

MONTHLY SYSTEM OPERATOR AND SYSTEM PERFORMANCE REPORT

FOR THE ELECTRICITY AUTHORITY

Transpower New Zealand Limited

August 2018

Keeping the energy flowing



TRANSPOWER



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Report Purpose

This report is Transpower's review of its performance as system operator for August 2018, 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.

Conflict of Interest – We have received a final report from Advisian following their review of our role impartiality policies and procedures. The report will be presented at the next System Operator Committee meeting in November by Fraser Clark from Advisian. We plan to share the results with the Authority prior to this presentation.

SOSPA deliverables – We submitted all the required SOSPA deliverables for 2017/18 as planned on 31 August. This included the SO Self Review and Assessment report 2017/18, the draft capital plan (for the 2-year period 2019/20 – 2020/21), the draft capital roadmap (for the 2-year period 2021/22 and 2022/23), and the SO ICT Strategic Roadmap (from 2018/19 to 2028/29). In addition, we met with the Authority to present the strategic roadmap to talk through the content and enable familiarisation of the plan.

Security of supply – In October, we intend to consult on our review of the Security of Supply Forecasting and Information Policy (SOSFIP) with a proposal to include contingent storage in the HRCs. This consultation will be in parallel with the Authority's OCC trigger work.

Credible events - Our Power Systems Group have performed stability studies for the lower South Island, and the issues identified are now being put through our credible event review methodology to determine if they should be mitigated pre or post event.

Emerging technologies programme: Battery Storage Investigation - Our report is going through a final review prior to seeking formal approval to release externally.

Real Time Pricing (RTP) - While the build phase of the RTP project is on hold, we have been finalising the design aspects for the project. We are also working with the Authority to provide support for the secondary consultation on an option to implement a real-time pricing mechanism.

People news - Sally Holloway, Grid and SO Manager, started with us on 13 August.

System operator performance

1 Compliance

We reported one breach of the Electricity Industry Participation Code 2010 in August. This related to the modelling of embedded generation at Cobb.

On 27 August a settlement meeting was held to address industry issues arising from the South Island AUFLS event of 2 March 2017. This meeting was attended by Meridian Energy, Contact Energy, Transpower (both as system operator and grid owner), and the Electricity Authority. An agreement is being drafted on a number of actions to address industry concerns, these align with actions set out in the Transpower report into the event.

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 high value 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

The updated Technical Requirements Report (TRR) and proposed changes to the Technical Requirements Schedule (TRS) were resubmitted to the Authority in mid-August. A Change Request is underway against TAS79 to re-align scope resulting from a request from the Authority Board.

Real Time Pricing (RTP)

The Stakeholder requirements and SO business impact analysis are complete. TAS 82 has been approved, which includes the completion of the market design and provision of support to the Authority in preparation of the secondary consultation on an option to implement a real-time pricing mechanism.

Dispatch Service Enhancement

The project team received confirmation that the Code changes decision paper has been approved by the Authority Board. Detailed design work is underway, and good progress is made developing the transition process plan. The next industry workshop has been confirmed to take place end of November.

Wind Offer Arrangements

The stakeholder requirements gathering has been completed and the documentation created for review and approval. The Authority has approved the solution approach. A final business case has been completed and is being reviewed internally.

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

We are still awaiting feedback from the Authority regarding the feasibility study into implementing annual cost-of-services.

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 Impartiality of Transpower roles

Since the creation of the Operations division and implementation of Transpower-wide training on role impartiality and conflict of interest, we have had a number of issues raised to the register. These issues are being handled in accordance with Transpower's policy for managing conflicts of interest. A summary of the items raised on the conflict of interest register is set out below:

- Creation of an Outage Planning Group under Operations Division
- Hiring a resource to perform a role at Palmerston North
- Secondment of SO staff to GO role
- SO staff involvement with GO project
- Availability of information regarding a new project
- Outage planning policy
- Ensuring consistent information provided for outage information
- Provision of options for outages to asset owners

System performance

8 Operational and system events

On 9 August, a tripping of the Kawerau T12 transformer resulted in a 30 per cent overload of the Kawerau T13 transformer for approximately 30 minutes. A Grid Emergency Notice was declared at Edgecumbe, Kawerau and Matahina. The response by the coordinators was fast with a re-dispatch of generation in the first few minutes. However, the slow ramping capability and the resource consents of the affected generation (Matahina and Kawerau Geothermal) resulted in the T13 transformer overload taking longer than expected to resolve. The event is under review to identify process improvements to reduce the risk to assets from overloading.

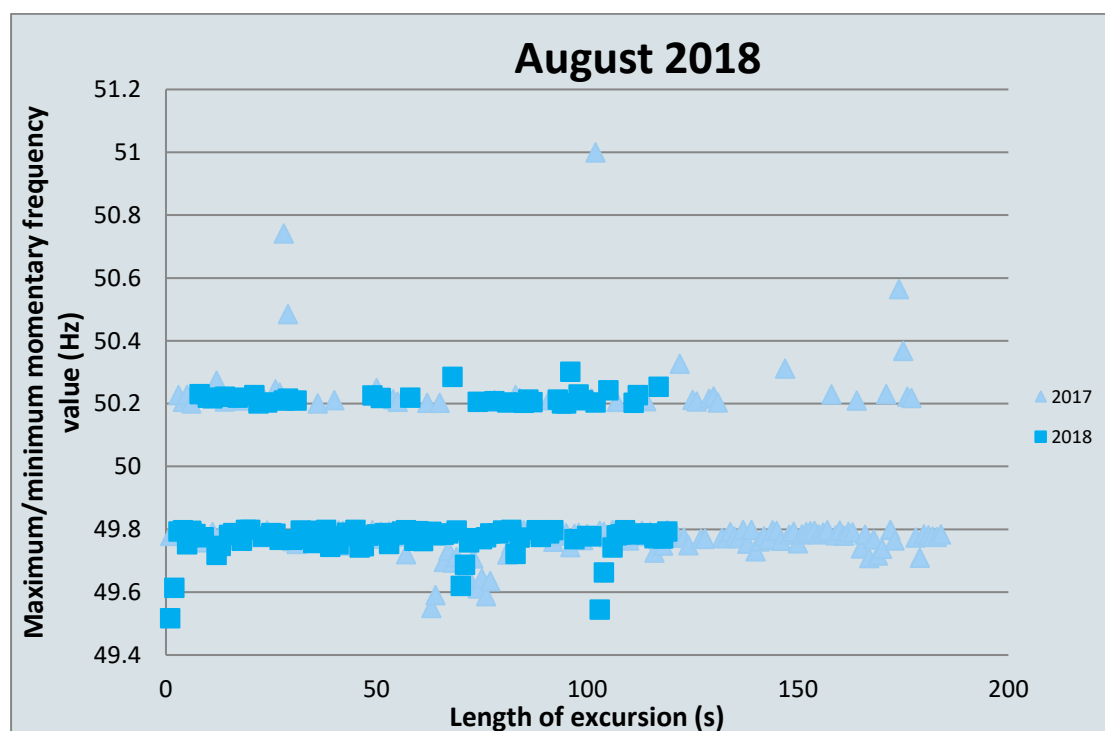
In conjunction with work currently being undertaken at the Otahuhu substation, we have initiated an in-depth study of system risk, specifically in Auckland and Northland. We have created preferred contingency plans for each of the main risks that have been identified. We have consulted with the industry and advised them of the risks and the impact of the outages. We have also revisited existing planned outages to determine the impact on the Otahuhu situation and the subsequent viability of all the planned outages. As a result, we have made changes to the September/October outages. We are continuing with this work to examine the outages in November. At the same time opportunities are being explored to carry out other work on the out of service Otahuhu circuits, not currently planned for this year.

9 Frequency fluctuations

Please note that refinements to the frequency reporting are underway in conjunction with the Authority. The new format will be included in the next Quarterly report (July-September 2018).

9.1 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.



9.2 Maintain frequency and limit rate occurrences during momentary fluctuations

The tables below show the total number of momentary fluctuations outside the frequency normal band, recorded in each island, for each month over the last 12 months and the 12-month cumulative totals, grouped by frequency band.

North Island:

Frequency Band	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Annual rate
55.00 > Freq >= 53.75													
53.75 > Freq >= 52.00													
52.00 > Freq >= 51.25													
51.25 > Freq >= 50.50				1				1					2
50.50 > Freq >= 50.20	31	41	85	5	23	19	30	20	30	19	25	26	354
50.20 > Freq > 49.80													
49.80 >= Freq > 49.50	89	91	135	27	53	57	62	71	87	65	64	61	862
49.50 >= Freq > 48.75				1		2	1		1	1			6
48.75 >= Freq > 48.00													
48.00 >= Freq > 47.00													
47.00 >= Freq > 45.00													

South Island:

Frequency Band	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Annual rate
55.00 > Freq >= 53.75													
53.75 > Freq >= 52.00													
52.00 > Freq >= 51.25													
51.25 > Freq >= 50.50	1	1		1			2	1	3				9
50.50 > Freq >= 50.20	28	29	47	8	13	12	16	14	18	15	10	6	216
50.20 > Freq > 49.80													
49.80 >= Freq > 49.50	58	46	42	13	32	24	29	38	49	28	32	26	417
49.50 >= Freq > 48.75				1		2	1			1			5
48.75 >= Freq > 48.00													
48.00 >= Freq > 47.00													
47.00 >= Freq > 45.00													

9.3 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	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18
Demand Allocation Notice	-	-	-	-	-	-	-	-	-	-	-	-
Grid Emergency Notice	-	-	1	-	3	1	-	1	1	-	-	1
Warning Notice	2	-	-	1	-	-	-	-	-	1	1	-
Customer Advice Notice	6	1	8	1	3	6	4	10	12	4	2	9

12 Grid emergencies

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

Date	Time	Summary Details	Island
09/08/18	09:58	A grid emergency was declared to allow the reconfiguration of the network to alleviate overloading caused by the tripping of 220 / 110 kV inter-connecting transformer, Kawerau T12.	N

13 Security of supply

During August, North Island inflows were 122% of average and South Island inflows were 88% of average.

National hydro storage decreased from 119% to 100% of average for the time of year over the month. The hydro risk status remains at 'Normal'.

Due to low inflows in the South Island, we are starting to see greater south transfers overnight on the DC. We are engaging with the South Island hydro generators to keep a watching brief on this situation.

14 Ancillary services

Although the high reserve costs experienced in June and July have not occurred in August or September, we are still actively monitoring reserve costs.

We have started the annual ancillary services tender process. This year we will be tendering for Over-Frequency Reserves in both the North and South Islands, and a Black Start provider in the South Island.

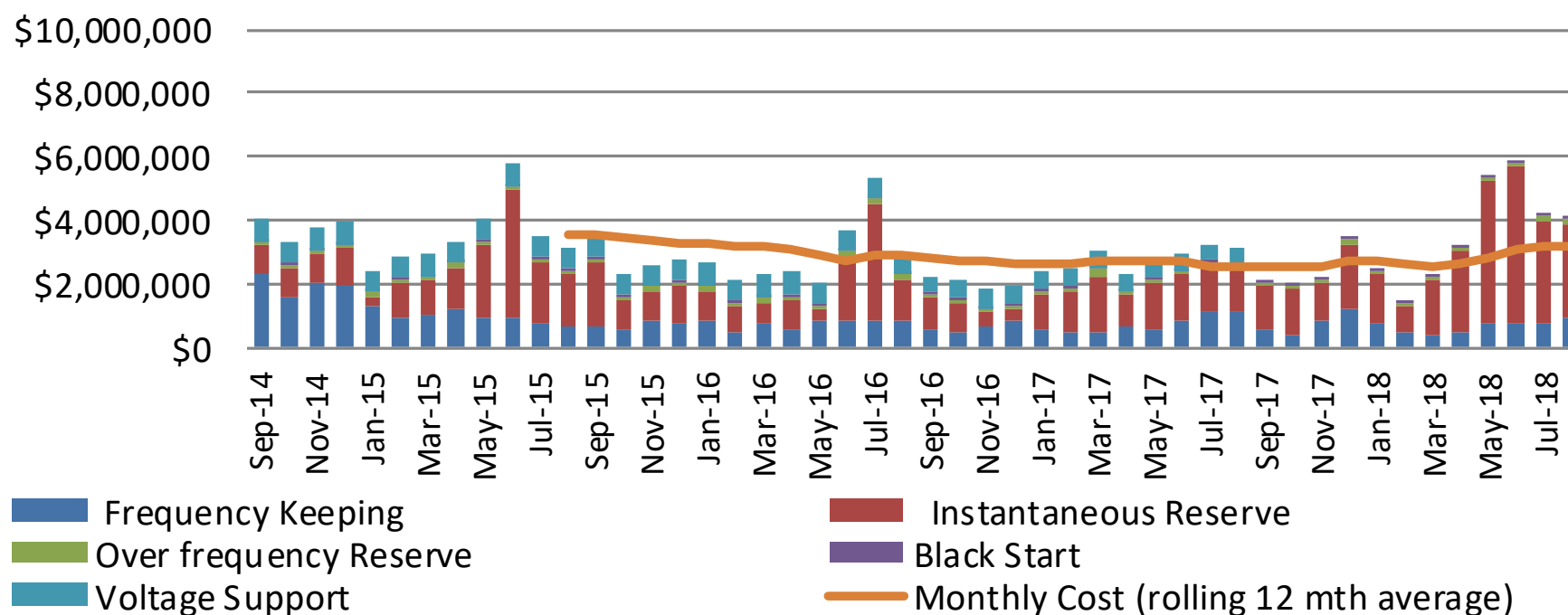
Refer Appendix B for Ancillary Services Graphs.

Appendix A: Discretion

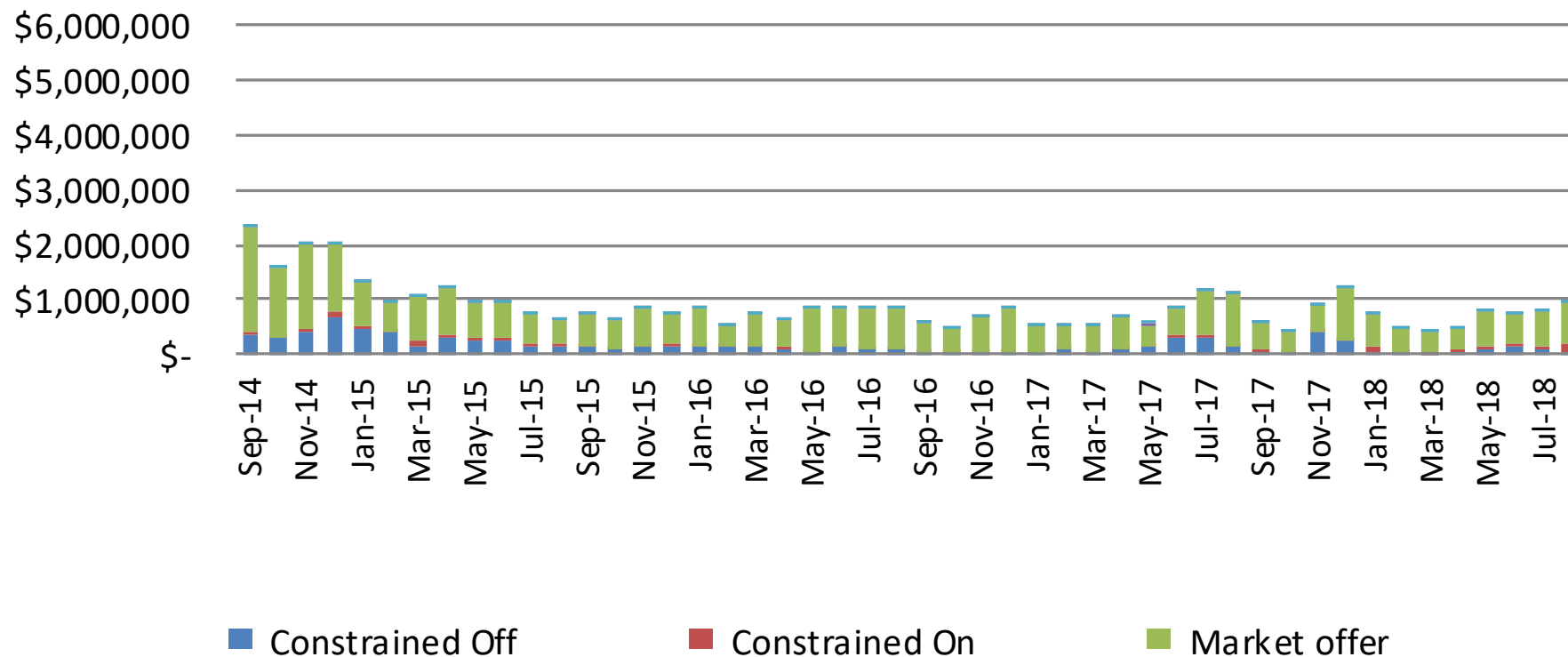
Event Date and Time	Event Description
1/08/2018 23:41	MAN2201 MAN0 : Required for TWI Potline 2 restoration
5/08/2018 23:46	MAN2201 MAN0 : For TWI Potline 2 restoration
6/08/2018 4:36	MAT1101 ANI0 : ANI generation tripped
8/08/2018 21:36	MAT1101 MAT0 : Tripping on KAW_T12
8/08/2018 21:39	KAW1101 KAG0 : Tripping on KAW_T12
8/08/2018 23:10	MAN2201 MAN0 : Extended potline, Line 2
8/08/2018 23:46	MAT1101 MAT0 : KAW_T12 tripping
12/08/2018 23:50	MAN2201 MAN0 : Line 2 Offload restoration
15/08/2018 23:57	MAN2201 MAN0 : Required for system security
19/08/2018 23:46	MAN2201 MAN0 : Potline Return - Line 2
27/08/2018 0:00	MAN2201 MAN0 : Extended potline change to provide Meridian with capacity required to restore reduction line.
29/08/2018 23:47	MAN2201 MAN0 : Required to manage Potline 2 restoration
30/08/2018 6:30	WGN0331 : Required for system security (SIR)
30/08/2018 6:30	WGN0331 : Required for system security (FIR)

Appendix B: Ancillary Services Graphs

Ancillary Services Costs (past 4 years)



Frequency Keeping (past 4 years)



Instantaneous Reserve (past 4 years)

