

Performance Measures Quarterly Report for the period ending 30 June 2018

Summary

This report provides an update on the performance measures that Gas Industry Co monitors on a regular basis. The purpose of these measures is to track the performance of the:

- ∂ Gas (Switching Arrangements) Rules 2008 (the Switching Rules);
- ∂ Gas (Downstream Reconciliation) Rules 2008 (the Reconciliation Rules); and
- ∂ Gas Governance (Critical Contingency Management) Regulations 2008 (the CCM Regulations).

The report includes measures directly related to these governance arrangements as well as measures for the competitive outcomes that they foster. The report also tracks transmission pipeline balancing, distribution, and metering measures, as a means of informing Gas Industry Co and the wider industry on these issues.

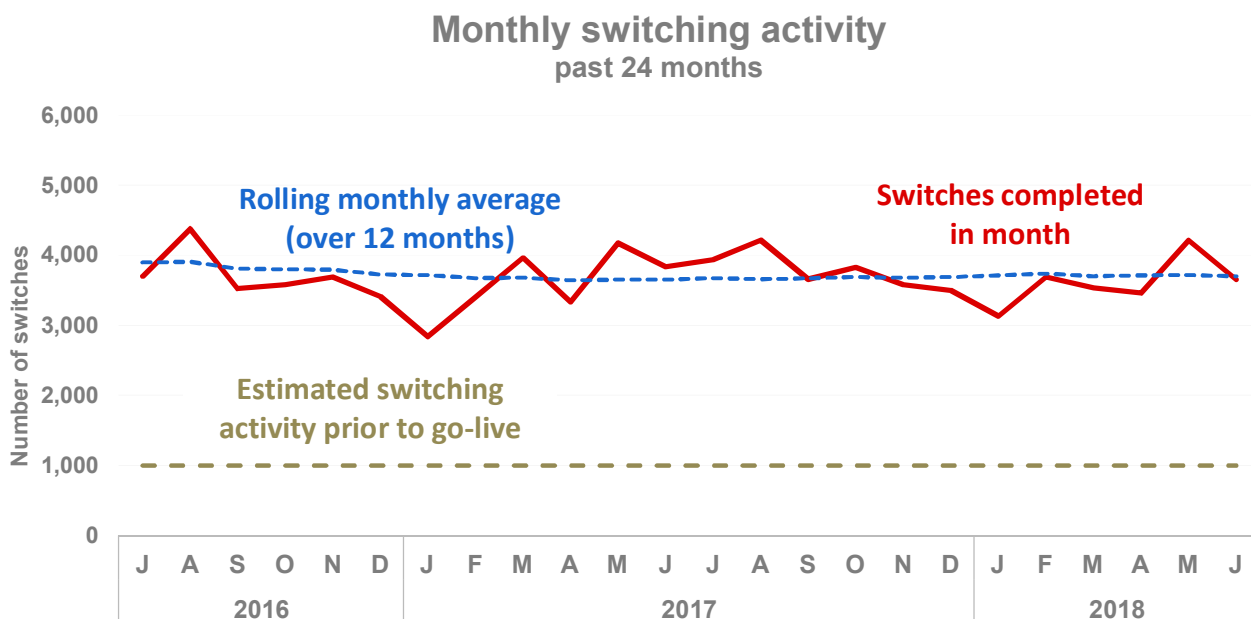
Explanatory details about the charts can be found in the Appendix to this report.

Highlights of the Report:

- ∂ There are about 3,700 not withdrawn switches completed per month, which translates to an annual churn rate of about 15.8%.
- ∂ So far in 2018, about 74% of customer switches have been completed within three business days.
- ∂ 65% of residential consumer sites have switched retailer at least once in the past eight years; 67% of small commercial and 55% of large commercial sites have switched at least once.
- ∂ Over 99% of gas customers are connected to a gate where seven or more retailers trade, suggesting that the gas retail sector is generally competitive throughout the North Island.
- ∂ Average annual unaccounted-for gas (UFG) over the past year stands at about 1.1% (compared with about 2% in 2009).
- ∂ Genesis is the largest retailer by customer share. Nova has the largest share of commercial and industrial customers.
- ∂ Nova is the largest retailer by volume market share.

Switching performance measures

Chart 1: Monthly switching activity



- ∂ This chart shows the number of switches that have occurred on ICPs that have a status of either active-contracted (ACTC) or active-vacant (ACTV) at the time of switching. The statistics exclude switches that have been withdrawn.¹
- ∂ There are about 3,700 not withdrawn switches per month, which translates to an annual churn rate of about 15.8%. Gas customers can switch retailers for many reasons, but the high level of activity in the gas retail market suggests that customers find changing retailer easy and can put pressure on retailers to offer competitive terms and pricing.
- ∂ These figures exclude the transfer of Energy Direct customers to Trustpower from August – October 2016.
- ∂ See Chart A-1 in the appendix for a chart of switching activity since the start of the registry (March 2009).

¹ Withdrawn switches are those that have been reversed, either because they were originally entered in error or because the customer decided not to go ahead with the switch (this latter situation is a “win-back” when the current retailer persuades the customer to stay). On average, about 5.5% of initiated switches are subsequently withdrawn.

Chart 2: Regional switching activity

Monthly regional and overall switching, past 24 months

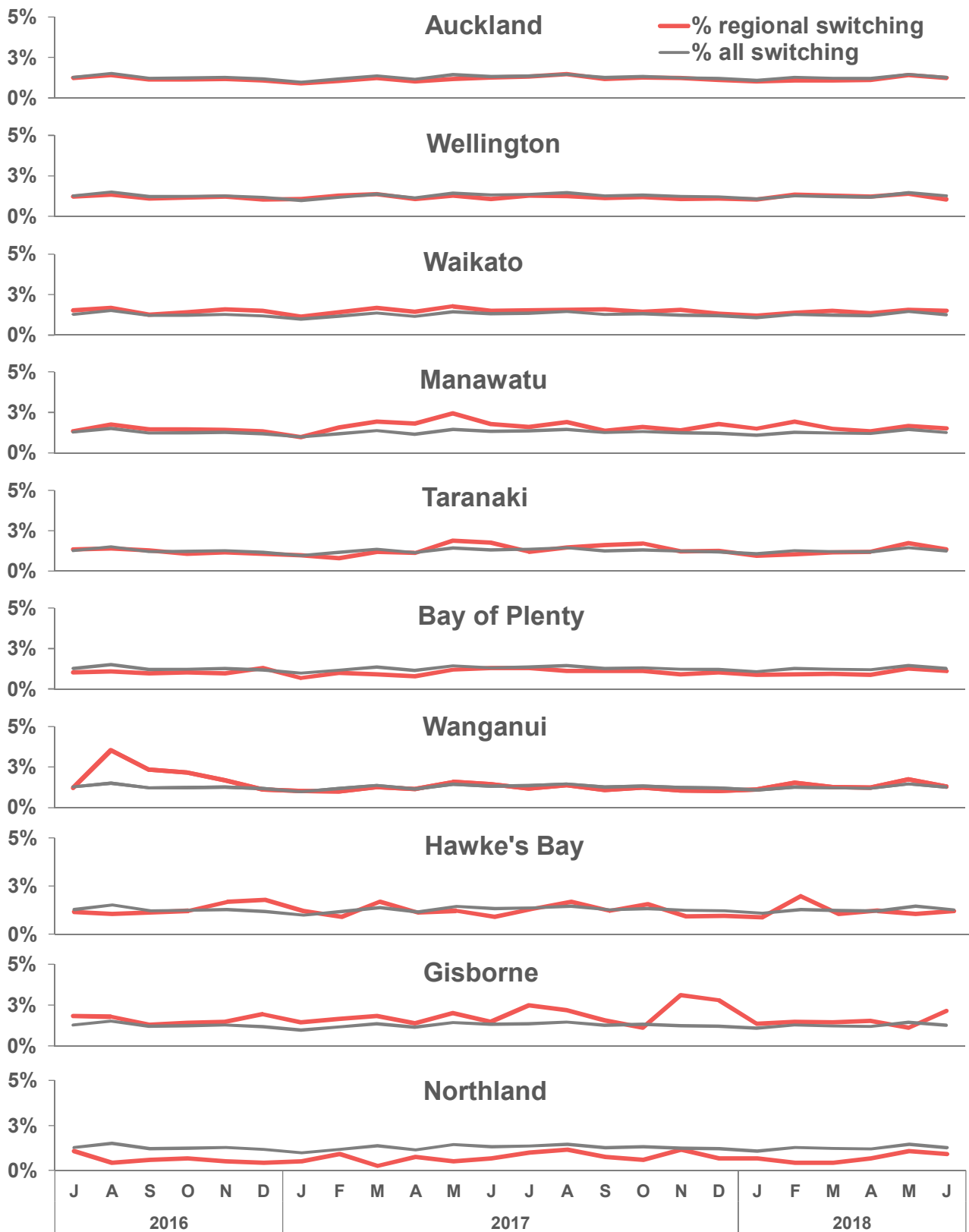
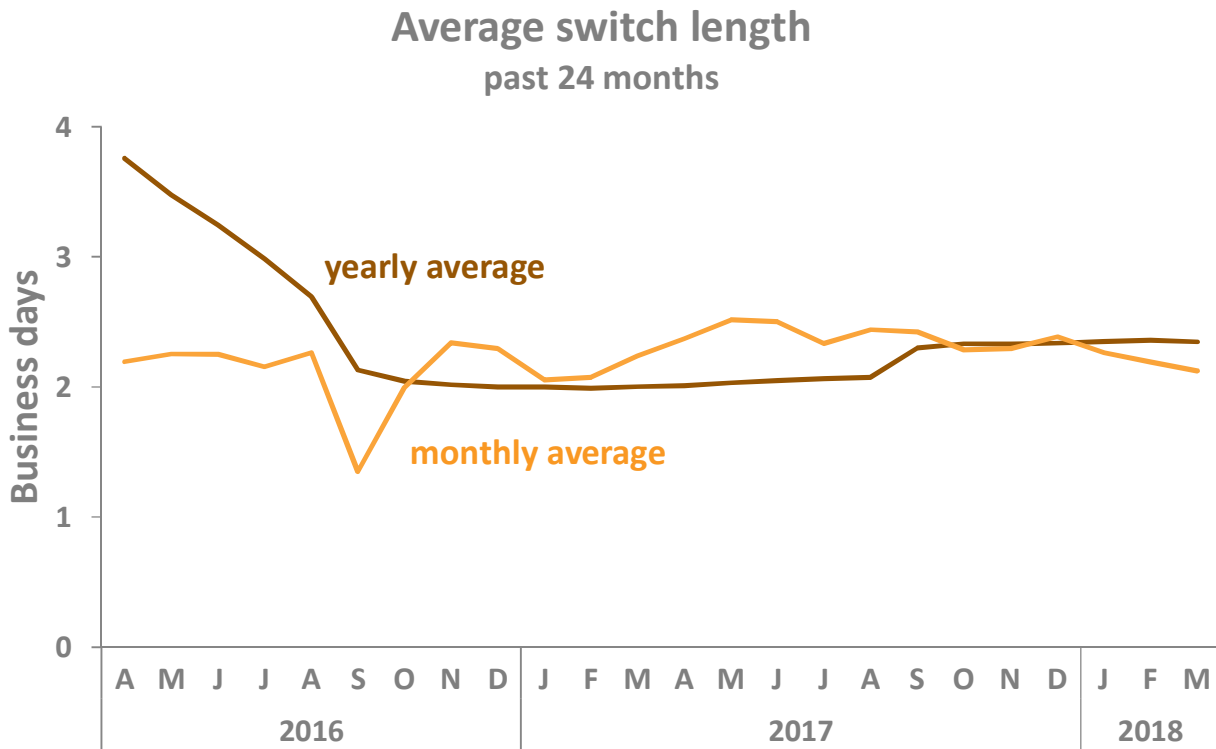
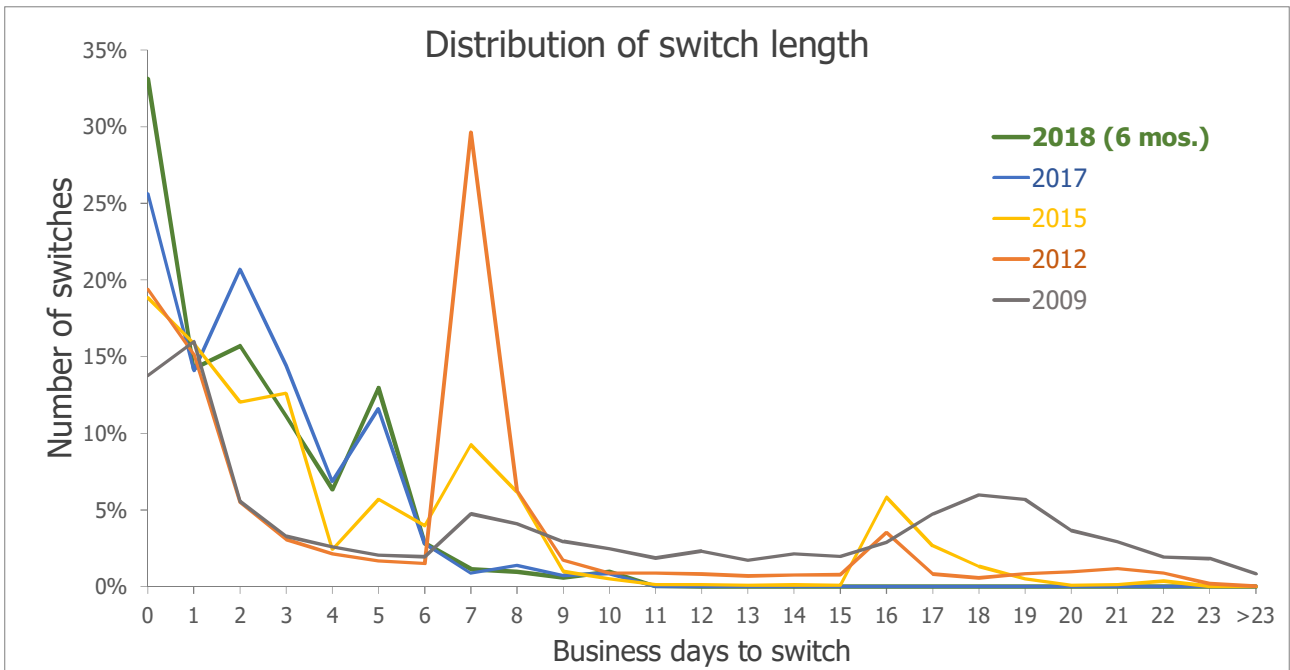


Chart 3: Time to process switches



- ∂ Switching times have fallen markedly since the start of 2015, when switches took a little over six days, on average. Switching times now average between 2 and 2.5 business days.
- ∂ Data are for switches of ICPs with a status of either active-contracted (ACTC) or active-vacant (ACTV) at the time of switching.

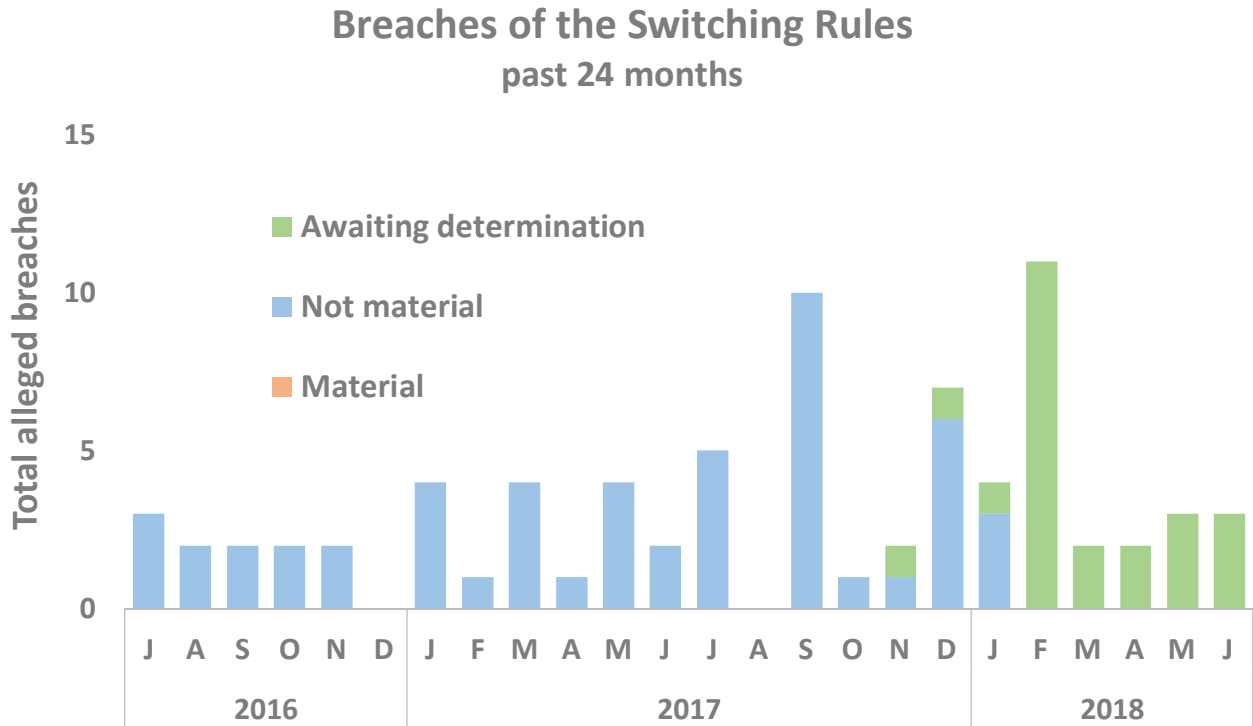
Chart 4: Distribution of switching length



∂ This chart shows the distribution of switching times for the calendar years of 2009, 2012, 2015, 2017, and 2018.

∂ The chart shows the change in switch length over time. In 2009, half of the switches were completed within seven days, while a quarter of switches took 17 days or more. By 2012, three-quarters of switches took place in seven days or less. In 2015, there was a shift to completion within three days. In 2017, another pattern emerged, where about a quarter of switches happened in less than a day and another third were completed in two business days. So far in 2018, about one-third of switches have been completed in less than a day, and nearly all switches take less than seven days.

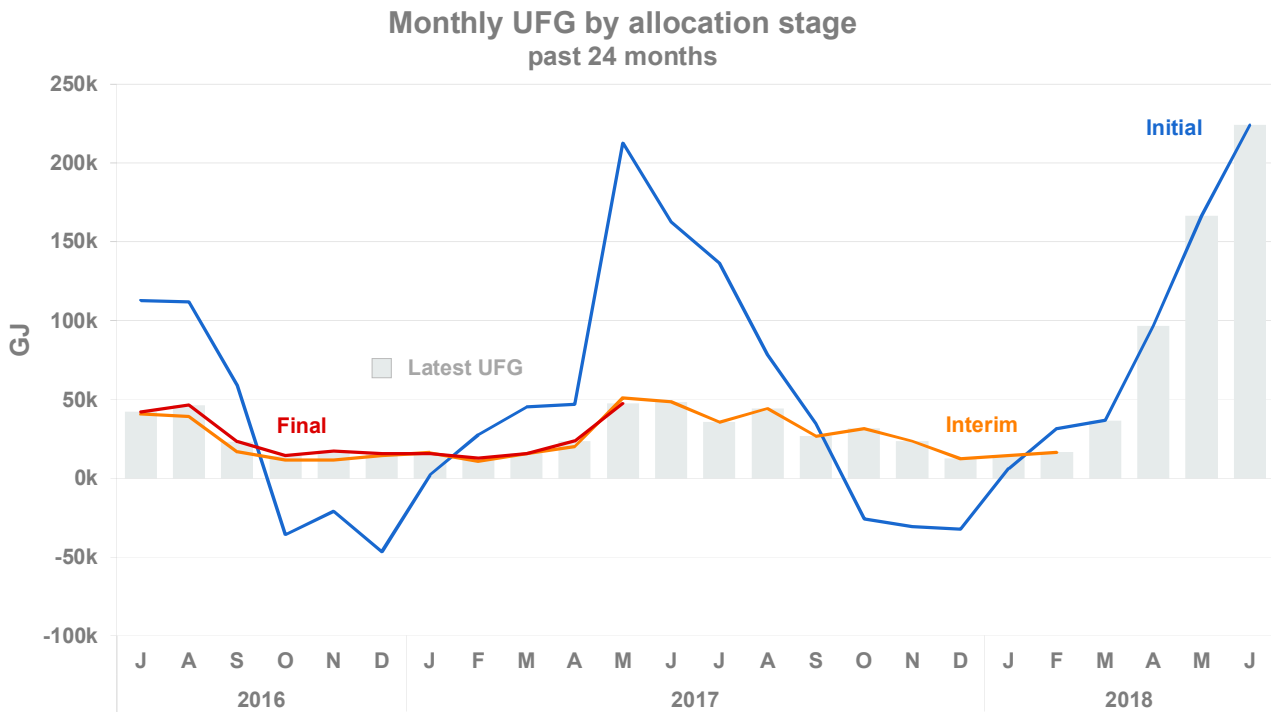
Chart 5: Number and severity of breaches of the Switching Rules



- ∂ This chart shows the breaches alleged each month by the registry operator. These allegations are generally for breaches of the rules that govern the mechanics of switching a gas consumer and include such things as late responses to switching notices.
- ∂ The chart does not show the breaches alleged in the course of performance audits, which tend to be related to the accuracy of information on the registry and the procedures that participants follow to maintain this information. Errors in registry participants’ data handling procedures can give rise to hundreds of individual instances of rule breaches, which would be misleading to include in the chart above.

Allocation and reconciliation performance measures

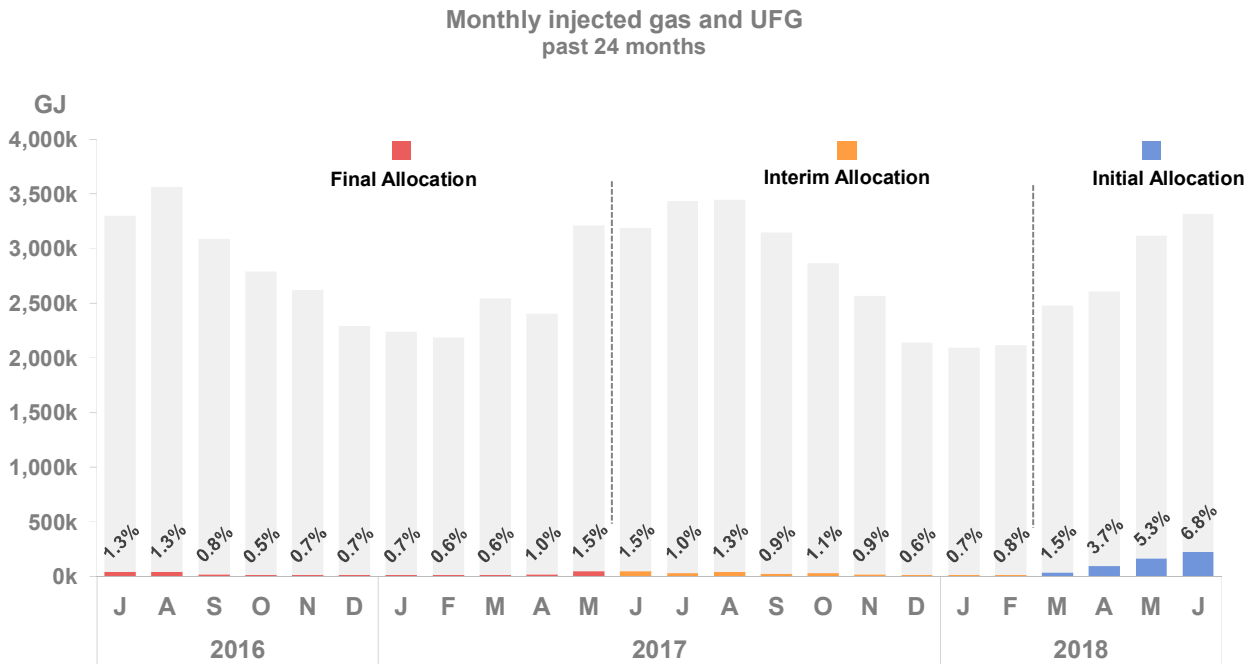
Chart 6: Volumes of unaccounted-for gas (UFG)



- ∂ Consistent with other winter seasons, there is a peak in UFG for May and June this year.
- ∂ Note that this chart uses the initial allocation produced by the allocation agent following month-end, not the D+1 allocation results.²
- ∂ See Chart A-2 in the appendix for a chart of UFG since the start of the Reconciliation Rules.

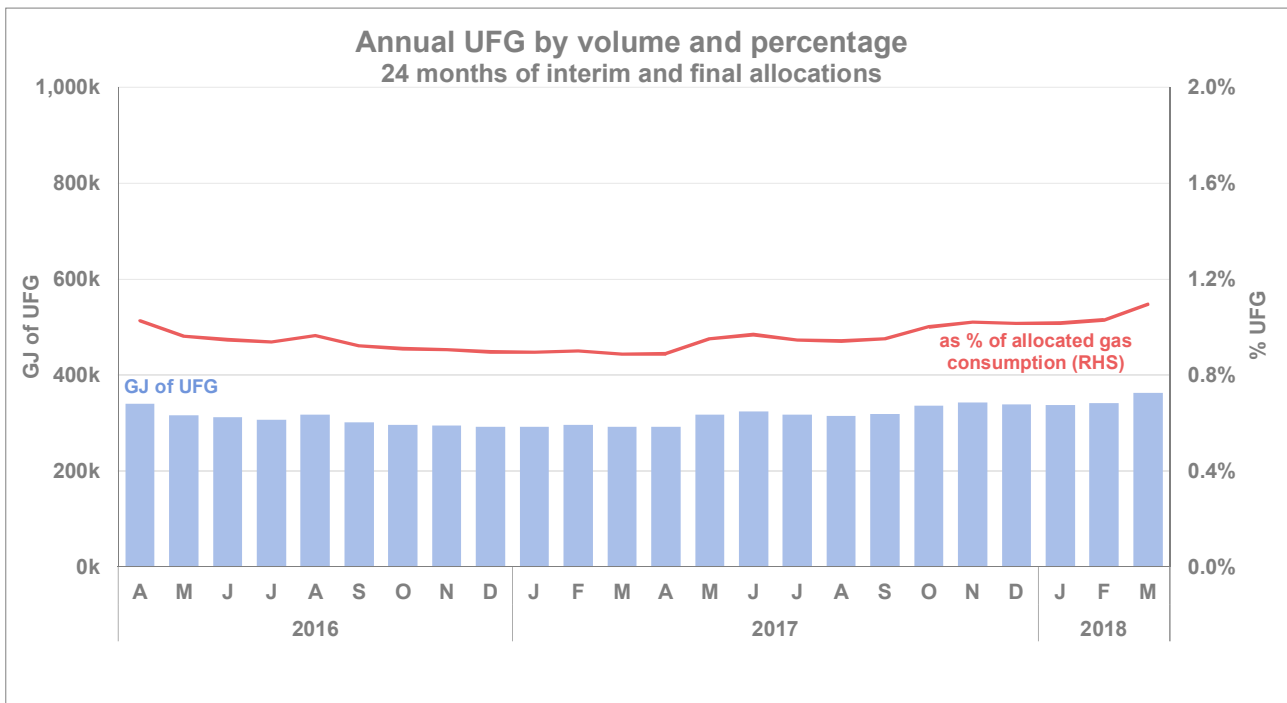
² The initial allocation produced by the Allocation Agent is a “bottom up” approach whereby each of the retailers submits data based on a combination of actual meter readings (historical estimates) and consumption estimates since the last meter reading (forward estimates). In that context, UFG is a meaningful measure of the difference between the aggregate estimates and the volumes that have entered the network. By contrast, D+1 is a system for dividing the network volumes among retailers and that process does not produce UFG figures that are comparable with the bottom-up approach to allocation.

Chart 7: Percentage of UFG



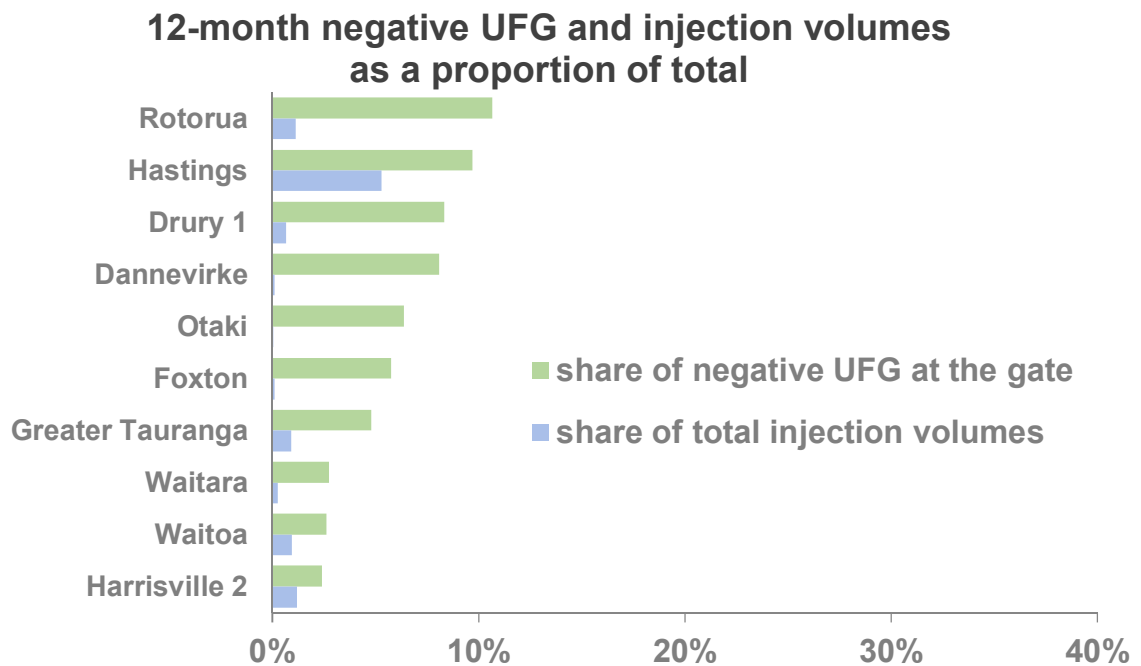
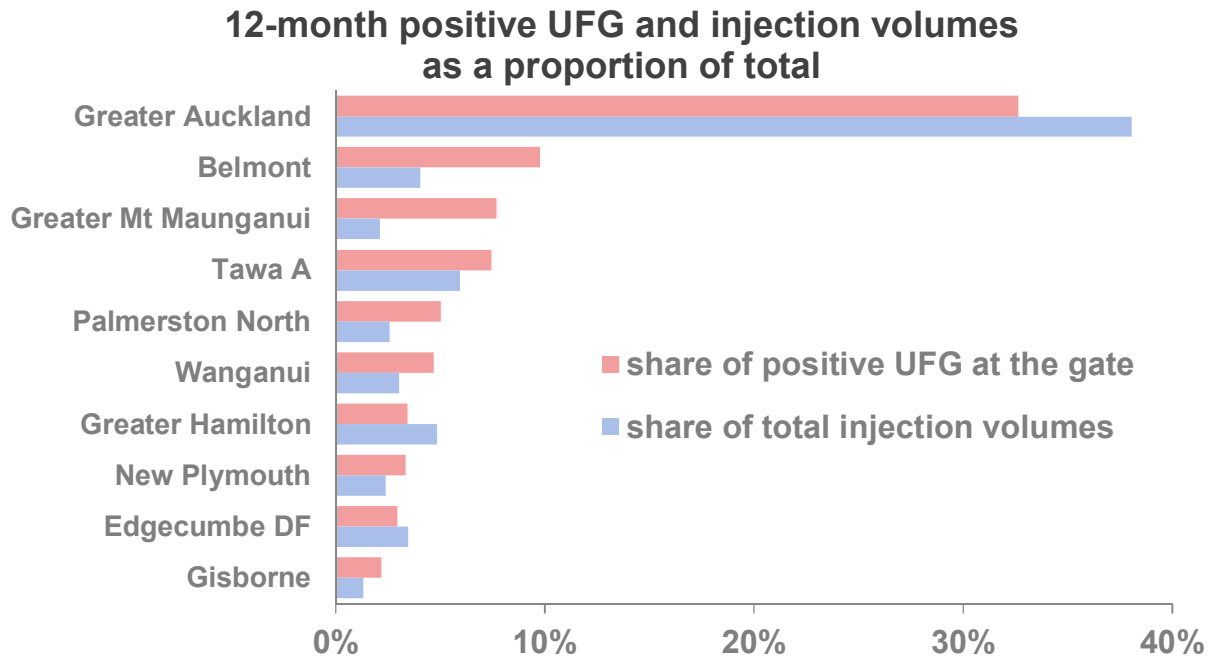
∂ UFG tends to be higher as a percentage when total volumes are high. This trend most likely due to UFG attributable to mass market consumption.

Chart 8: Rolling 12-month UFG



∂ In volume terms, annual UFG has decreased dramatically since 2009, when UFG was about 600,000 GJ per year. In the past 12 months, UFG totalled about 363,000 GJ, about 1.1% of allocated gas consumption.

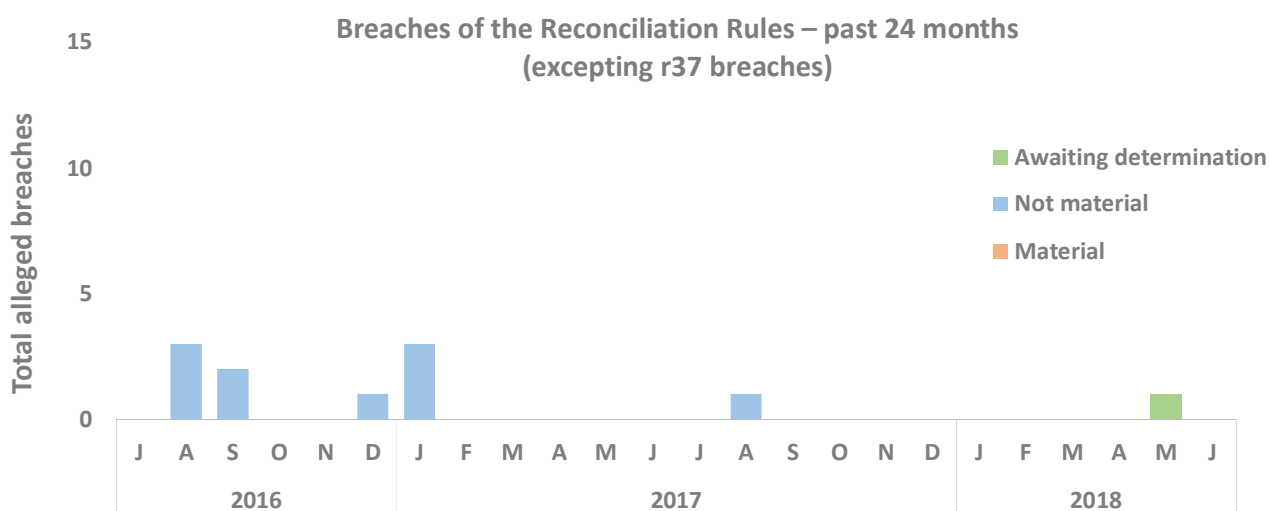
Chart 9: Gas gates where UFG is the highest



∂ These charts show the gates that experience the largest share of total UFG, compared to their share of total gas gate deliveries at shared gas gates. These charts use 12 months of the most recent interim and final allocation data available: in this case, March 2017 through February 2018.

- ∂ The 10 gates shown in the top chart account for 79% – about 309,000 GJ – of the positive UFG experienced over the past 12 months.
- ∂ The 10 gates shown in the bottom chart account for about 61% (about 30,000 GJ) of the negative UFG experienced in the past 12 months.
- ∂ Some of the gas gates shown have been determined to be global one-month gates, since, among other things, they have a high proportion of industrial load. The global one-month methodology assigns a share of the actual UFG experienced in a month to industrial consumers, in contrast to the usual calculation method, which assigns industrial load an annual average amount of UFG.
- ∂ In the first chart, Edgecumbe DF is a global one-month gates; Waitoa and Harrisville 2 are in the second chart.

Chart 10: Number and severity of breaches of the Reconciliation Rules



- ∂ This chart shows the breaches alleged each month by the allocation agent. They generally relate to matters relating to the provision of monthly consumption data by retailers and daily injection information by retailers.
- ∂ This chart excludes rule 37 breaches. This is the rule that requires initial consumption information submitted by retailers to be within a percentage of accuracy of the consumption information submitted for the final allocation. The purpose of this rule is to ensure that the initial allocation is as accurate as possible. Beginning with the December 2015 consumption month, the end-of-month initial allocations have been replaced with day-after daily allocations (known as D+1) on a trial basis. If some form of D+1 is adopted on a permanent basis, it could eliminate the need for rule 37 breach settlements.
- ∂ In the meantime, Gas Industry Co is working to reach a settlement on the rule 37 breaches relating to the period prior to the D+1 pilot. The market administrator is considering how best to resolve rule 37 breaches that have occurred since the beginning of the D+1 trial.
- ∂ The chart also excludes the breaches alleged in the course of performance audits. These allegations relate to such things as metering requirements and procedures for converting meter readings to

energy. Errors in participants' systems and procedures can give rise to hundreds of individual instances of rule breaches, which would be misleading to include in the chart above.

Audits commissioned

Event audits

No event audits were commissioned in this quarter.

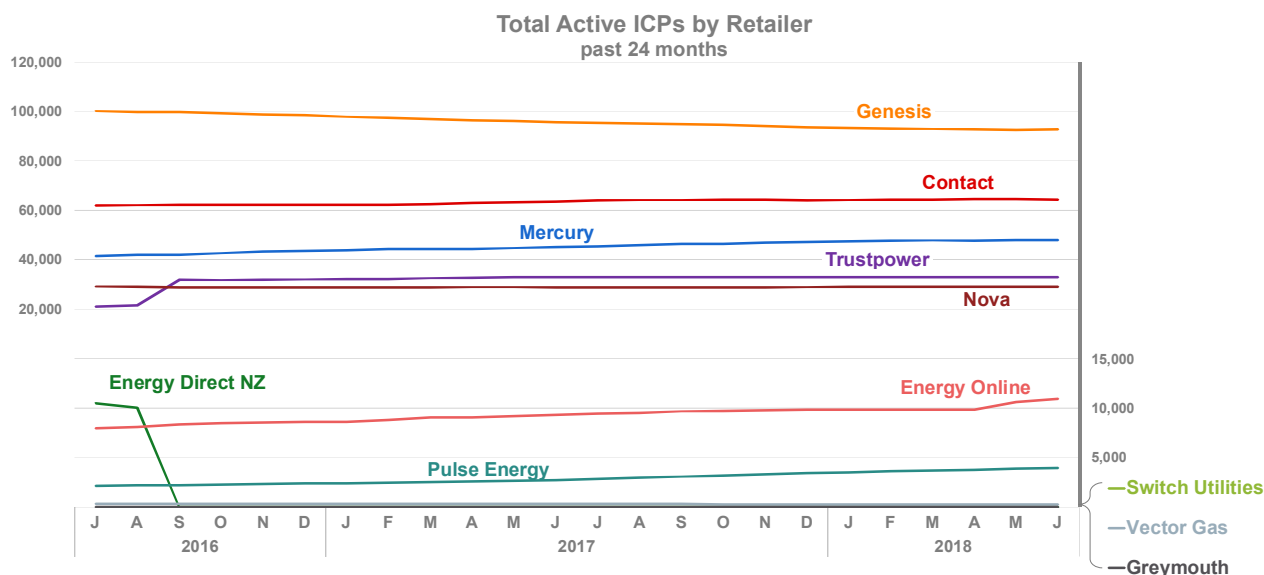
Performance audits

Gas Industry Co has completed the current round of performance audits under the Switching Rules and the Reconciliation Rules, which provide for regular performance audits of registry participants, defined as retailers, distributors, and meter owners.

This was the third round of performance audits under the Reconciliation Rules and the first under the Switching Rules. No significant compliance issues were found, although the auditors identified a considerable amount of minor alleged rule breaches, particularly under the Switching Rules. These alleged breaches are currently being processed.

Market competition performance measures

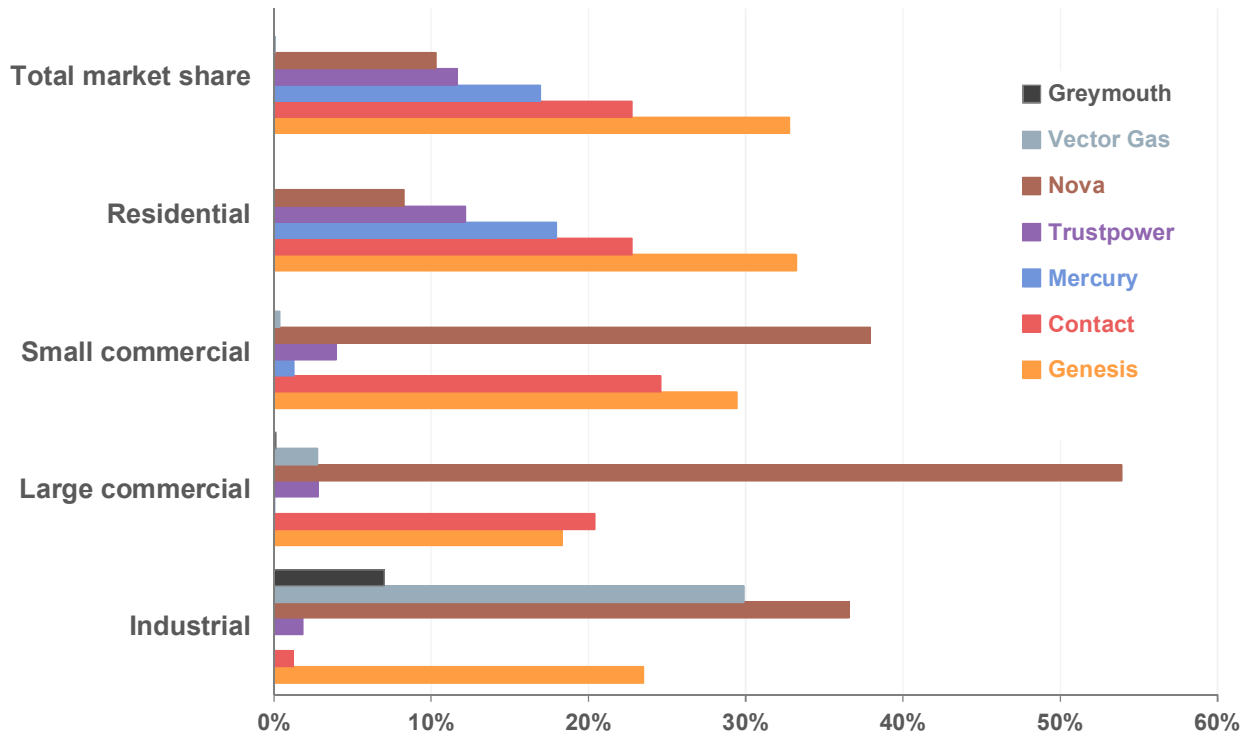
Chart 11: Market share of ICPs by retailer



- ∂ Not visible on this chart is the newest entrant into the retail gas market, Scholarship NZ, which entered the market in February 2018 and has one customer as at the end of June.
- ∂ This chart shows the contrast between the relative stability of customer numbers for the established retailers versus the growth of the new entrant retailers:
 - Trustpower, which entered the retail gas market in November 2013, is now the fourth largest retailer by customer share;
 - Pulse Energy entered the market in October 2014;

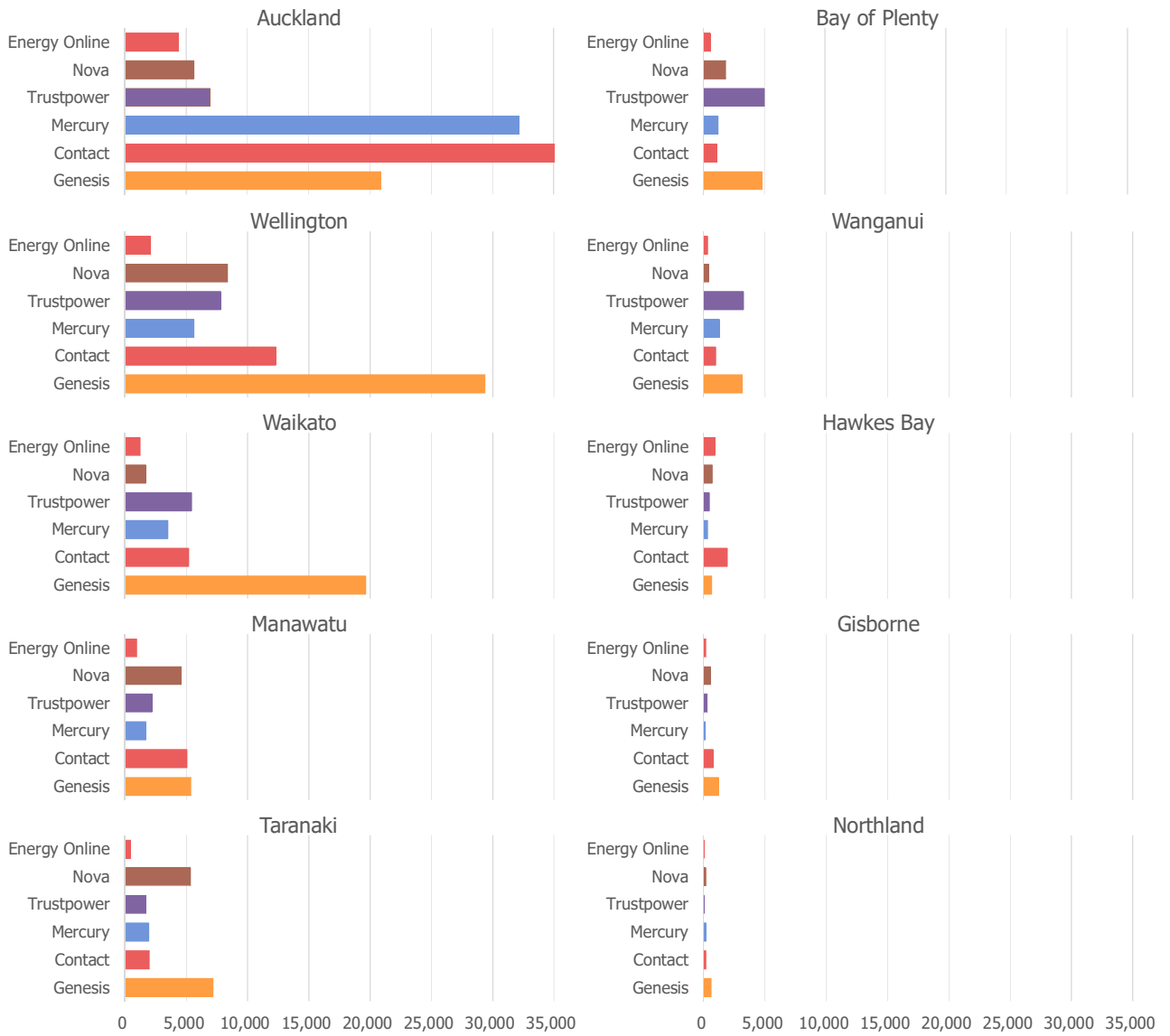
- Switch Utilities entered in July 2015.
- ∂ Energy Online is a retail brand of Genesis Energy and has also been experiencing growth in customer numbers.
- ∂ There are now 11 distinct retail brands, owned by 10 different retail companies.

Chart 12: Customer market share by consumer segment



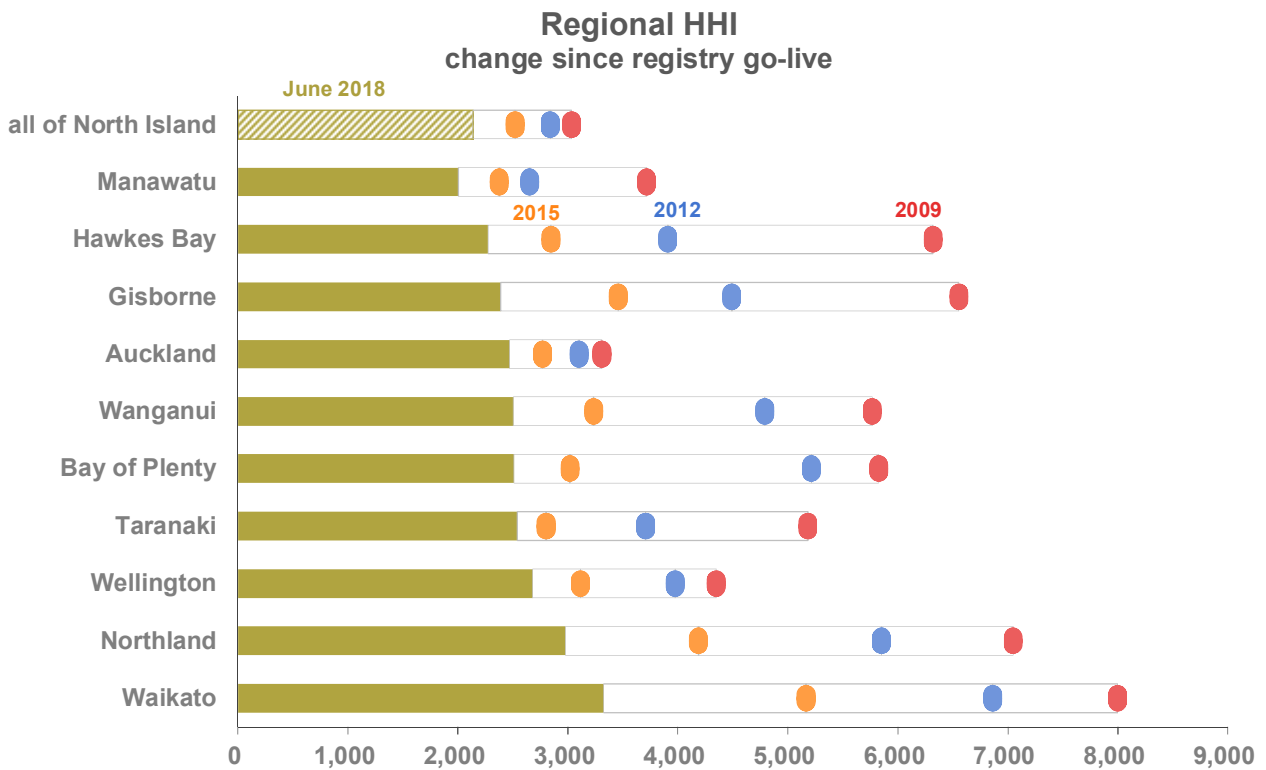
- ∂ In this chart, consumer segment is inferred from the load shedding category listed on the gas registry for each consumer site. The top set of bars shows the same set of data as the previous chart. The other sets of bars show how some retailers are more dominant in specific sectors of the retail gas market. Vector Gas, for example, focusses on large industrial and large commercial customers, while Greymouth has a focus on large industrial customers.
- ∂ The chart includes the retail brands that have more than 5% of market share in a category.

Chart 12a: Customer market share by region



∂ This chart shows the number of ICPs for each retailer in each geographical region. The retailers shown each have over 3% of total customer market share.

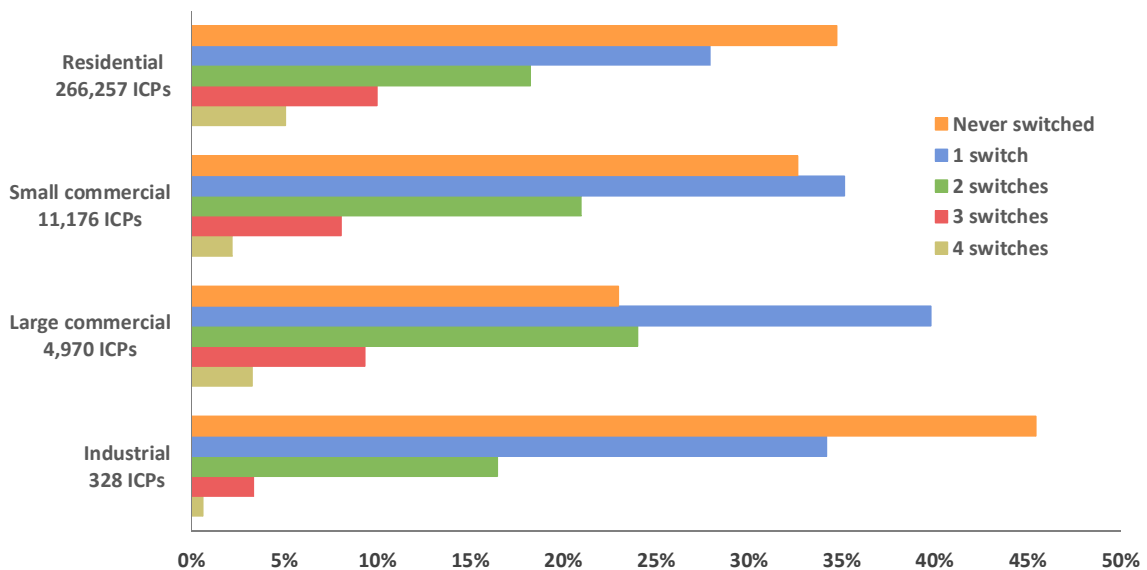
Chart 13: Herfindahl–Hirschman Index (HHI)



∂ The HHI has decreased in all regions since 2009, indicating that the retail market is becoming less concentrated across the North Island.

∂ Nationally, the HHI stands at 2,137, in comparison to 3,033 in February 2009 (the start of the registry).

Chart 14: Switching by consumer sites since 2009

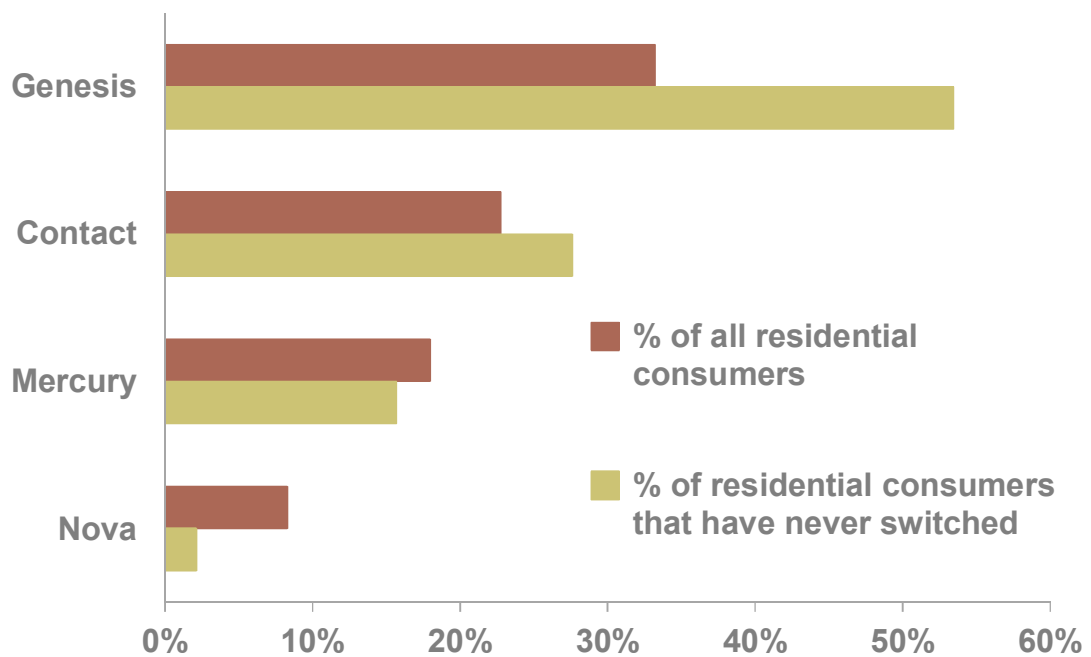


As with Chart 12, consumer sites in this chart and Chart 15 are categorised based on the load shedding category recorded in the gas registry.

Consumers that have switched retailer at least once since the start of the gas registry (February 2009) include:

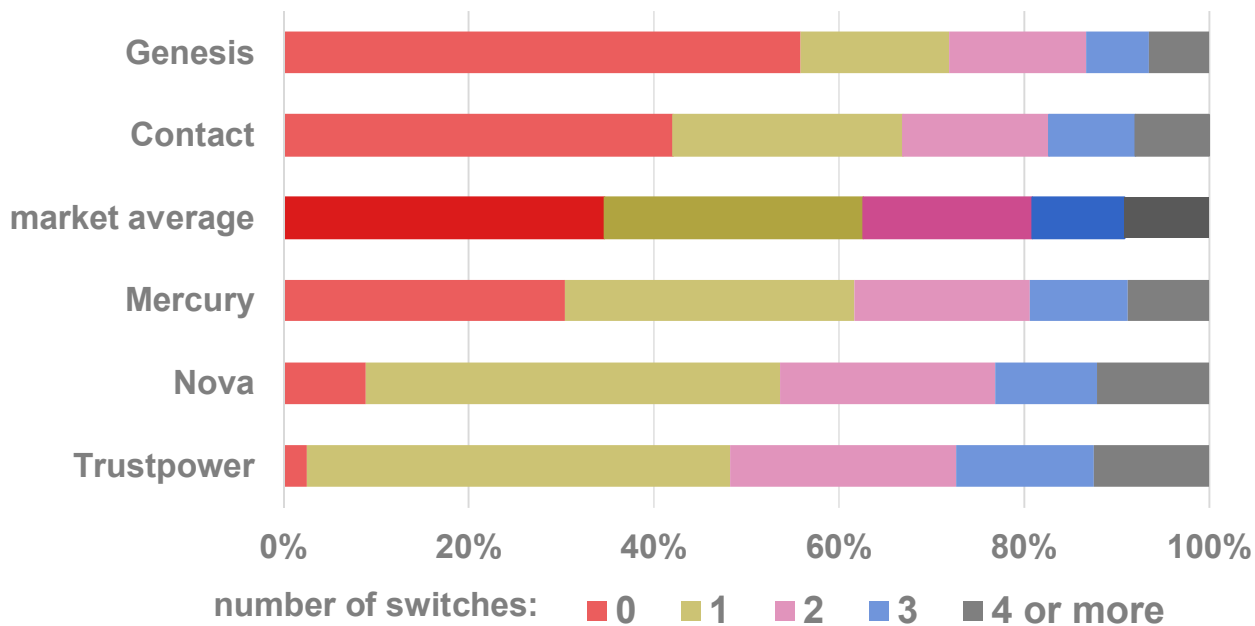
- ∂ 65% of residential consumer sites
- ∂ 67% of small commercial sites
- ∂ 77% of large commercial sites; and
- ∂ 55% of large industrial sites.

Chart 15: Residential consumer sites that have never switched



- ∂ This chart compares retailers' market share of all residential consumers with their share of residential consumers that have never switched since the start of the gas registry in February 2009.
- ∂ It shows, for example, that Genesis has about 33% of the total residential market, and about 53% of the residential consumers that have not switched retailers in that time.
- ∂ The chart focuses on the mass market retailers that were in operation at the start of the gas registry and that remain operational.

Chart 15a: Residential customers by number of switches



- ∂ This chart provides another way to think about residential customer switching. The third bar repeats the data on residential switches from chart 14 above: 35% of residential consumer sites have never switched retailer; 28% have switched once; 18% have switched twice; 10% three times, and 9% four or more times.
- ∂ The other bars enable comparison with retailers’ residential customer bases. 56% of Genesis customers, for example, have never switched; the proportion is 42% for Contact customers.
- ∂ In contrast, Trustpower has built its customer base almost entirely through switching: 46% of its customers have switched once; 24% twice; and 15% three times. (Trustpower is also retailer to a small number of newly-created ICPs that have never switched.) Note that the transfers from Energy Direct are counted as switches in this context.

Chart 16: Switching activity by retailer

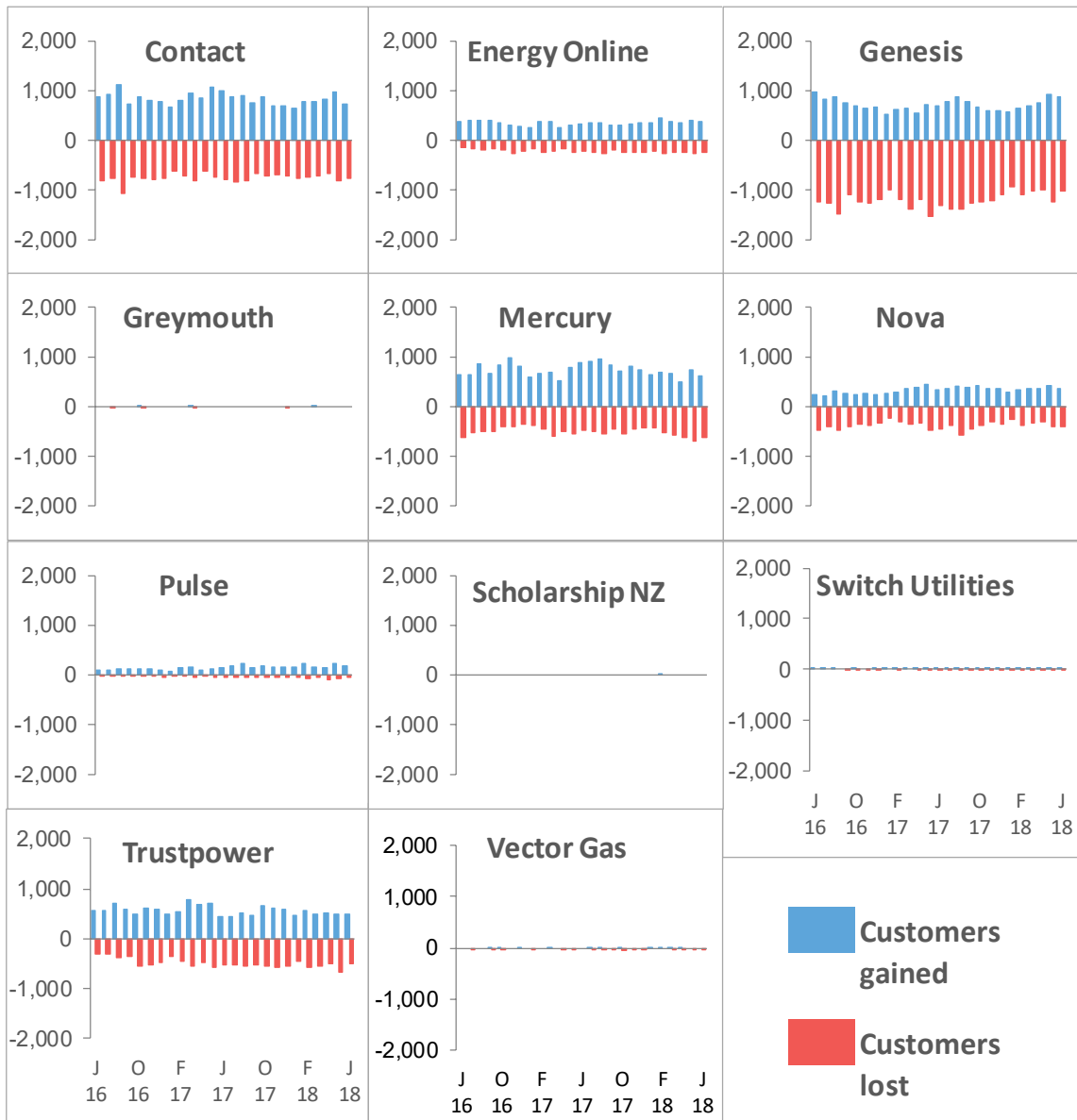
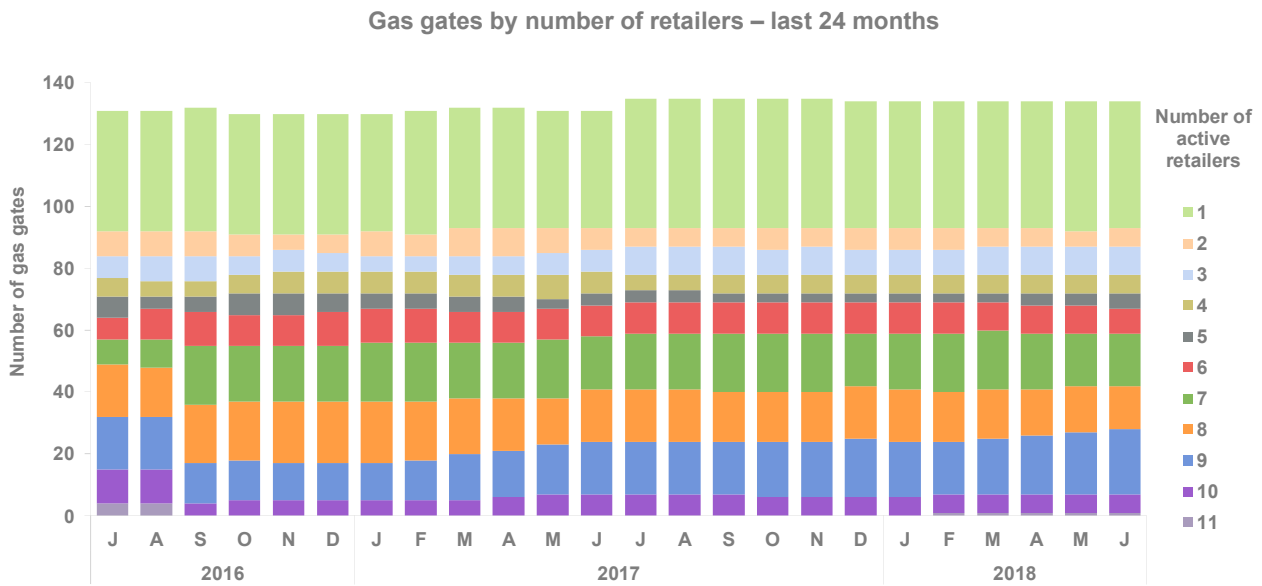


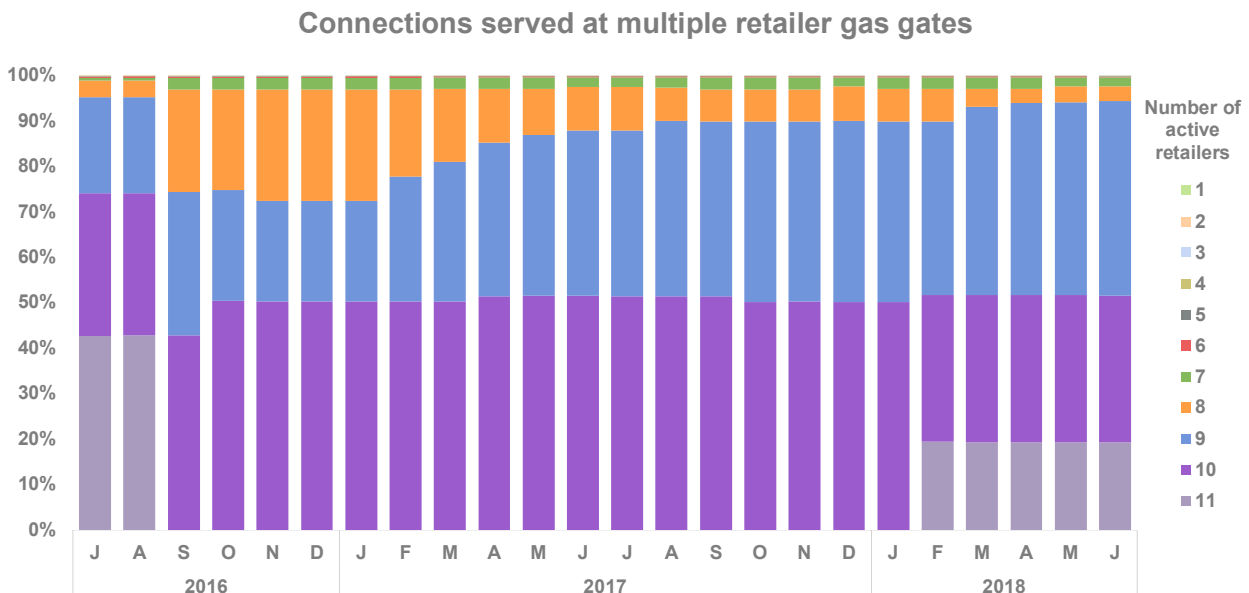
Chart 17: Gas gates by number of retailers



∂ The entry of Scholarship NZ to the retail gas market means that there is one gas gate where 11 retailers trade: WST03610, which is part of Greater Auckland.

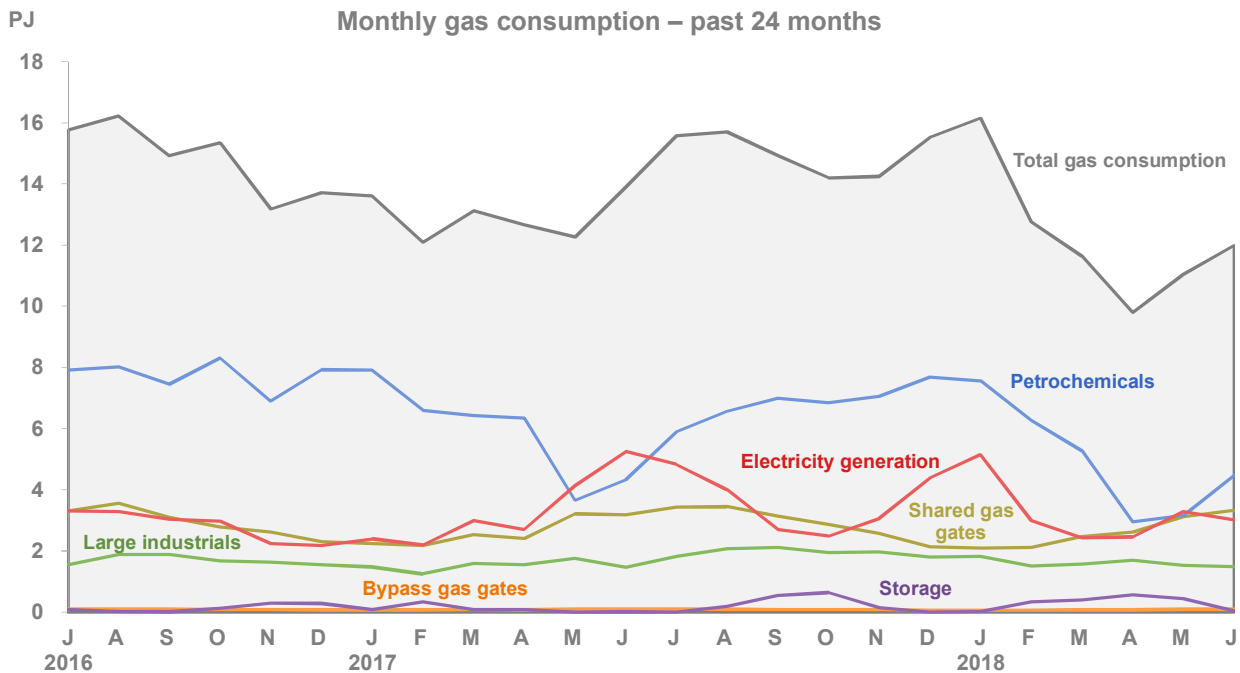
∂ Most of the single-retailer gates are gates that are dedicated to a single customer. The five Nova bypass gates, which serve commercial and residential consumers, are also single retailer. In addition, there are a few gates with a small number of ICPs that happen to have the same retailer.

Chart 18: Connections served by multiple retailers



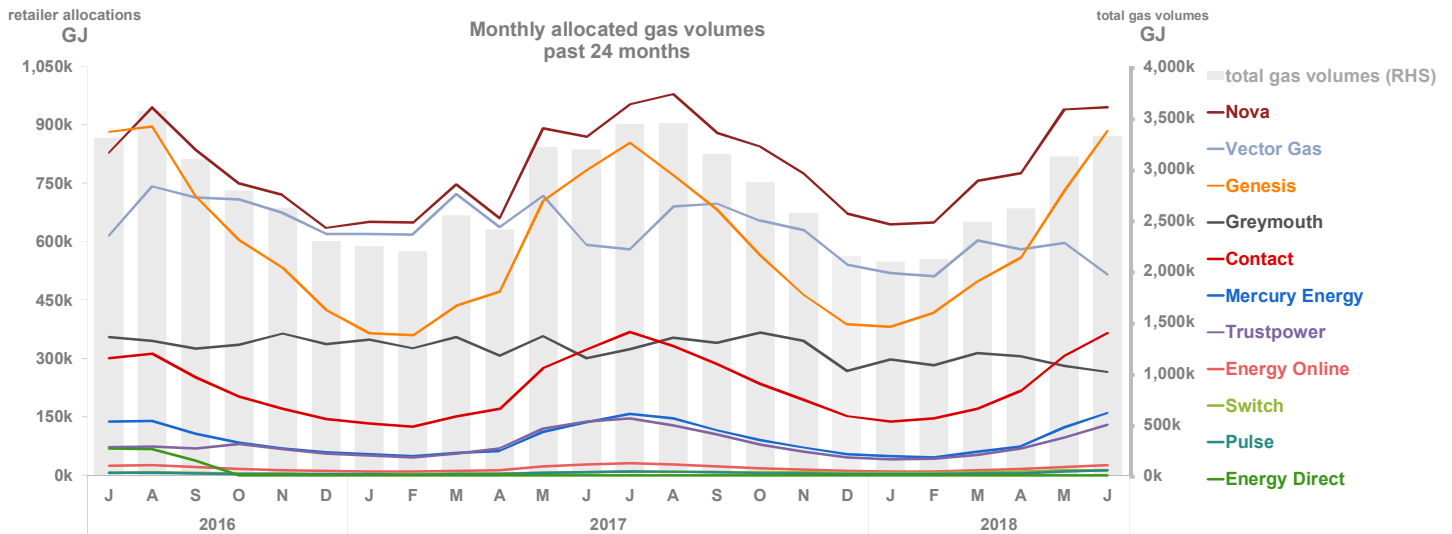
∂ Over 99% of gas consumers are connected to a gate where seven or more retailers trade.

Chart 19: Total gas volumes



- ∂ Two data series stand out for their movements over the past two years: petrochemicals and electricity generation.
- ∂ Petrochemical demand for gas dipped in May 2017 due to planned maintenance at Methanex on its Motunui-1 plant. Volumes have also been down since April 2018 due the scheduled maintenance of Motunui-2 as well as unscheduled delivery constraints at Pohokura.
- ∂ Gas demand for thermal generation peaked in winter 2017 and again at the end of the calendar year, when hydro inflows were low.
- ∂ Note that these data reflect only the gas delivered through the Maui and First Gas transmission pipelines. Gas volumes flowing through private non-open access pipelines, such as to Methanex, are not included.

Chart 20: Allocated gas volumes



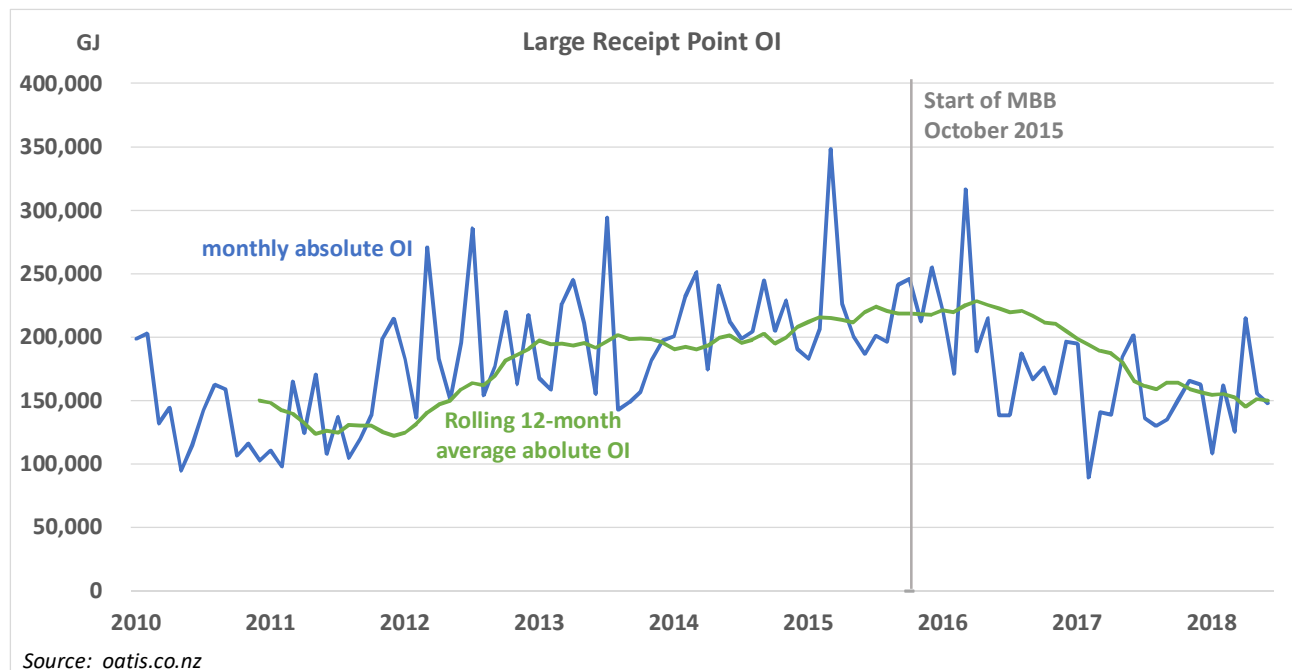
- ∂ Allocated volumes for Scholarship NZ are not large enough to be seen on this chart.
- ∂ The data are from a mix of allocation stages: Final through May 2017; Interim for June 2017 through February 2018; and Initial for March through June 2018. Note that the initial allocation data are those initially produced by the allocation agent, not the D+1 allocations that were used to replace the initial allocations.

Pipeline balance

Chart 21: Balancing gas volumes (no longer tracked since June 2017)

Gas Industry Co no longer tracks balancing gas volumes in this report, as changes to pipeline operations and the transition to market-based balancing (MBB) in October 2015 mean that secondary balancing volumes are no longer relevant as a performance measure. Instead, this report focusses on primary balancing in the following two charts.

Chart 22: Receipt point operational imbalance (OI)



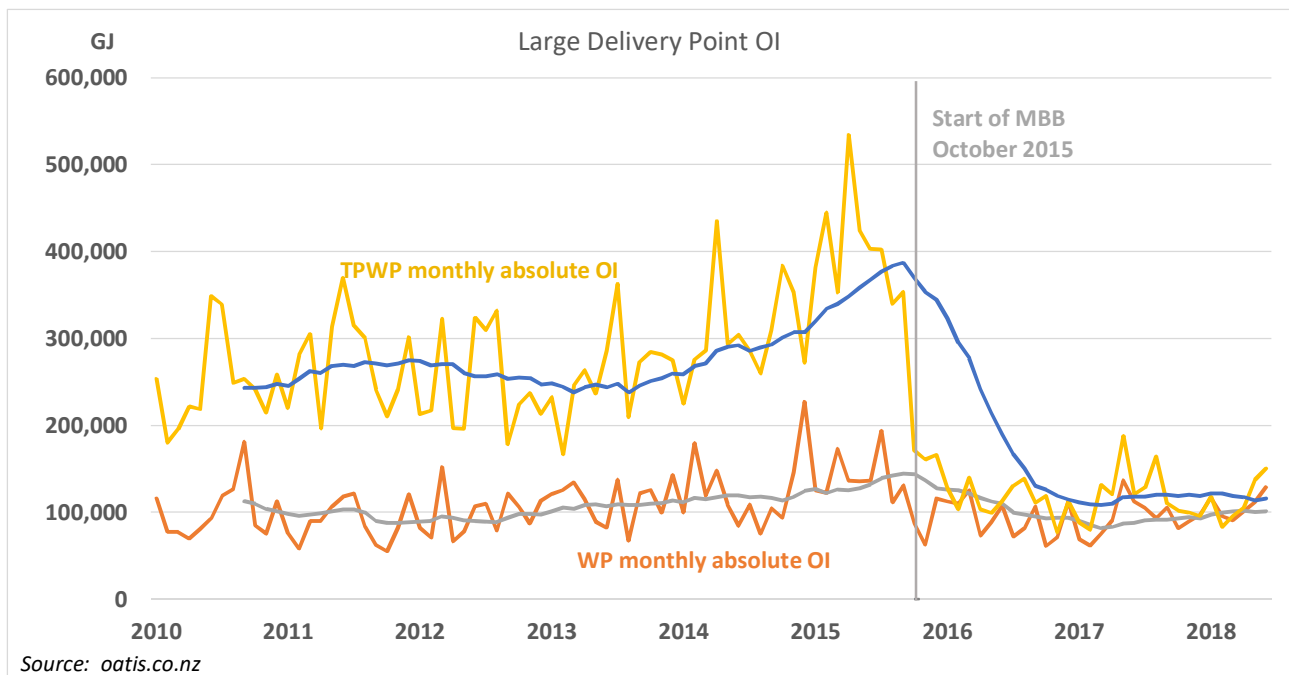
One of the expectations of MBB was that it would improve primary balancing; that is, that pipeline users would strive to match their actual gas flows with the quantities of gas that they scheduled. For welded parties on the Maui pipeline, the daily difference between the two quantities is termed operational imbalance (OI).

The chart above was constructed by calculating the absolute value of OI on a daily basis for each large receipt welded point on the Maui Pipeline (with the exception of Frankley Road). These values were then summed by month and plotted as the blue data series above. The data plotted in green represent the rolling average of the previous 12 months of monthly OI data.

As observed in Gas Industry Co's *Review of Market-Based Balancing*,³ dated November 2016, management of the receipt welded points changed very little immediately after the introduction of MBB. More recent data do show a downward trend in OI, commencing about June 2016.

³ Available at <http://www.gasindustry.co.nz/dmsdocument/5420>

Chart 23: Delivery point operational imbalance (OI)



This chart shows the OI at large delivery welded points on the Maui pipeline: the yellow line shows data from the transmission pipeline welded points (TPWPs) Pokuru and Rotowaro; the orange line shows the Bertrand Road, Faull Road, Ngatimaru Road, Mokau Compressor Station, and Huntly Power Station delivery points. The Frankley Road bi-directional point is again excluded from this analysis.

Unlike the previous chart, this chart does show a marked difference in OI from October 2015, the start of MBB, particularly in the TPWP OI. In *Review of Market-Based Balancing*, Gas Industry Co considered that there were two likely causes of these changes: the incentive provided by mandatory daily cash-outs and the improved information available as a result of D+1 allocations and notifications of cash-out shares, which probably increased shippers' ability to manage their daily positions.

Critical contingency management performance measures

There were no critical contingencies during the quarter.

Potential critical contingency

On 10 April, the critical contingency operator (CCO) notified stakeholders of a potential critical contingency. A severe storm had cut power supplies to Oaonui production station, causing an unplanned outage of the facility that processes gas from the Maui field. At the time, the Kupe gas field was also experiencing an outage. The falling pressure in the transmission pipelines meant that the pressure threshold at Kapuni Gas Treatment Plant was at risk of being breached.

In response to the potential critical contingency, a number of large gas users voluntarily minimised their gas usage. In particular, Methanex brought forward the maintenance shutdown of its Motunui-2 plant; Genesis Energy scaled back its gas usage at Huntly; and other users also reduced their demand. Collectively, these actions helped the pipeline to regain balance and avoid the need for formal demand curtailment.

Annual industry exercise

The CCO conducted its annual industry exercise, named Exercise Paparua, on 9 May. The exercise simulated a major landslide on the Maui pipeline in north Taranaki, requiring the pipeline to be isolated for 7 -14 days while repairs were carried out. In order to conserve linepack and pressure in the transmission system, the CCO issued curtailment instructions affecting consumers in Bands 1 to 6.

The exercise provided an opportunity for parties to practice their responses to a critical contingency event, thereby enhancing their knowledge and competency for responding to an actual event. The exercise successfully tested the steps and information flows associated with a critical contingency, such as declaration, demand curtailment, public information statements, retailer media appeals and consumer compliance updates.

The CCO’s exercise report concludes that:

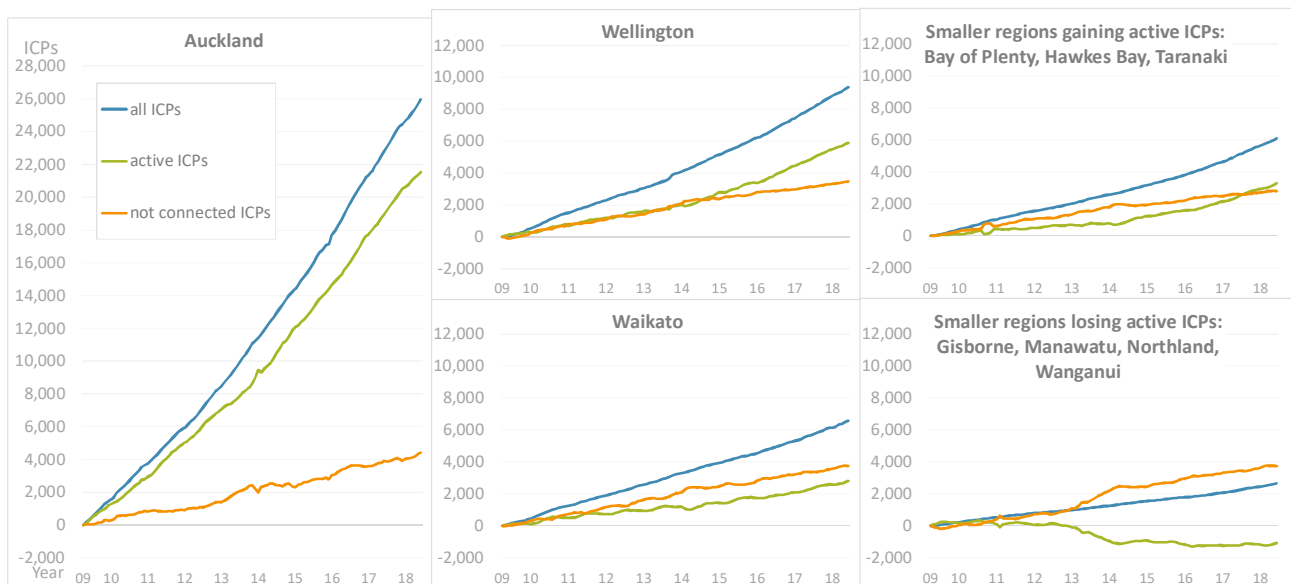
- ∂ First Gas’s critical contingency management plan (CCMP) substantially complies with regulation 25 and is effective in achieving the purpose of the regulations; and
- ∂ The CCMP substantially contains the contact details required by regulation 25 and that they are current; and
- ∂ The exercise provided limited evidence that the emergency contact details maintained by retailers (as required by regulation 43) are current.

This report makes recommendations to improve the efficiency of procedures and to improve the level of confidence that the emergency contact details maintained by retailers are current.

The CCO and First Gas, as the transmission system owner, conclude from this exercise that the industry remains prepared to respond to an actual critical contingency.

Distributor and meter owner performance measures

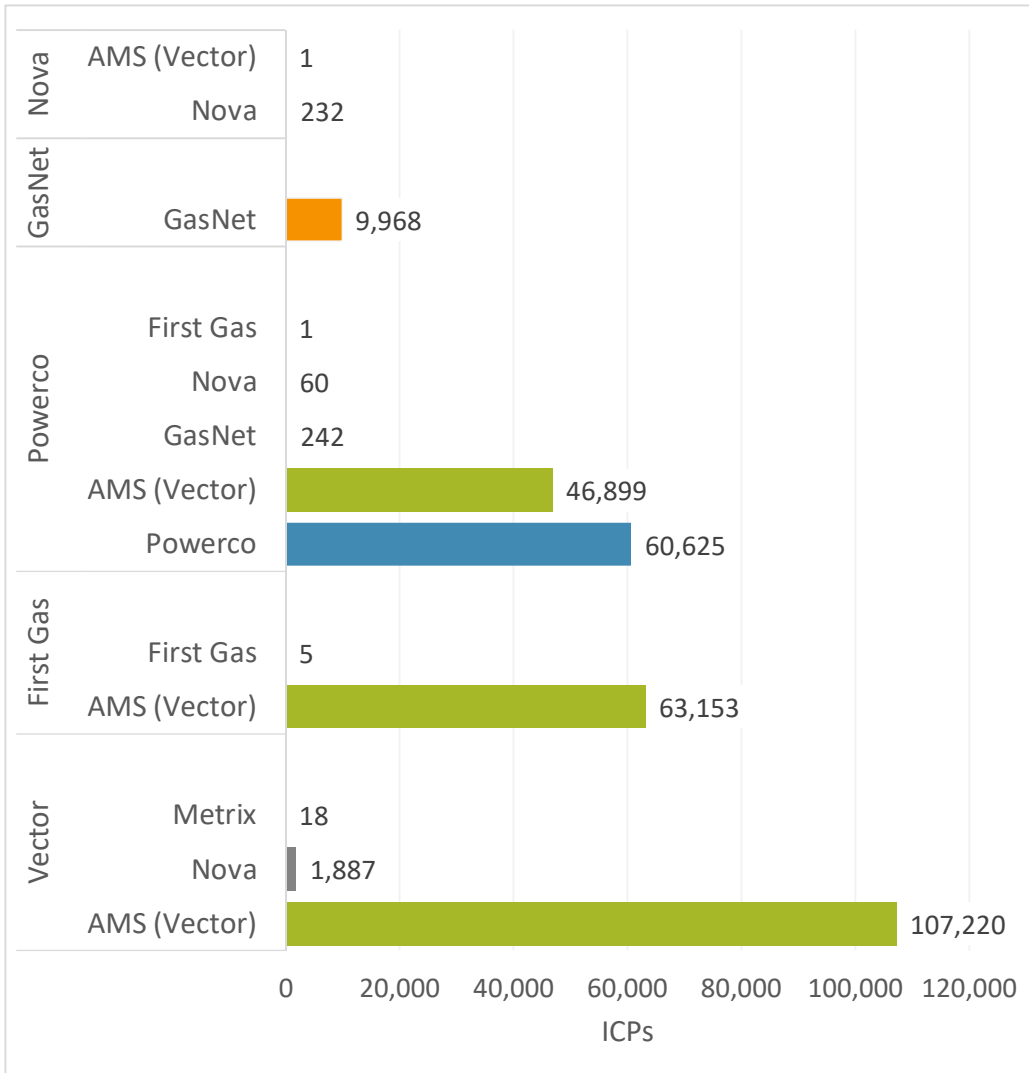
Chart 24: Regional increases in ICP numbers since 2009



This series of charts shows regional changes in ICP numbers. The blue data series shows the cumulative increase in total ICPs since the start of the gas registry in 2009. The green data series shows the cumulative increase in active ICPs – ICPs that have a status of either active-contracted (ACTC) or active-vacant (ACTV). The orange data series is the difference between the two and shows the cumulative increase in ICPs that are not connected and inactive, either because there is no longer a gas consumer at that site or because the site was never connected to a consumer in the first place.

The five charts all use a similar scale, so that the data can be compared between regions. The largest increase in ICPs has been experienced in Auckland, the region with the largest number of gas consumers. This region has also experienced a relatively low rate of disconnections. Wellington, the second largest region, has had nearly the same number of disconnections as Auckland, but only about one-fourth the number of new active ICPs in the past eight years. In Waikato, the third largest region, disconnections have outnumbered the increase in active ICPs by one-third. In the smaller regions of Bay of Plenty, Hawke's Bay, and Taranaki, the sum of new active ICPs is approximately equal to the sum of new disconnections. The regions of Gisborne, Manawatu, Northland, and Wanganui have all experienced a net decrease in active ICPs, despite the creation of about 2,700 new ICPs in those regions.

Chart 25: Meter ownership by distribution system



This chart shows the number of active ICPs (with a status of either active-contracted (ACTC) or active-vacant (ACTV) in the gas registry) by meter owner within each distribution network. While there are a number of metering providers in the gas market, the chart shows that, in most distribution networks, there is a dominant provider.

Natural gas trades on emsTradepoint

emsTradepoint is an online platform established in 2013 that enables the anonymous trading of natural gas. It also provides a clearing and settlement service for gas trades that are made off the market. Since its inception, annual volumes of gas traded on emsTradepoint have increased more than tenfold.

Another feature of emsTradepoint is that it provides a mechanism for price discovery. Monthly volume-weighted average prices on emsTradepoint have ranged from about \$3.60 to \$7.10 per GJ since October 2013.

The charts below show gas volumes conducted on emsTradepoint – both traded volumes and off-market trades – as well as monthly average, maximum, and minimum prices.

Chart 26: Monthly trade volumes and prices on emsTradepoint

