MONTHLY SYSTEM OPERATOR AND SYSTEM PERFORMANCE REPORT

FOR THE ELECTRICITY AUTHORITY

Transpower New Zealand Limited

February 2018

Keeping the energy flowing




TRANSPOWER

Transpower New Zealand Limited The National Grid

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Report Purpose

This report is Transpower's review of its performance as system operator for February 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.

Ex-cyclones Fehi and then Gita broke the spell of low inflows in southern hydro catchment areas. This saw a shift back to prices between $80 – $100. Prices climbed as inflows again started to slow, but as Gita approached prices dropped to $30 as hydro stations drew down water to allow inflows from Gita to be stored. These inflows resulted in higher South Island hydro generation, and a swing to HVDC north transfer.

A review of the March 2017 Transpower South Island AUFLS report is underway. This will likely result in a separate report focused on System Operator performance being provided to the EA's System Operator Committee.

System operator performance

1 Compliance

No breaches of the Code were reported in February.

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

The project is on hold pending the recommendation on options from the Authority Board in March. In the meantime, Transpower continues to support the Authority as required with input and options assessment.

The approved capital project underway deviates from the current Capex Plan with an increased approved capital cost (approved $525k against Capex Plan of $195k). Although the approved completion date currently aligns with the Capex Plan, this will be reviewed once direction of the project is confirmed.

Real Time Pricing

Approval for the next phase of the project (to plan, implement governance and produce a business case) has been provided by the Authority and work is well underway. Additional workstreams associated with the market system outages and “lite” dispatch and generation options are also underway. This work is on track and planned to enter the capital phase in June. Time and cost of this work aligns with the current Capex Plan.

Dispatch Service Enhancement

An Industry workshop was held in mid-February with a good level of participation and worthwhile feedback is being obtained by the project team. Delivery business case is planned for approval in May 2018. Time and cost of this work aligns with the current Capex Plan.

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). This was completed in September last year and a proposed approach submitted to the Authority for their feedback.

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

Loss of supply events

Stratford Power generator (SPL) tripped twice in February. The first event on 9 February resulted in an under-frequency event, which saw some interruptible load trip. The second event three days later led to a smaller frequency drop above the underfrequency event threshold.

Cyclone Gita brought high winds and heavy rain to the South Island and parts of the lower North Island on 20 February. Transpower teams prepared for the storm with a pre-event Coordinated Incident Management System (CIMS) group watching the weather, recalling critical circuits from outages and inspecting circuits and substations in the forecast cyclone path. Aside from many feeder trippings in the Taranaki area, Transpower's high voltage network was unaffected.

Outage planning

Outage planning workload has continued to be high over the summer period, with some of the outages requiring complex assessment due to concurrencies and continued high irrigation load in the Lower South Island.

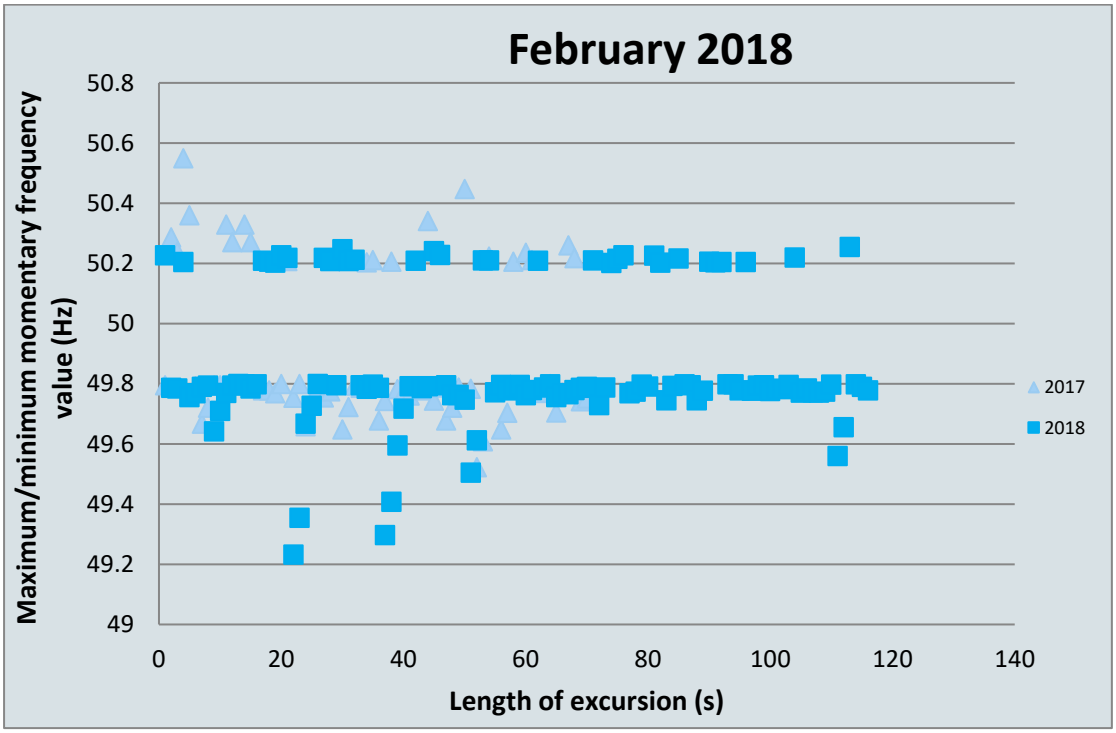
Grid Emergency

A grid emergency was declared on the 18th of February to allow the system operator to move to single frequency keeping. This was due to a system issue with one of the market system communication protocols. The issue was resolved by following normal support procedures, returning service to full functionality within 30 mins. An assessment of the cause has been completed and was identified as a misconfiguration which has now been corrected.

9 Frequency fluctuations

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	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-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**
50.50 > Freq >= 50.20	10	8	16	22	6	22	31	41	85	5	23	19	**288**
50.20 > Freq > 49.80													
49.80 >= Freq > 49.50	52	55	59	42	52	92	89	91	135	27	53	57	**804**
49.50 >= Freq > 48.75	1			3						1		2	**7**
48.75 >= Freq > 48.00													
48.00 >= Freq > 47.00													
47.00 >= Freq > 45.00													

South Island

Frequency Band	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Annual rate
55.00 > Freq >= 53.75													
53.75 > Freq >= 52.00	1												**1**
52.00 > Freq >= 51.25													
51.25 > Freq >= 50.50	1	1	1	1		2	1	1		1			**9**
50.50 > Freq >= 50.20	7	16	18	28	11	17	28	29	47	8	13	12	**234**
50.20 > Freq > 49.80													
49.80 >= Freq > 49.50	27	29	33	45	36	50	58	46	42	13	32	24	**435**
49.50 >= Freq > 48.75				2						1		2	**5**
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.

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	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18
Demand Allocation Notice	-	-	-	-	-	-	-	-	-	-	-	-
Grid Emergency Notice	1	1	1	-	-	1	-	-	1	-	3	1
Warning Notice	-	-	-	-	-	-	2	-	-	1	-	-
Customer Advice Notice	24	10	16	23	2	6	6	1	8	1	3	6

12 Grid emergencies

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

Date	Time	Summary Details	Island
18-Feb-18	00:27	A grid emergency was declared due to an unplanned communications failure affecting the Multiple Frequency Keeping (MFK) application. The System Operator reverted to Single Frequency Keeping during this time.	N+S

13 Security of supply

During February, North Island inflows were 165% of average and South Island inflows were 148% of average.

National hydro storage increased from 79% to 96% of average for the time of year over the month. The hydro risk status remains at ‘Normal’.

14 Ancillary services

An Under-Frequency Event on the 9th of February saw the North Island frequency dip and spinning reserve came on to arrest the frequency drop. As per normal process we are collecting information from the event to analyse the reserve providers' performance and investigate possible event causer.

Refer Appendix B for Ancillary Services Graphs.

Appendix A: Discretion

Event Date and Time	Event Description
01-02-2018 01:09 p.m.	TUI1101 PRI0 Discretion ended for return of RDF WRK 1
01-02-2018 01:09 p.m.	TUI1101 PRI0 Discretion ended for return of RDF WRK 1
01-02-2018 01:12 p.m.	TUI1101 PRI0 Discretion ended for return of RDF WRK 1
09-02-2018 05:06 a.m.	SFD2201 SPL0 Bona-fide change to offer claimed
14-02-2018 06:21 a.m.	ARG1101 BRR0 Required off for switching ARG_BLN
15-02-2018 02:00 p.m.	ARG1101 BRR0 Required off for switching ARG_BLN
19-02-2018 06:18 a.m.	ARG1101 BRR0 Required off for switching ARG-KIK-1
19-02-2018 03:58 p.m.	ARG1101 BRR0 Required off for switching ARG-KIK-1
20-02-2018 04:16 p.m.	KPA1101 KPI1 KPI islanded upon OPK_KPI_SFD_2 tripping
21-02-2018 02:24 a.m.	COL0661 COL0 Discretion on to provide upper south island MVAr support
21-02-2018 02:27 a.m.	COL0661 COL0 Discretion on to provide upper south island MVAr support
21-02-2018 03:42 a.m.	COL0661 COL0 Discretion on to provide upper south island MVAr support
26-02-2018 07:29 a.m.	ARG1101 BRR0 Required off for switching ARG-KIK-1
27-02-2018 09:55 p.m.	MAN2201 MAN0 Required for extension of emergency potline

Appendix B: Ancillary Services Graphs