MONTHLY SYSTEM OPERATOR AND SYSTEM PERFORMANCE REPORT

FOR THE ELECTRICITY AUTHORITY

Transpower New Zealand Limited
April 2019

Keeping the energy flowing




Transpower New Zealand Limited The National Grid

Report Purpose

This report is Transpower's review of its performance as system operator for April 2019, 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).

Table of Contents

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System operator performance

1 Compliance

We have reported two breaches in April. Neither breach had a market or security impact.

- The first breach relates to the correction of inaccurate modelling of the reactive support at Whareroa.
- The second breach is due to the incorrect modelling of several SPS schemes in the market system and forward-looking schedules for a short period post-implementation of the SPS Automation project.

As at the end of April, we have six breaches with the Authority including the RMT error identified in February which may result in a penalty.

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.

Real Time Pricing (RTP)

Work in April has focused on supporting the Authority through the consultation period and the completion of reports to be considered by the Authority Board in June. We have also been assisting the Authority with estimates as part of the initiation of the Demand Dispatch and Generation Dispatch Lite scope.

Dispatch Service Enhancement (DSE)

The project has completed the build phase and is progressing with testing. Due to complexities during integration testing the project team is currently assessing the impact on the delivery timeframes for the ICCP dispatch component.

Transpower has been working with the Authority on how to handle costs to transition participants from GENCO to one of the new dispatch channels, as well as considering industry feedback on this topic from the 1 March workshop. This matter has been referred for consideration to the Authority Board meeting in June. The project team is working closely on joint communications to be delivered to participants following this decision.

Situational Intelligence

The project team has started the next phase of the investigation to prove selected foundational components for the Situational Intelligence programme. This includes development and user acceptance of a real-time data, and the alert user-interface for the control room environment; plus recommendations for associated technology options to support this. On 8 May 2019, the team started working with the preferred vendor – Qrious. Demonstration of prioritised business concepts is on track for delivery by 2 July 2019.

Wind Offer Arrangements

The Wind Offer Arrangements project is progressing to schedule. The Authority has agreed to a change request for a small amendment to scope; this is to include additional information required to support future Code changes relating to constrained-on payments.

Energy Futures

We have been preparing a high-level view of the changes to system inertia that happen as a result of the different Te Mauri Hiko scenarios. For each scenario we are considering the likely impact of these changes on our ability to respond and recover from a system event. We are also nearing completion of a paper addressing the issues around long-term security of supply policy.

3 Outage planning and coordination

Outage Planning

April was a busy month for outages, continuing the recent trend. A 'key' outage, in the schedule, from a system security perspective, was the HVDC pole 3 outage on 11-12 May which was successfully completed.

The proposed outage to replace a circuit breaker at Clyde in late May was cancelled as it would have significantly restricted generation out of the lower South Island. The outage is now being planned for March next year.

Generation Balance Scenarios

The April NZGB report provided sensitivity analysis to reflect gas shortage and peak winter load scenarios. Sufficient generation balance margins were seen during the Pole 3 HVDC outage in May based on outage information ahead of time.

We are also analysing several scenarios to determine expected margins during the HVDC 2020 work.

4 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.

5 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.

6 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). This was completed in September 2017. Reporting will start in the 2019/20 year.

7 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.

8 Separation 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 on the conflict of interest register. These issues are being handled in accordance with Transpower's policy for managing conflicts of interest.

We have closed one entry in April; a plan to manage the conflict has been established and will be reviewed on a regular basis.

A summary of the open items raised on the conflict of interest register is set out below:

Internal:

- Management of actions from role impartiality review – making sure the outcome of a Transpower-wide impartiality review conducted by Advisian is appropriately managed
- Actions during HVDC outage – ensuring actions around improvement identified during this outage are implemented
- Staff interest in an industry participant project – ensuring a staff member with a family relationship with an industry participant is not part of any decisions relating to that project
- Security and availability of data – assessing if there are any data confidentially issues in a new project that is being rolled out

External:

- Staff advised of confidential generator outage plans – a participant sought assurance that their information remains strictly confidential during a planned outage

A full list of reported issues, including closed actions, will be provided in the next quarterly report.

9 Customer

Teleconference on HVDC Outages

Transpower held a teleconference in April on the HVDC outage on 11 and 12 May. At the teleconference, representatives from the system operator and grid owner explained to the industry the work involved and its importance to participants, with the system operator providing a security overview. Given the anticipated conditions, we forecast there was sufficient generation margins during the outage but undertook additional analysis to test these margins with lower gas-fired generation, lower North Island hydro storage and no wind.

Extended Pohokura outage

OMV advised the market that their outage at Pohokura will extend for an additional two weeks, with completion now expected in mid-May. This will see gas constraints continue to impact the electricity market. It would also be concurrent with the HVDC outage on the weekend of 11 and 12 May - this scenario is well understood and was factored into our scenario modelling and security assessments.

Gas supply

While there was an ongoing negotiation between Contact and other generators to secure gas supply to Contact generation, it resulted in reduced generation in the North Island. We understand that a deal has now been completed which releases approximately 60MW of additional MWs into the system; this is in place until end of June.

System performance

10 Operational and system events

Market and SCADA systems

This month the control rooms have been impacted by intermittent loss and degraded performance of some of our critical tools. These were managed in line with existing business continuity processes, notably as a result of the dual control room operation. The issues were as follows:

- Just before midnight on 3 April, there were major interruptions to multiple tools in the Hamilton control room. Responsibilities were managed from Wellington. Most of the impacted systems were restored before the morning peak with full restoration by 9am on 4 April.
- On 20, 24, 26 April we experienced several brief disruptions to our SCADA tools that monitor and control systems.

Black start Testing - Maraetai

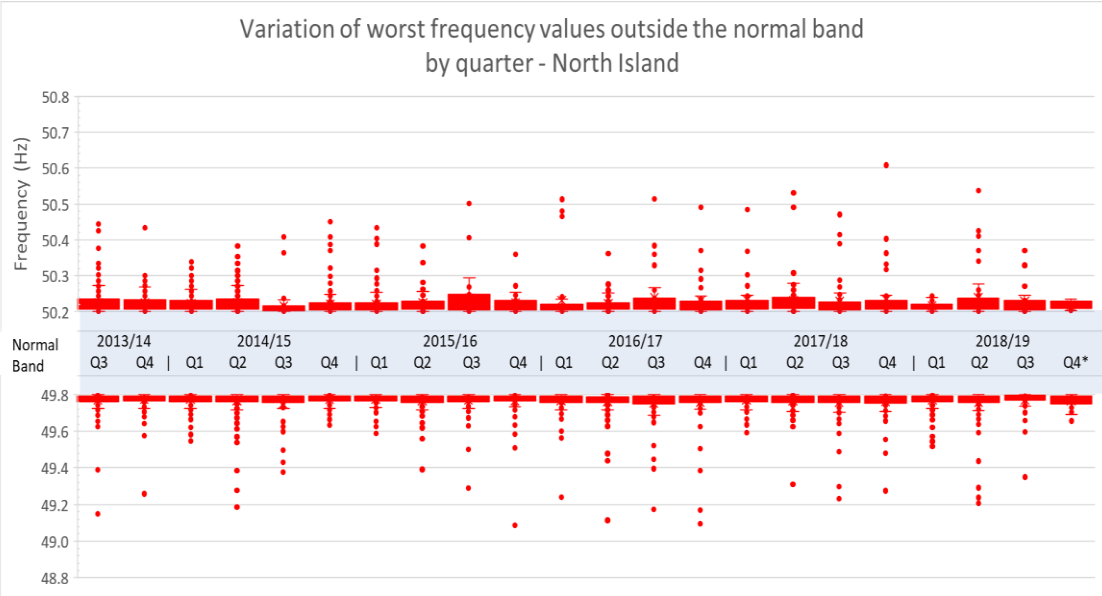
Black start testing was completed at Maraetai on Saturday 4 May. The last black start test of Maraetai was completed in 2015; this was the first black start test since the Maraetai bus coupler has been installed. The test itself went well, though there was an issue with voltage during restoration which although caused no damage is being investigated to identify the cause.

11 Frequency fluctuations

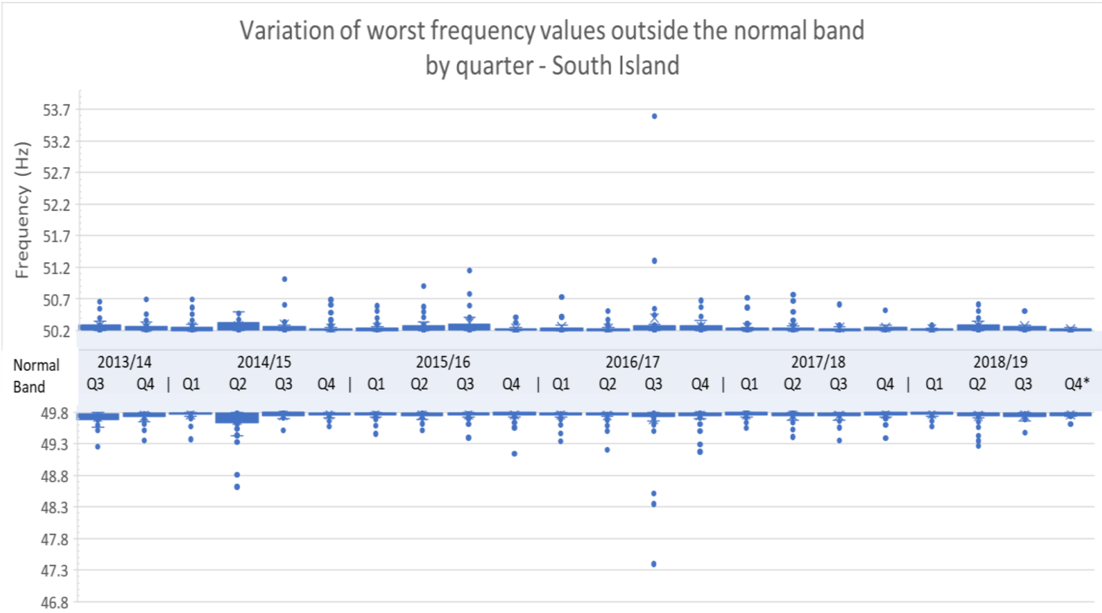
11.1 Maintain frequency in normal band (Frequency value)

The following charts show the distribution of the worst frequency excursion outside the normal band (49.8 to 50.2 Hz) during the reporting period.

North Island



South Island



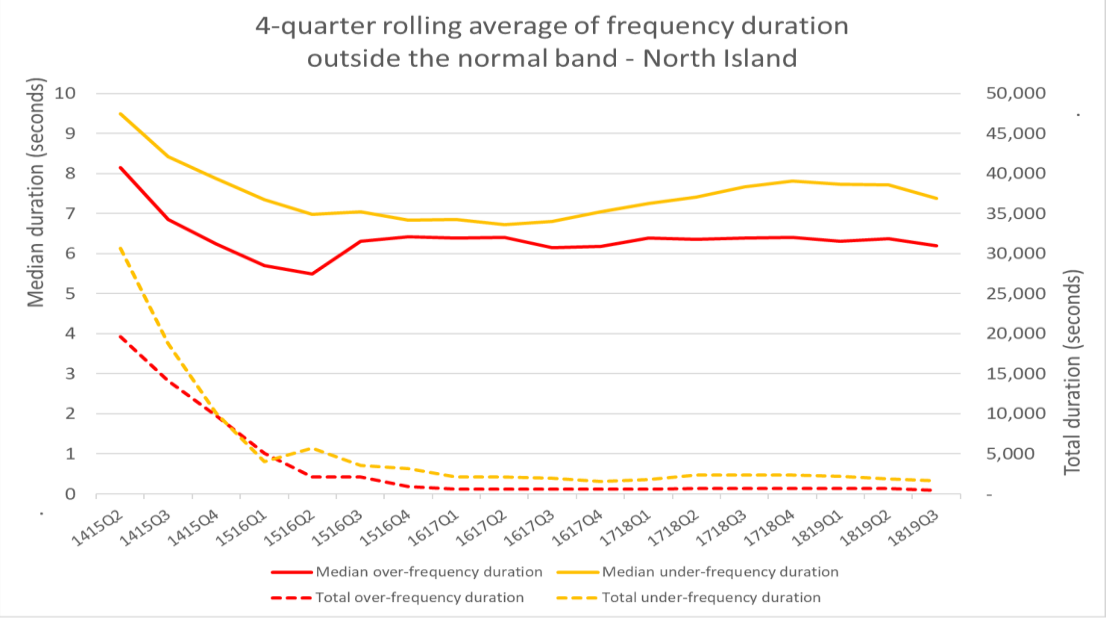
* 2018/19 Q4 contains data for April only

Note: These box and whisker charts show the distribution of data. The “box” represents the distribution of the middle 50% of the data, the “whiskers” indicate variability, and outliers are shown as single data points.

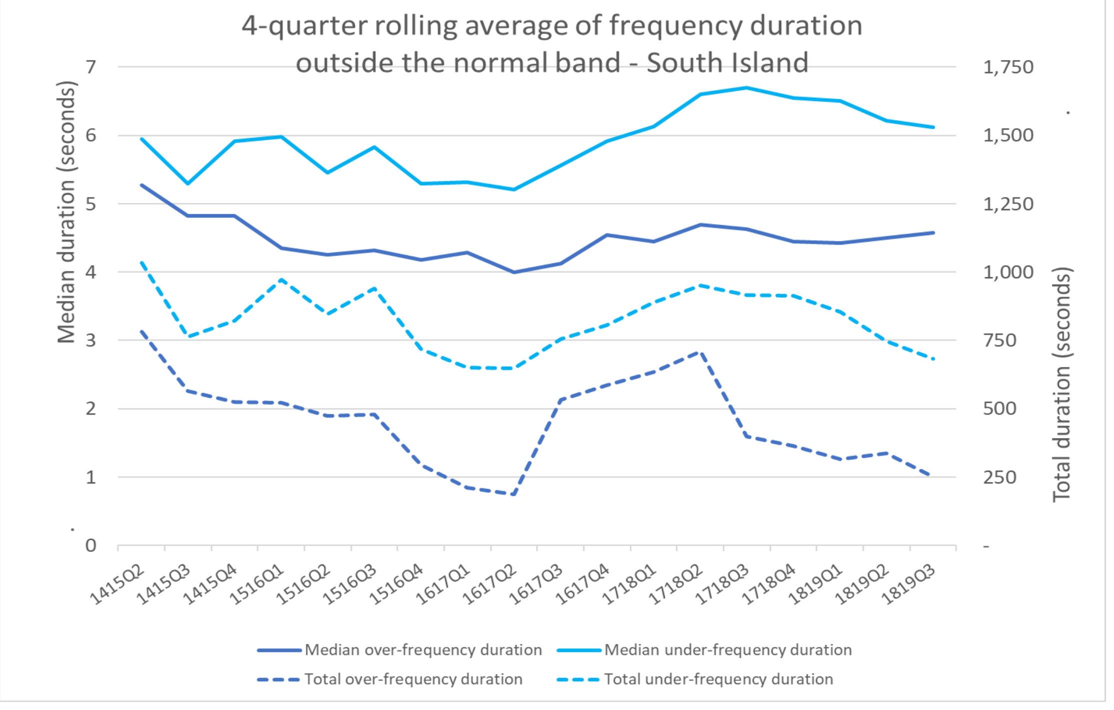
11.2 Recover quickly from a fluctuation (Time)

The following charts* show the median and total duration of all the momentary fluctuations above and below the normal band for each island. The information is shown as a 4-quarter rolling average to illustrate trends in the data

North Island



South Island

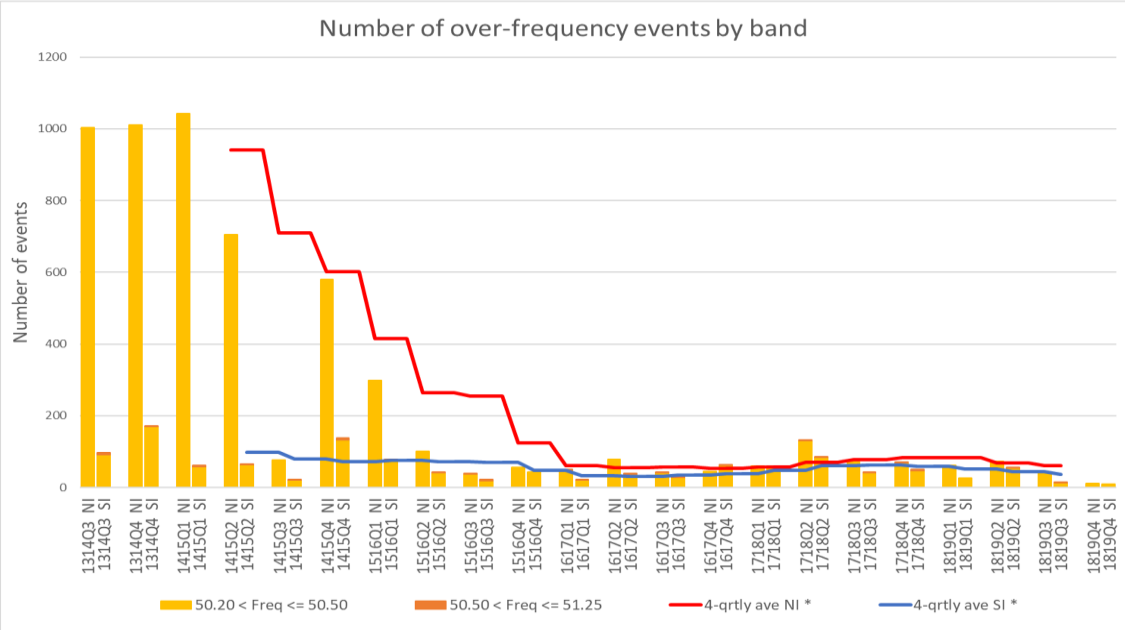


* These graphs have not been updated since 2018/19 Q3; they will only be updated at the end of each quarter

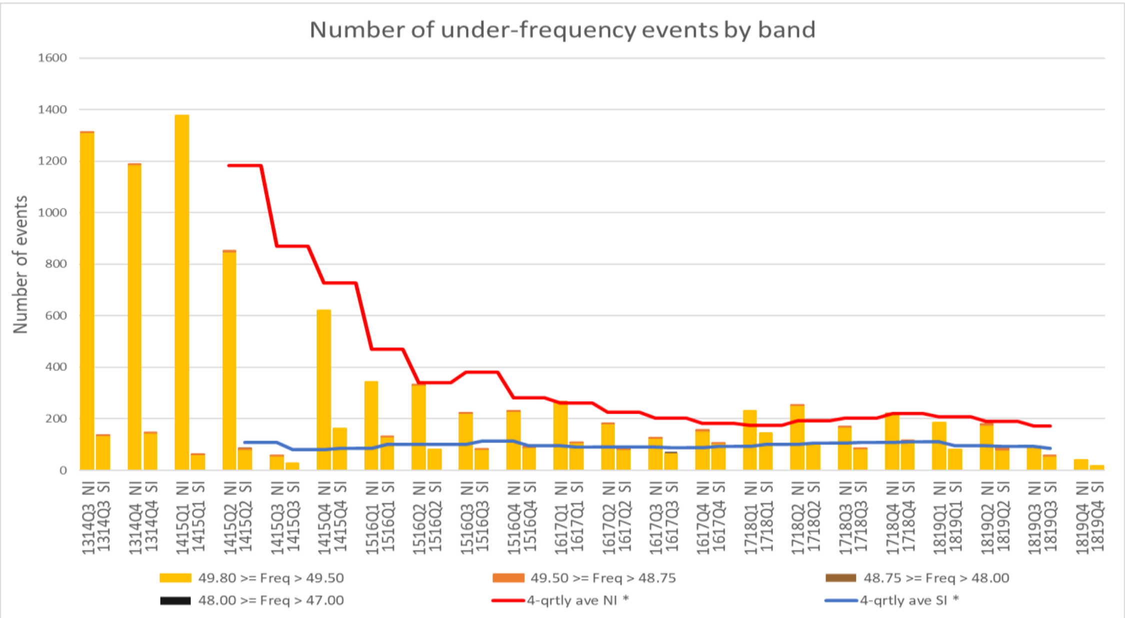
11.3 Manage frequency and limit rate of occurrences during momentary fluctuations (Number)

The following charts show the number of momentary fluctuations outside the frequency normal band, grouped by frequency band, for each quarter since 2014. The information is shown by island, including a 4-quarter rolling average to show the prevailing trend.

Over-frequency events



Under-frequency events



Note: The 2018/19 Q4 contains data for April only.

* 4-qrtly averages for NI and SI will only be updated at the end of each quarter

11.4 Manage time error and eliminate time error once per day

There were no time error violations in the reporting period.

12 Voltage management

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

13 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	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19
Demand Allocation Notice	-	-	-	-	-	-	-	-	-	-	-	-
Grid Emergency Notice	1	-	-	1	-	-	-	-	-	-	1	-
Warning Notice	-	1	1	-	-	-	1	-	-	-	-	-
Customer Advice Notice	12	4	2	9	9	6	20	20	16	6	7	4

14 Grid emergencies

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

Date	Time	Summary Details	Island
		None this month.	

15 Security of supply

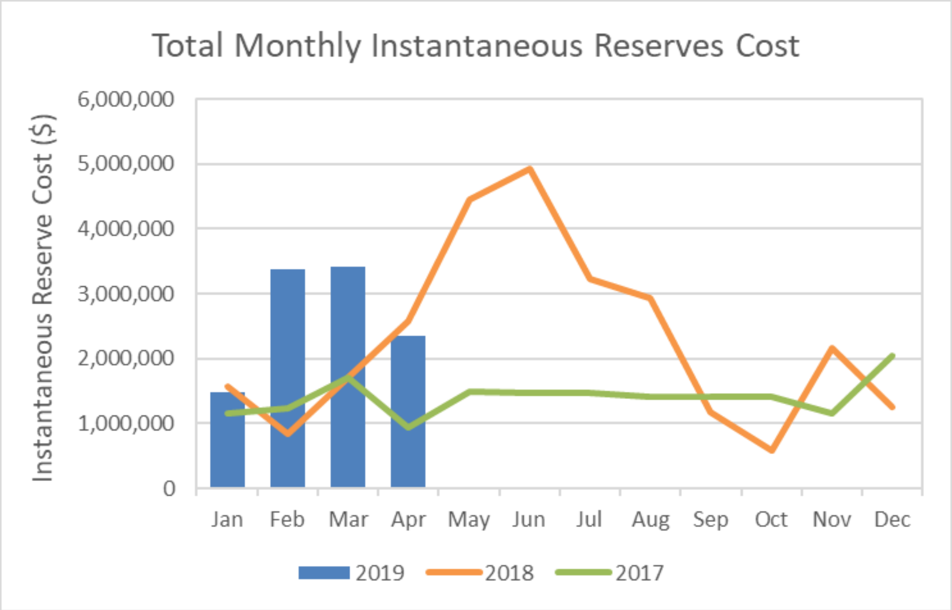
Since the significant inflow event in late March, regular inflows have kept storage above average for this time of year, and consequently risk has remained low. National controlled storage at the end of April was 107% of average, however, North Island storage was particularly low (66% of average). Given this, we may come under increased pressure from North Island generators regarding maximising HVDC transfer. We have previously provided industry with transparency about HVDC utilisation and may need to revisit this for information purposes.

The review of the Security of Supply Forecasting and Information Policy is almost complete. The policy has been through the governance process at the Electricity Authority. We are currently working with the Authority to finalise the changes to the policy and draft a decision paper based on the policy approved by the Authority's Board. This process is expected to be completed in the week beginning 27 May, with the publication of the decision paper and a gazette notice.

16 Ancillary services

Monthly ancillary service costs decreased by 27% in April. This month they were $3.73 million, a decrease of $1.36 million from last month. Both February and March the ancillary service costs had been in the order of $5 million.

The largest decrease was for Instantaneous Reserve costs which decreased by $1.07 million (31%) to $2.35 million, which is likely to reflect the re-valuation of fuel following the increase in hydro storage in late March and resolution of the gas supply issues in February/March. In addition, April demand was low for a period of two weeks due to Easter and Anzac public holidays and school holidays.



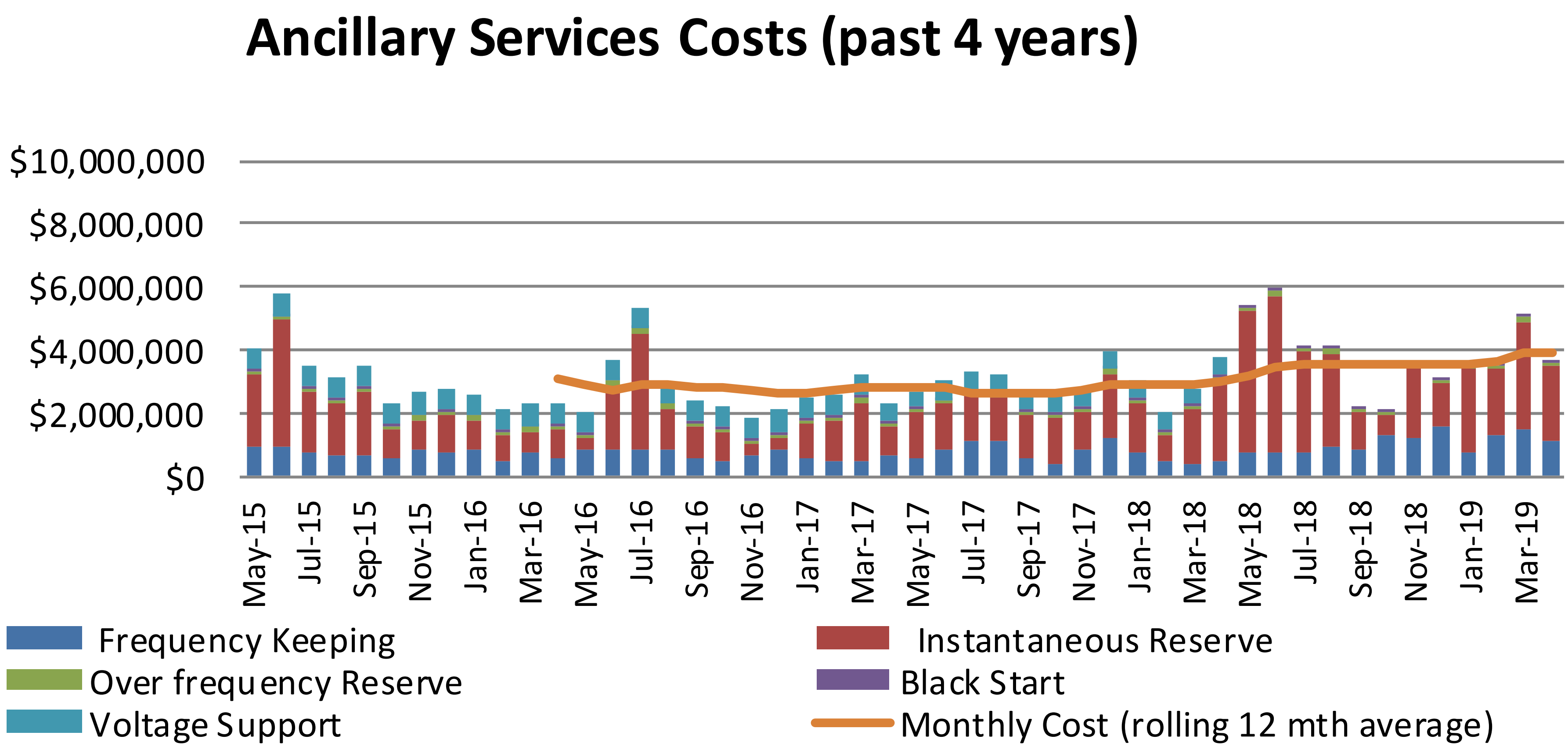
This month's frequency keeping costs decreased by $294k (20%) to $1.167 million. Although, the procurement of Frequency Keeping increased slightly (+$200k), the overall decrease was a result of decreases in the constrained on (-$1.642k) and constrained off (-$492k) costs.

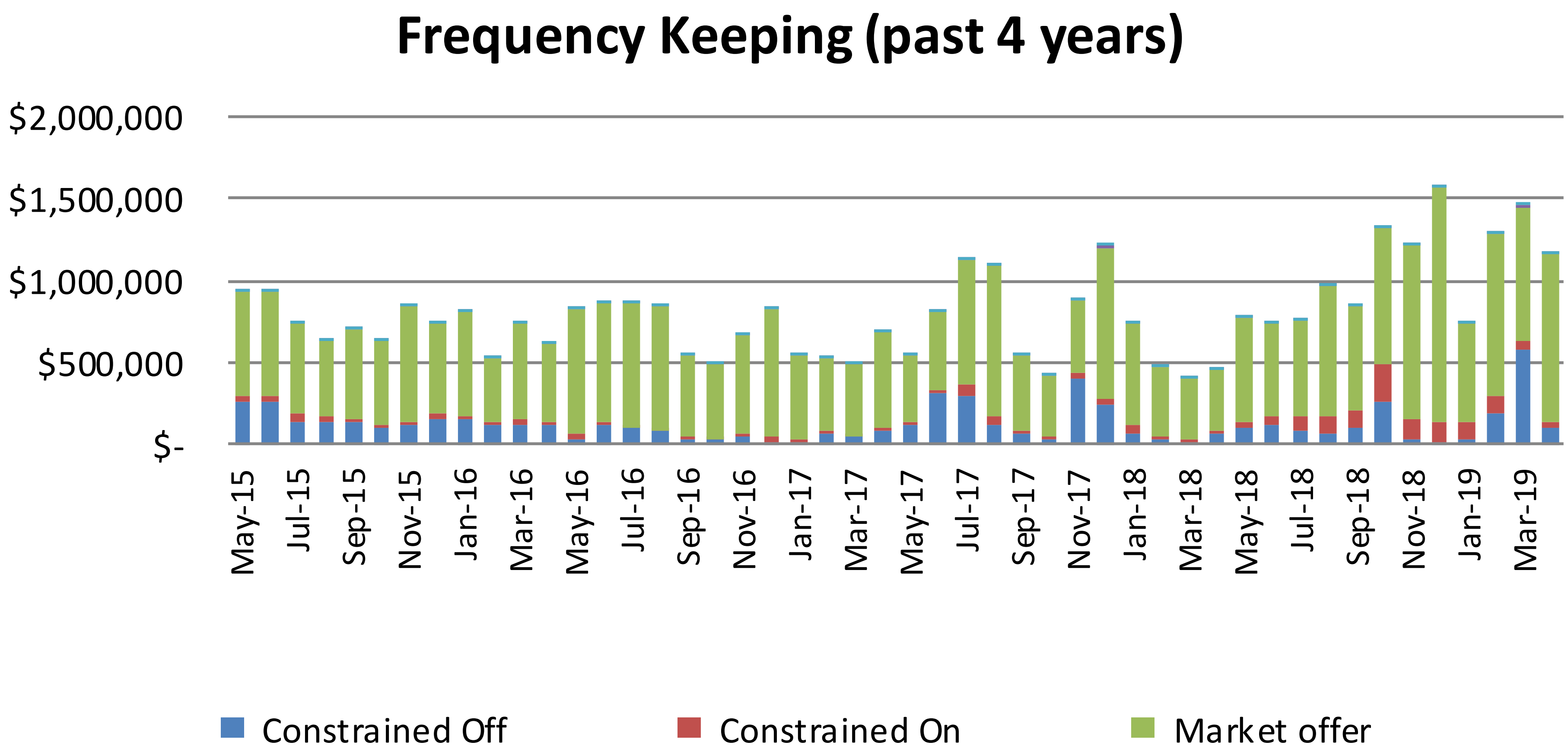
Refer to Appendix B for more detailed Ancillary Services graphs.

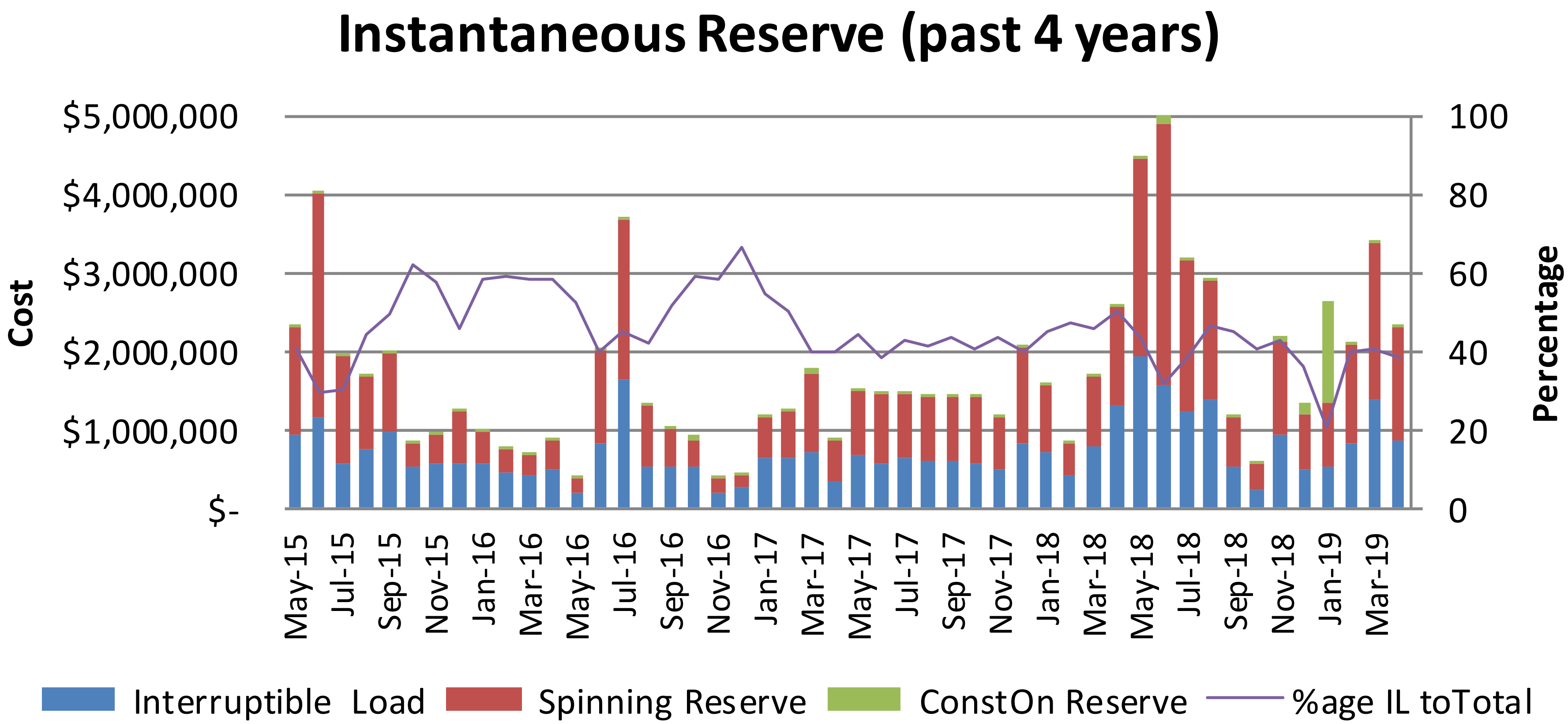
Appendix A: Discretion

Event Date and Time	Description
	There were no applications of discretion during April 2019

Appendix B: Ancillary Services Graphs




Frequency Keeping (past 4 years)
$2,000,000
$1,500,000
$1,000,000
$500,000
$-
May-15
Jul-15
Sep-15
Nov-15
Jan-16
Mar-16
May-16
Jul-16
Sep-16
Nov-16
Jan-17
Mar-17
May-17
Jul-17
Sep-17
Nov-17
Jan-18
Mar-18
May-18
Jul-18
Sep-18
Nov-18
Jan-19
Mar-19
Constrained Off
Constrained On
Market offer


Instantaneous Reserve (past 4 years)
Cost
Percentage
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$-
100
80
60
40
20
0
May-15
Jul-15
Sep-15
Nov-15
Jan-16
Mar-16
May-16
Jul-16
Sep-16
Nov-16
Jan-17
Mar-17
May-17
Jul-17
Sep-17
Nov-17
Jan-18
Mar-18
May-18
Jul-18
Sep-18
Nov-18
Jan-19
Mar-19
Interruptible Load
Spinning Reserve
ConstOn Reserve
%age IL toTotal