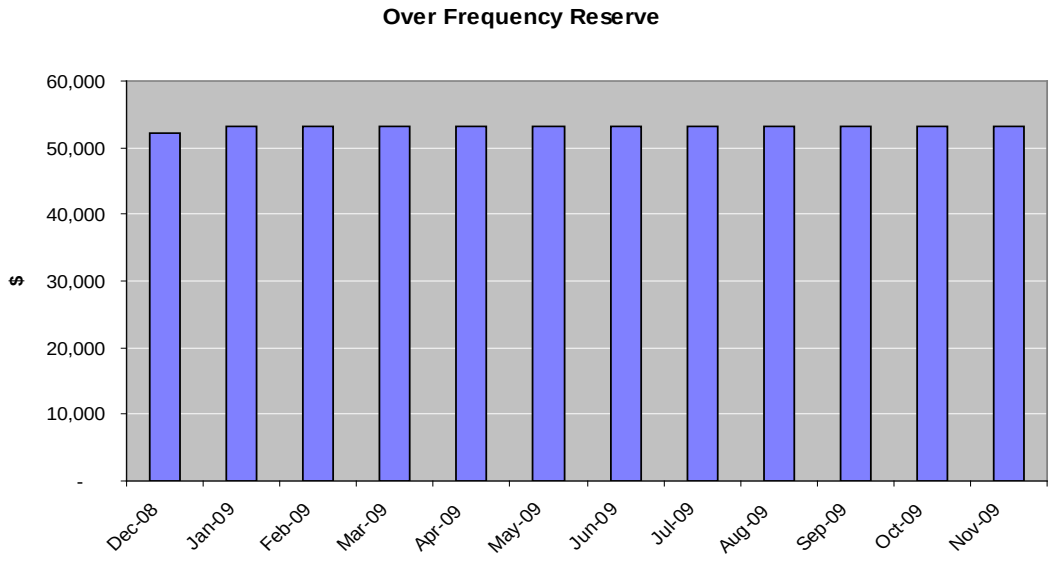
Instantaneous Reserve	Cost
Spinning reserve	$777,054.92
Interruptible Load	$695,306.78
Total monthly Instantaneous Reserve cost	**$1,472,361.70**

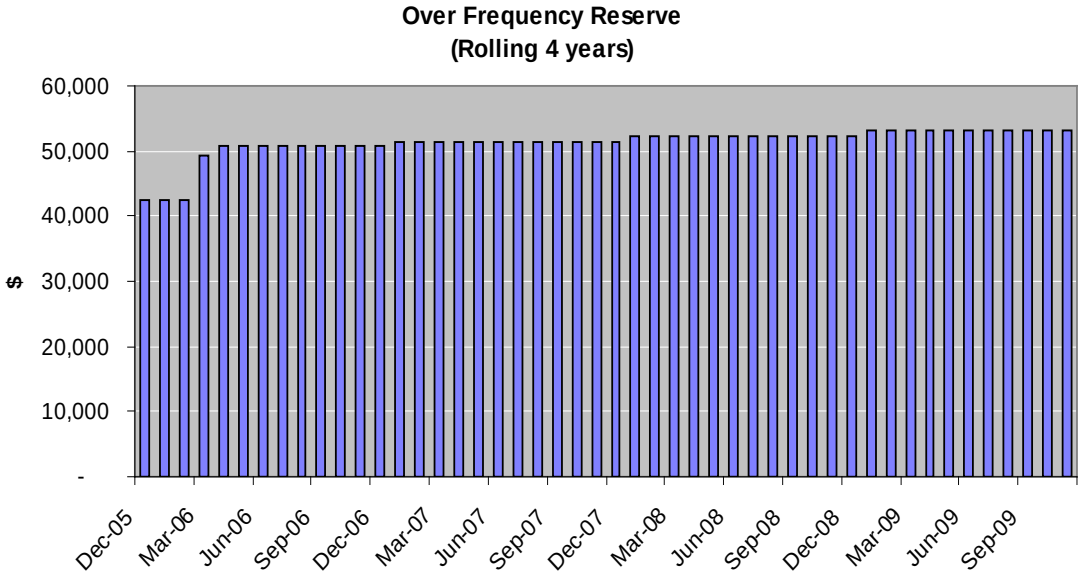




1.3 OVER FREQUENCY RESERVE (OFR)

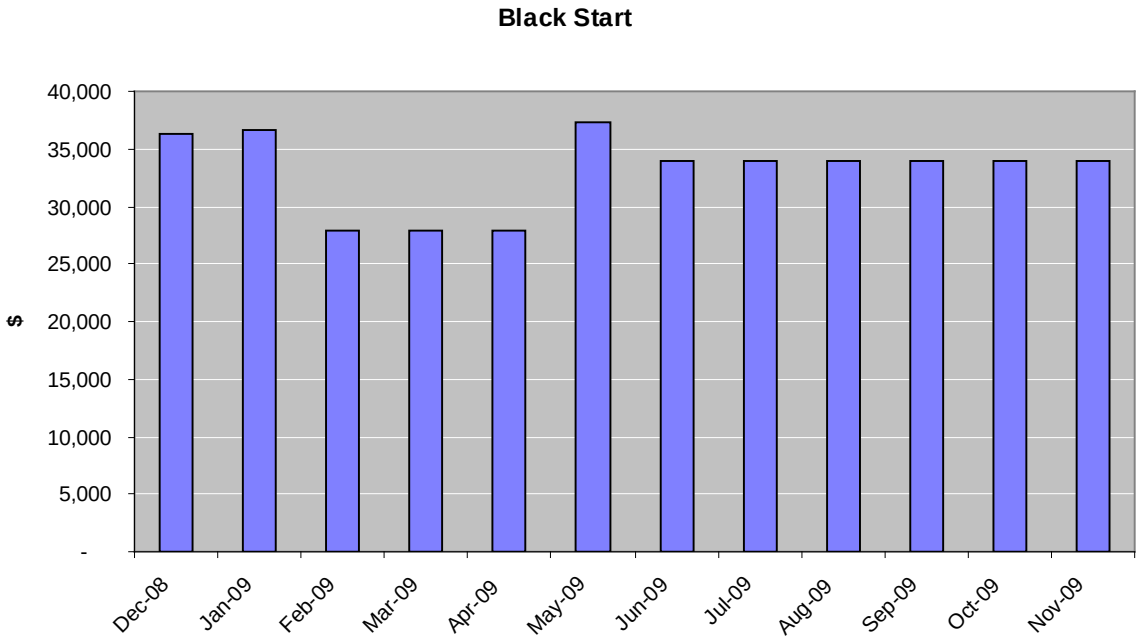
Over Frequency Reserve	Cost
Total monthly Over Frequency Reserve cost	**$53,284.86**

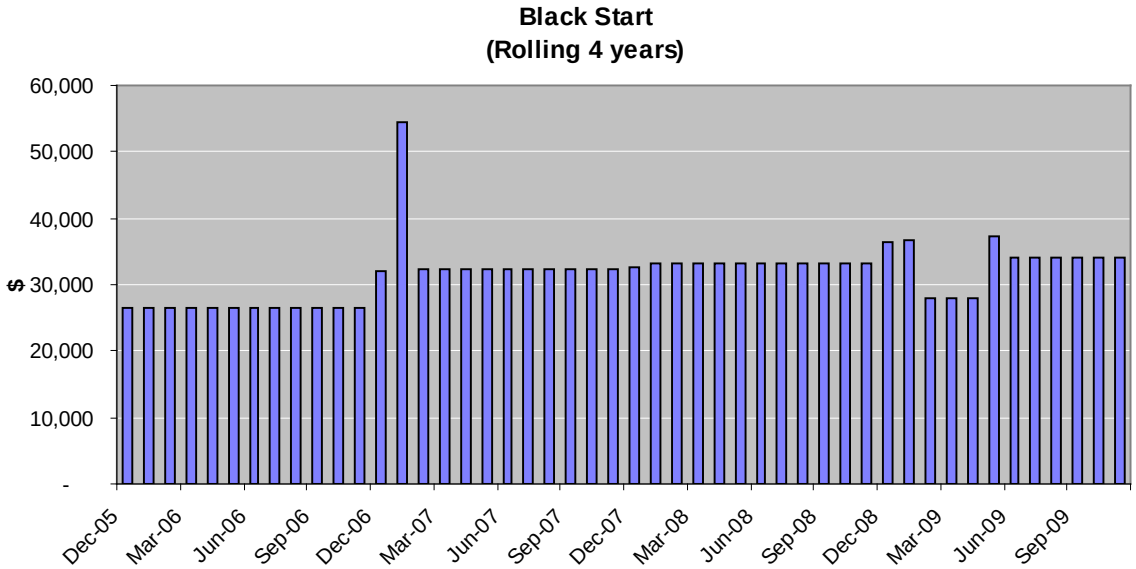




1.4 BLACK START (BS)

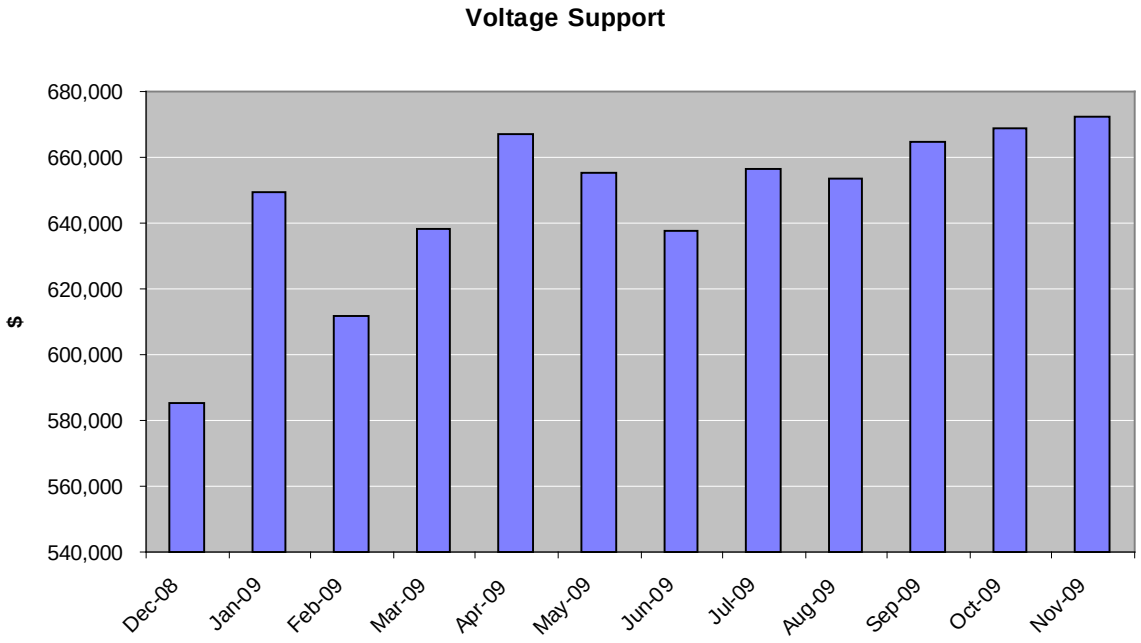
Black Start	Cost
Total monthly Black Start cost	**$34,007.95**

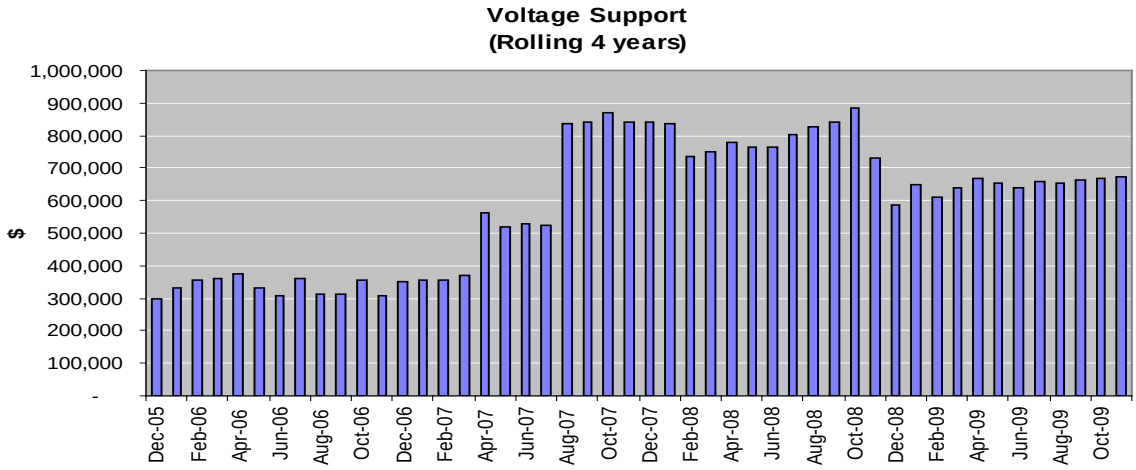




1.5 VOLTAGE SUPPORT (VS)

Voltage Support	Cost
Total monthly Voltage Support cost	**$672,493.19**





1.6 ADMINISTRATIVE COSTS

Nil

2. Summary of Contracted Ancillary Services

The table below provides a summary of contracted ancillary services as at November 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 08/09

3.1 Procurement Plan

The System Operator tendered for Instantaneous Reserve, Over Frequency Reserve, Frequency Keeping and Black Start services. Tenders were received for all tendered services.

The System Operator has awarded contracts to ten ancillary service agents for the provision of ancillary services commencing 1 December 2009. The term of the contracts ranges from 1 to 5 years.

3.2 Summary of Procured ancillary services

Frequency keeping

The System Operator received three offers to provide frequency keeping services.

Two of the frequency keeping service providers were contracted for a term of one year. The other provider was contracted for a term of four years. The remaining frequency keeping service provider remains on a longer term contract to 2010.

Instantaneous Reserve

The System Operator awarded nine contracts for the provision of instantaneous reserves, with contract terms ranging from one to five years.

Black Start

The System Operator contracted the services of one black start provider in each island. The System Operator has contracts for two black start service providers in each island.

Over frequency reserve

The System Operator awarded two contracts for over frequency services, one for a term of one year and one for a term of 5 years.

3.3 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 of PLSR/TWDR instantaneous reserves and interruptible load.

4. Events Requiring Further Consideration for Regulation and or Rule Change

Nil

Report Ends