

MONTHLY SYSTEM OPERATOR AND SYSTEM PERFORMANCE REPORT

FOR THE ELECTRICITY AUTHORITY

Transpower New Zealand Limited

July 2017

Keeping the energy flowing



TRANSPOWER



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Report Purpose

This report is Transpower's review of its performance as system operator for July 2017, in accordance with clause 3.14 of the Electricity Industry Participation Code 2010 (the Code).

A detailed system performance report (Code obligated) is provided for the information of the Electricity Authority (Authority).

Commentary

This section highlights successful management of significant events and operational issues by the system operator. It provides additional commentary (not Code or SOSPA required) relating to aspects of system operator performance or system performance. The remainder of the report provides supporting detail (which is Code or SOSPA required) in two sections:

- System operator performance, and
- System performance.

Security of supply

We are working on what the recent dry winter has taught us, and what improvements we can make to ensure future events are managed optimally. Key aspects of this work program are a review of the system operator policies that govern security of supply, and implications for Code provisions managed by the Authority. We will consult with the industry, with any changes to be in place by March 2018. Our work also includes how we best capture and record the knowledge gained so we can apply it in future situations. Refer Section 13 [Security of supply](#) (p. 6) for current security of supply status.

System operator performance

1 Compliance

The system operator reported no breaches of the Code in July.

Appendix A shows instances where the system operator has applied discretion under 13.70 of the Code.

2 Market design and system enhancement project updates

Progress against in-flight market design and service enhancement projects is included below along with details of any variances from the current Capex Plan.

Efficient Procurement of Extended Reserves – An extension of time is being worked through with the Authority and NZX which is expected to delay implementation by 12 weeks. Change requests are being prepared to reflect this change. A capital project to implement the tool changes was approved and is now being developed.

Real Time Pricing – The consultation paper has been released and briefing presentations are being prepared. The overall time has been pushed out to align with the planned completion of the decision paper following consultation. Requirements and design work are expected to recommence in October 2017.

EDF Phase III – This project will refresh dispatch functionality within the market system, reducing barriers to entry and enable future dispatch products to be implemented. The investigation project was completed with an initial business case and associated consultation paper delivered to the Authority. The appropriation approval process is now underway. The capital phase of the project is planned to commence in 2017/18.

Sensitivity Schedules – This project will provide forecast sensitivity schedules for market benefit. An industry survey has been completed and benefits identification has progressed. The development of the Business Case and the appropriation consultation document have commenced.

3 Performance metrics

System operator performance against the performance metrics for the financial year as required by SOSPA 12.3 (a) will be provided in the next quarterly report.

4 Actions taken

A full list of actions taken regarding the system operator business plan, statutory objective work plan, participant survey responses and any remedial plan, as required by SOSPA 12.3 (b) will be provided in the next quarterly report.

5 Cost-of-services reporting

The feasibility study into implementing annual cost-of-services reporting to the Authority is required in financial year 2 (SOSPA 12.6 refers). An update will be provided in the next quarterly report.

6 Technical advisory hours and services

Technical advisory hours and a summary of technical advisory services to which those hours related (SOSPA 12.3 (d) refers) will be provided in the next quarterly report.

7 Separation of Transpower roles

As system operator, Transpower has not been materially affected by any other role or capacity Transpower has under the Code or under any agreement.

System performance

8 Operational and system events

The combination of the dry winter and a severe cold weather event set three new power system records. There were two power system events, one related to severe weather.

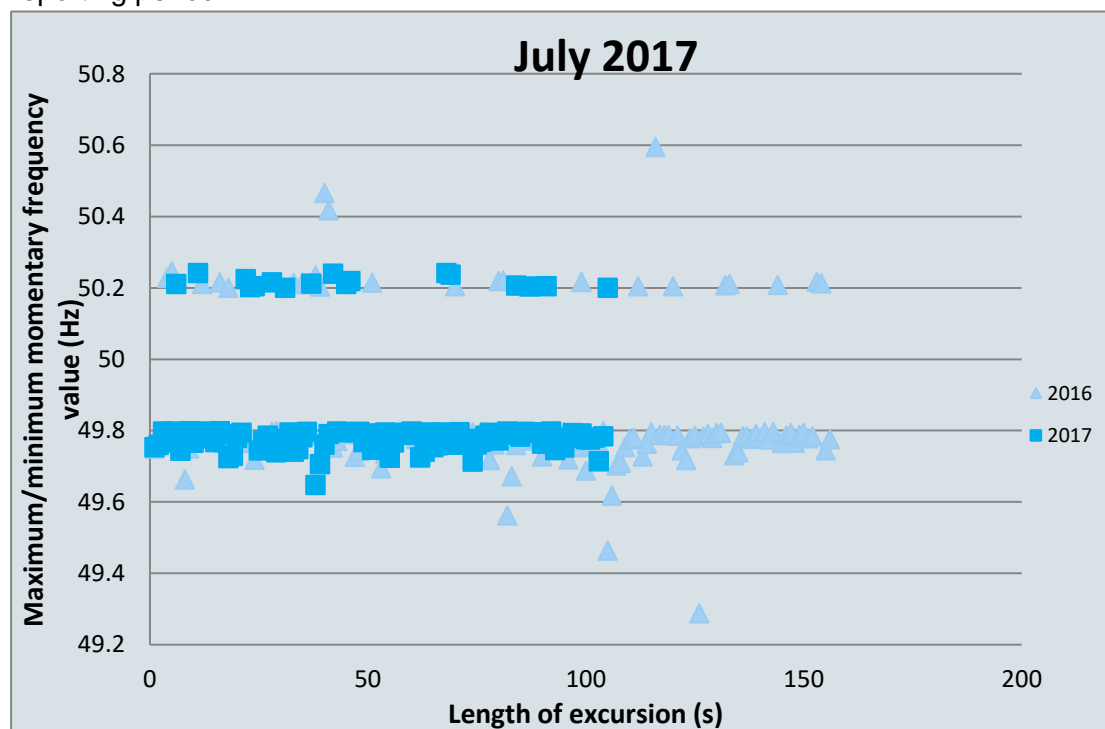
On 13 July, the heavy snow event on the central plateau of the North Island resulted in outages on the 110 kV central North Island network with a loss of service to Ohakune, National Park for part of the day and a longer one day sustained loss of supply to Mataroa. Total load lost was 9 MW. The extended outage at Mataroa was due to limited access to identify the cause of the loss and then to repair broken conductors. The impact of the outages was mitigated by significant damage with the local distribution networks supplied from these GXP's.

There was a 25 MW loss of supply to parts of Nelson on 13 July when Stoke Transformer T6 tripped. The local distribution network back fed the lost demand until full supply from Stoke was available.

9 Frequency fluctuations

Maintain frequency in normal band and recover quickly from a fluctuation

The chart below shows the maximum or minimum frequency reached and length of each frequency excursion outside the normal band (49.8 to 50.2 Hz) during the reporting period.



Maintain frequency and limit rate occurrences during momentary fluctuations

The table below shows the total number of momentary fluctuations outside the frequency normal band, recorded in both islands, for each month over the last 12 months and the 12 month cumulative totals, grouped by frequency band.

Frequency Band	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Annual rate
55.00 > Freq >= 53.75													
53.75 > Freq >= 52.00								1					1
52.00 > Freq >= 51.25													
51.25 > Freq >= 50.50		2			1	1	1	1	1	1	1		9
50.50 > Freq >= 50.20	13	32	39	45	32	34	20	17	24	34	50	17	357
50.20 > Freq > 49.80													
49.80 >= Freq > 49.50	102	153	101	101	59	67	49	79	84	92	87	88	1062
49.50 >= Freq > 48.75		2	2	3	1	2		1			6		17
48.75 >= Freq > 48.00								1					1
48.00 >= Freq > 47.00								1					1
47.00 >= Freq > 45.00													

Note: The frequency excursions for March include simultaneous over-frequencies and under-frequencies that occurred when the South Island was split into two electrical islands on 2 March.

Manage time error and eliminate time error once per day

There were no time error violations in the reporting period.

10 Voltage management

Grid voltages did not exceed the Code voltage ranges during the reporting period.

11 Security notices

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

Notices issued	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
Demand Allocation Notice	-	-	-	-	-	-	-	-	-	-	-	-
Grid Emergency Notice	2	1	2	-	-	-	4	1	1	1	-	-
Warning Notice	5	1	-	-	-	-	-	-	-	-	-	-
Customer Advice Notice	7	5	12	26	7	11	7	24	10	16	23	2

12 Grid emergencies

The following table shows grid emergencies declared by the system operator.

Date	Time	Summary Details	Island
		None.	

13 Security of supply

The security of supply situation has continued to improve, with recent rain resulting in inflows across the country. The week of 24 July saw overall hydro storage increase to 62% of average for this time of year (an improvement on the 58% of average from the previous week).

On 28 July, the hydro risk status had returned to 'Normal' at the national level on the back of continued good inflows into Taupo and steady if still lower inflows in the South Island. We will continue to monitor the situation.

14 Ancillary services

Preparations for the tender process for Ancillary Services are about to begin. Contracts for frequency keeping and instantaneous reserve, and black start contracts for the North Island will be up for renewal.

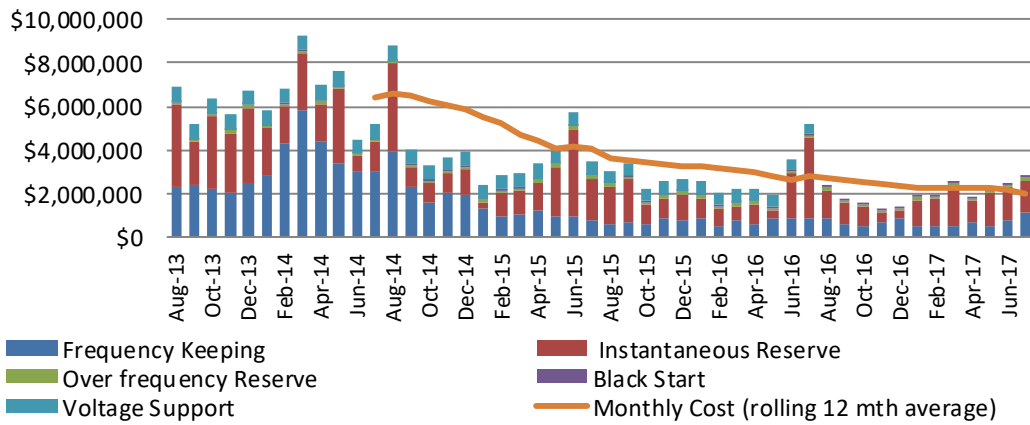
Refer Appendix B for Ancillary Services Graphs.

Appendix A: Discretion

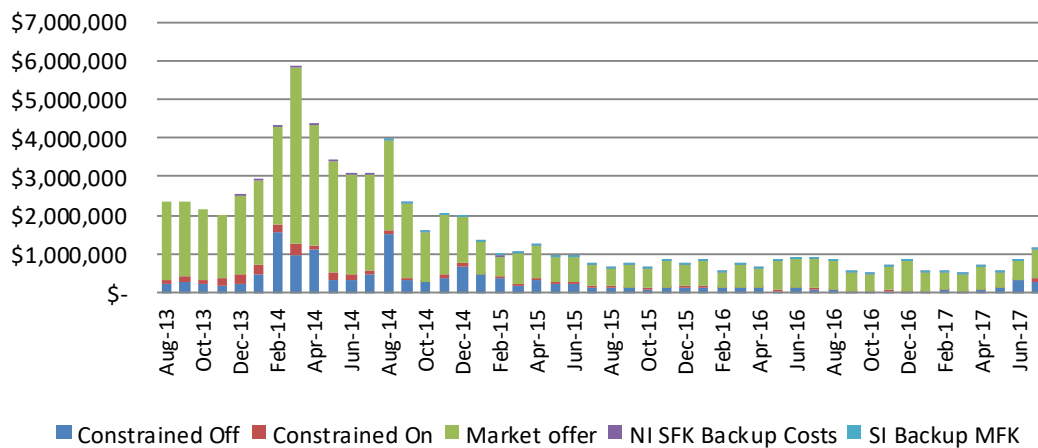
Event Date & Time	Subject	Event Description
3/7/2017 5:51:00 PM	DISCRETION	WGN0331 Discretion Clause 13.70, Part 13 FIR Max : 54.9 Start: 03-Jul-2017 17:51 End: 03-Jul-2017 18:00 Notes: Last Dispatched: IntF: 76.88 IntS: 94.95
12/7/2017 8:19:40 PM	DISCRETION	WHI2201 WHI0 Discretion Clause 13.70, Part 13 EN Min : 20 Start: 12-Jul-2017 20:19 End: 12-Jul-2017 20:30 Notes: To ensure secure solution. RTD alternating between WHI being dispatched on, then off, solution infeasible without WHI when dispatched on, takes 10 minutes to start. Last Dispatched Mw: 25
13/7/2017 10:17:45 AM	DISCRETION	WHI2201 WHI0 Discretion Clause 13.70, Part 13 ENR Min : 10 Start: 13-Jul-2017 10:17 End: 13-Jul-2017 10:30 Notes: NI Load still rising and 10MW minimum required. Last Dispatched Mw: 9.43
31/7/2017 8:22:23 PM	DISCRETION	WHI2201 WHI0 Discretion Clause 13.70, Part 13 ENR Min : 10 Start: 31-Jul-2017 20:22 End: 31-Jul-2017 20:30 Notes: Required for SEcure Dispatch due to RTD oscillations. Last Dispatched Mw: 39.3
31/7/2017 8:41:34 PM	DISCRETION	WHI2201 WHI0 Discretion Clause 13.70, Part 13 ENR Min : 10 Start: 31-Jul-2017 20:41 End: 31-Jul-2017 21:00 Notes: Required for Secure Dispatch due to RTD oscillations. Last Dispatched Mw: 25.34

Appendix B: Ancillary Services Graphs

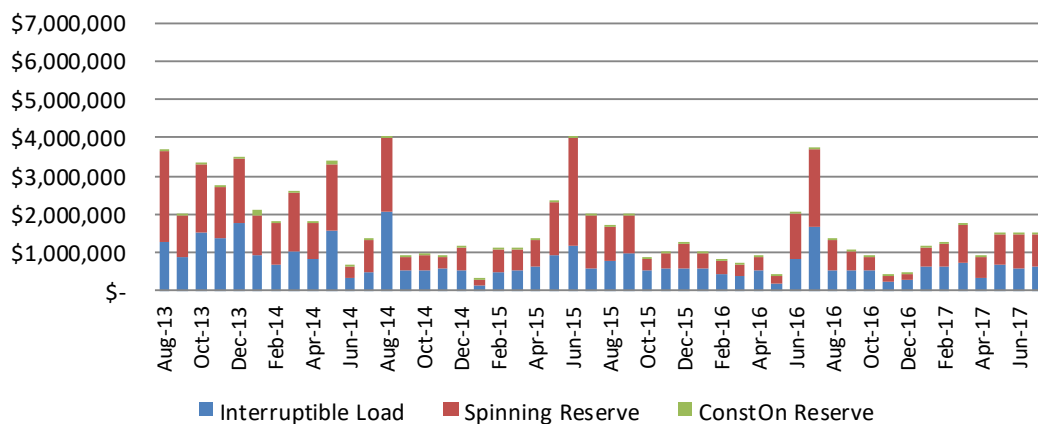
Ancillary Services Costs (past 4 years)



Frequency Keeping (past 4 years)



Instantaneous Reserve (past 4 years)



Note: IR Cost May 2012 = 14.129M, IR Cost Jun 2012 = 8.164M