Gas Downstream Reconciliation Performance Audit Final Report

For

Nova Energy Limited and MegaTEL

Prepared by

Bernie Cross: Crosshaven Consulting

Date of Audit: 13 & 15 November 2023

Date Audit Report Complete: 11 February 2024

Executive Summary

This Performance Audit was conducted at the request of the Gas Industry Company (GIC) in accordance with Rule 65 of the Gas (Downstream Reconciliation) Rules 2008 effective from 14 September 2015. The purpose of this audit is to assess the systems, processes and performance of two participants codes: Nova Energy (GNVG) and MegaTEL (MEGA).

MegaTEL is owned by Nova Energy and many of their functions are performed by Nova Energy. MegaTEL is responsible for customer liaison and invoicing and they also manage switching and registry updates.

Nova Energy holds the ICP information within its Orion system and completes all reconciliation activities on MegaTEL's behalf. Billing information is generated within Orion and provided to MegaTEL who generate the physical invoices. MegaTEL data and submissions are subject to the same data validation processes as other Nova Energy non-TOU data.

The audit was conducted in accordance with terms of reference prepared by the GIC, and in accordance with the "Guideline note for rules 65 to 75: the commissioning and carrying out of performance audits and event audits, V3.0" (http://www.gasindustry.co.nz/dmsdocument/2858). which was published by GIC in June 2013.

This three year audit period has been challenging for Nova Energy and MegaTEL as well as the industry in general due to the Covid 19 pandemic and also extreme weather events impacting work practices & resourcing, meter read attainment, and customers consumption patterns.

These challenges are evident in the levels of exceptions identified and timeliness of the corrections measured across the audit period. Nova Energy is actively working to transition functions between teams in order to prioritise and focus on these backlogs of exceptions.

Nova Energy has an extensive suite of operational exception reporting however during the audit it was found that the selection criteria for some reports excluded MegaTEL ICPs resulting in further delays in identifying and resolving exceptions. There is an opportunity to implement trend reporting around the exception types and volumes to support monitoring of the respective operational team's workloads, identify training opportunities to users where initial set up errors occur and refine processes to reduce exception volumes where possible.

The overall submission accuracy remained at consistent levels to the previous audit period.

The summary of report findings in the table below shows that Nova Energy's and MegaTEL's control environment is 'effective' for nine of the areas, 'acceptable' for three areas and 'needs improvement for seven areas evaluated.

Eight of the 18 areas evaluated were found to be compliant. 20 breach allegations are made in relation to:

- Incorrect ICP and meter set up information.
- Meter read attainment for allocation group 4 ICPs.
- Some corrections not occurred outside revision window.
- Incorrect gas conversion for Non TOU ICPs.
- TOU estimation methodology.
- Initial GAS040 submissions which were not within ±10% or < 200 GJ of the final submission.
- GAS070 (as billed) report accuracy.

27 recommendations were made to improve future compliance, mostly focussed on monitoring, validation and correction of Orion data and improved monitoring of TOU data and estimation processes.

The recommendations are listed in **section 6**, and the relevant report sections.

Summary of Report Findings

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
Transmission methodology and audit trails	1.6	Effective	Compliant	Effective transmission and audit trail processes are in place.
ICP set up information	2.1	Acceptable	Not compliant	The majority of ICP information checked in this section was accurate, but there were some errors in altitudes. Exception reporting was not consistently monitored during audit period. One error relating to Nova Energy ICP (0001026382PG8D5) resulted in an altitude factor which was over the maximum permissible error in NZS 5259:2015. Two MegaTEL ICPs were identified with a difference in altitude value recorded between Orion and the registry had an incorrect altitude recorded in Orion. One error relating to MegaTEL ICP (0001000879NG56D) resulted in an altitude factor which was over the maximum permissible error in NZS 5259:2015
Metering set up information	2.2	Needs Improvement	Not compliant	The majority of metering information checked in this section was accurate, but there were some errors in meter & network pressures, meter serial numbers and digits. Exception reporting was not consistently monitored during audit period. 11 Nova Energy ICPs with meter pressure differences had an incorrect meter pressure recorded in Orion and seven were corrected during the audit. Five of the differences were over the maximum permissible error in NZS 5259:2015. For two ICPs the fieldwork paperwork stated that the as found meter pressure did not match the registry meter pressure value and was found to be outside

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
				the maximin permissible errors (± 0.9%) set out in NZS5259:2015. In both cases the meter pressure correction was only applied from the date of the meter change and no investigation was undertaken to determine if the previous meter set up was correct. 15 MegaTEL ICPs with meter pressure differences had an incorrect meter pressure recorded in. 11 of the differences were over the maximum permissible error in NZS 5259:2015. Five recommendations made to improve process effectiveness. • Nova Energy - As part of the meter set up correction process ensure there is a feedback loop to the original user who made the error to ensure users are aware of the need to check that the meter attributes are correctly applied in the initial meter set up. This will reduce the ongoing volume of required remedial meter set up corrections. • Nova Energy - Work with field service agents to ensure that in all cases where the as found meter pressure does not match the registry meter pressure that these scenarios are escalated so that Nova Energy can investigate and apply any required corrections for the prior periods. • Nova Energy - Ensure the meter serial number report is actively monitored and exceptions actioned in a timely manner to ensure the billing, switching and submission processes are not impacted. • Nova Energy - Implement process to regularly compare meter equipment owner records of the corrector function to Orion's register content code for the ICP to ensure alignment and correct application of gas factors. • MegaTEL - As part of the meter set up correction process ensure there is a feedback loop to the original user who made the error to ensure users are aware of the need to check that the meter attributes are

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
				correctly applied in the initial meter set up. This will reduce the ongoing volume of required remedial meter set up corrections
Billing factors	2.3	Needs improvement	Not compliant	Only 22% of Nova Energy ICPs and 9% of MegaTEL ICPs currently have correct network pressure values in Orion. No monitoring in place to identify new set ups with incorrect network pressures applied. 12 Nova Energy ICPs were identified as having temperature factor values outside the maximum permissible error (± 0.9%) due to the network pressure in Orion being recorded as meter pressure. Five recommendations made to improve process effectiveness. • Nova Energy - Review meter set up process and exception monitoring for Orion to ensure the correct network pressure is applied for all new meter set ups. • Nova Energy - To reduce the impact of incorrect Joule-Thomson effect calculations on industry UFG investigate the effort to implement network pressure corrections in the Orion system for all Allocation Group 4 ICPs. • Nova Energy - Review all current exception reporting to ensure any non TOU ICPs classified as Industrial are included in all exception reporting. • Nova Energy - Working with the meter owner for ICP 0000026443GNCC4, determine whether the current GMS configuration operating at network pressure (210kPa) meets NZS5259:2015 maximum permissible errors requirements.

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
				• MegaTEL - To reduce the impact of incorrect Joule-Thomson effect calculations on industry UFG investigate the effort to implement network pressure corrections in the Orion system for all Allocation Group 4 ICPs.
Archiving of reading data	3.1	Effective	Compliant	Effective practices are in place for archiving of register reading data.
Meter interrogation requirements	3.2	Needs Improvement	Not compliant	The allocation group monitoring report has not been actively worked by Nova Energy since March 2022 due to personnel changes and resource challenges which is the reason for the higher than expected ICP counts identified as part of this audit. 443 Nova Energy ICPs with annualised consumption over 250 GJ incorrectly assigned to Allocation group 6. 189 Nova Energy ICPs with annualised consumption under 250 GJ incorrectly assigned to Allocation group 4. Nova Energy allocation group 4 forward estimate volumes present for seven gas gates for final revision relating to April 2022, six gas gates relating to May 2022 and two gas gates for June 2022 due to ICPs not being consistently read monthly. No permanent estimates were applied resulting in potential over / under submission once an actual read is obtained for the affected ICPs.

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
				Eight MegaTEL ICPs with annualised consumption over 250 GJ incorrectly assigned to Allocation group 6. Four MegaTEL ICPs with annualised consumption under 250 GJ incorrectly assigned to Allocation group 4. Four recommendations made to improve process effectiveness. • Nova Energy - Review read attainment process for allocation group 4 ICPs to ensure any meter read attainment issues are escalated and resolved as soon as possible. • Nova Energy - Review outstanding allocation group 4 forward estimate volumes for interim revisions as a measure of the reading performance for allocation group 4 ICPs and ensure the read issues impacting these ICPs are resolved prior to final revisions. • Implement reporting and process to review TOU metered ICPs where the annualised consumption falls materially below 10TJ with a view to downgrading the GMS to standard metering. • Nova Energy - Investigate requesting an exemption from Rule 29.2.1 For any ICP where the annualised consumption is materially below 10 TJ and the GMS is operating at network pressure requiring a corrector / logger to be fitted.

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
Meter reading requirements	3.3	Acceptable	Not compliant	Nova Energy's meter reading processes for allocation group 6 ICPs appear robust and reduce the reliance on forward estimates to ensure submission accuracy. Some allocation group 4 ICPs have not been successfully read monthly. Analysis of the allocation group 4 submission volumes relating to final GAS040 revisions for April (36.058 GJ), May (30.748 GJ) and June 2022(4.943 GJ) identified that forward estimate volumes were present. Nova Energy does not have a separate no read escalation process for allocation group 4 ICPs resulting in the allocation group 6 process being applied to try and obtain one read each 12 months instead of escalating the access issue after one missed read. One recommendation made to improve process effectiveness. • Ensure all reported gas meter condition codes are investigated in a timely manner to support the read attainment processes.
Non-TOU validation	3.4	Effective	Compliant	A robust validation process is in place before and after invoicing.

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
Non-TOU error correction	3.5	Needs Improvement	Not compliant	Monitoring of potential stopped meters stopped during audit period resulting in a backlog of 337 ICPs to investigate. Effective correction processes are in place once the required correction is identified. The volume correction for ICP 1001290219QT502 has not been applied – Nova Energy have requested updated paperwork confirming the meter pressure change post meter change. Two recommendations made to improve process effectiveness. • Nova Energy - Include Allocation group and customer type fields to the 'All Active Gas Meters with No Consumption' report to enable potential higher volume ICPs to be prioritised for investigation. • Nova Energy - Prioritise business ICPs for monitoring and investigation of potential gas stopped meters.
TOU validation	3.6	Effective	Compliant	Robust TOU validation processes are in place. One recommendation made to improve process effectiveness. • Work with the TOU data collectors to implement a notification process for time corrections greater than ± 300 seconds enable Nova Energy to review the TOU data and determine if a data correction is also required

Energy consumption calculation	4	Needs Improvement	Not compliant	The process to convert consumption to energy for TOU ICPs is non compliant where compressibility factor is required to be applied as the calculation uses reference meter pressures stored against the meter attribute as opposed to using the measured hourly or daily meter pressures.
				• For Nova Energy ICP 0008000038NG8EF, the incorrect register content (TGS instead of TG) was applied in Orion since April 2022. The impact of this error was assessed to be 1.14% or 4.3 TJ per annum.
				• For three Nova Energy ICPs, the difference between the reference meter pressure used in the daily compressibility factor calculation and the daily measured meter pressure resulted in the compressibility factor being outside the ±0.2% maximum permissible error set out in NZS 5259:2015.
				  • 0000026779GNAAE - 0.29% 37.5 GJ pa.
				  • 0000073197NAB99 – 0.28% 64.4 GJ pa.
				  • 1002112585QTDE3 – 0.051% 54.1 GJ pa.
				• For Nova Energy ICP 0078000094PG227, for two days in August 2022 the difference between the reference meter pressure used in the daily compressibility factor calculation and the daily measured meter pressure resulted in the compressibility factor being outside the ±0.2% maximum permissible error set out in NZS 5259:2015. The impact to the submission volumes for these two days was assessed to be 0.3 GJ.
				The process to convert consumption to energy for non-TOU ICPs within Orion is that the system applies monthly conversion factors to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods. This does not ensure that the conversion factors that applied at the time the gas was consumed are used, and can result conversion factors outside permissible errors, and create differences between the total allocated consumption for a read to read period, and the total consumption for the read to read period.

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
				• Nova Energy ICPs 0000869021QTA8A (read period 16/11-12/12/2022) and 0001445641QT546 (21/09-19/12/2022) had a temperature factor difference outside the maximum permissible error for NZS 5259:2015. • Nova Energy ICP 0000072523NA580 had a CV difference outside the maximum permissible error for NZS 5259:2015 for its 18/10-16/11/2022 read period. • MegaTEL ICPs 1002040310QTD1 (read period 13/8-08/11/2022), 1001262671QT23B (read period 19/11-20.12/2022), 0009000259NG7E4 (read period 07/09-02/11/2022) had temperature factor differences outside the maximum permissible error for NZS 5259:2015.
TOU estimation and correction	5.1	Needs Improvement	Not compliant	Nova Energy's TOU permanent estimation process is not consistent with schedule 1 of the Gas Downstream Regulations. Two recommendations made to improve process effectiveness. • Implement process to confirm missing periods of TOU data with the data collectors to ensure all available data is provided to Nova Energy. • Once a TOU data gap has been confirmed obtain corrected / uncorrected register reads either side of the data gap from the data collector to enable an accurate calculation of the volume of gas consumed during the affected period.
Provision of retailer consumption information	5.2	Acceptable	Not compliant	The process for preparing consumption information files has some minor non conformance. Some ICPs were identified in the Initial GAS040 submission exception reporting as missing and one ICP (0001616881QTDEE) remains unresolved from the Interim submission and are not included in the GAS040 Submission.

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
				For four Nova Energy ICPs overlapping or gaps in the ICP level data records where identified. • The records for ICP 0001015096NGFC5 has overlapping records relating to the current meter ID of 05E880659 (1 to 31 July 2023) but also for a Meter ID of 600657872 (1 to 31 July 2023) which the registry has recorded against ICP 1001299067NG3A5. 4.805 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023. • The records for ICP 0001793611QT86B has overlapping records relating to the current meter ID of 22EG0710 (1 to 31 July 2023) but also for a Meter ID of 834100290 (1 to 31 July 2023) which the registry has recorded as being removed on 1 February 2023. 4.805 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023. • The records for ICP 0004004320NG2E8 has overlapping records relating to the current meter ID of 99EW3566 (1 to 31 July 2023) but also for a Meter ID of 600587945 (3 to 31 July 2023) which the registry has recorded against ICP 0004004323NGE28. 4.495 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023. • The records for ICP 0003026278NG25D has a gap in records for July 2023. One record spans 1 to 4 July 2023 and a second record is for 31 July 2023 only. The period 5 July to 30 July 2023 is missing from submission and there are no switching or status events that could explain this gap in submission data. For Nova Energy ICP 0001409424QTDEB the historic estimate calculation was applied across a time slice one day less than the correct period between the

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
				switch date and the first actual read date due to an incorrect meter install date being applied in Orion. Actual TOU data for Nova Energy ICP 0078000094PG227 (gas gate KAP12901) for August 2022 was reviewed as the UFG for this month significantly deviated from historical trends. The TOU data for this ICP showed unexpected volumes for two days (28 & 29 August 2022) which were four times the expected volumes for this ICP and also exceeded the gas gate volumes for these days (approximately 800 GJ over submission). ICP 0009000969NG312 had installed an additional gas boiler at this ICP and the additional gas load has now exceeded the meters measurement capacity when the ICP was running at full load resulting in some gas volumes not being measured. There was a delay in updating the registry for seven Nova Energy new connections and the consumption information not provided until the final revision. For five MegaTEL ICPs overlapping of the ICP level data records where identified. • The records for ICP 0000147781QT387 has overlapping records relating to meter ID of 895294 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 61.38 GJ of default consumption is incorrectly recorded against this meter ID for July 2023. • The records for ICP 0000601981QTED2 has overlapping records relating to meter ID of 151238 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023.

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
				• The records for ICP 1001261664QT739 has overlapping records relating to meter ID of 02C589009 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023. • The records for ICP 1001270891NG3ED has overlapping records relating to meter ID of 15EG0006 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023. • The records for ICP 0000313861QTB1E has overlapping records relating to the current meter ID of 05E805871 (1 to 31 July 2023) but also for a Meter ID of 05E805871X (1 to 31 July 2023). 0.155 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023. There was a delay in updating the registry for eight MegaTEL new connections and the consumption information not provided until the final revision. Six recommendations made to improve process effectiveness. • Nova Energy - Investigate implementing an additional check for overlapping consumption records in the ICP level GAS040 consumption information. • Nova Energy - Investigate implementing an additional check for gaps in consumption records compared to the Registry Retailer, Status and Metering events in the ICP level GAS040 consumption information. • Nova Energy - Include review of the daily TOU data whenever an ICP is identified in the submission checks as being outside the expected

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
				volume thresholds compared to historical consumption patterns or previous submissions. • Nova Energy - Investigate validating daily consumption volumes against contracted MDQ values as part of submission checks to identify daily TOU data outliers for investigation prior to submission. • Nova Energy - Investigate implementing post submission UFG monitoring of TOU gas gates to ensure any potential TOU data corruption is identified and resolved in a timely manner. • Nova Energy - Work with the TOU gas meter owners to implement a validation check of TOU meters design maximum flow rate (Q_{max}) to the measured hourly flow rate to identify meters that may be close to or are exceeding the meter design maximum flow rate

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
Initial submission accuracy	5.3	Effective	Not compliant	Nova Energy uses historic seasonal adjustment daily shape values to improve the accuracy of forward estimates. Although compliance has not been achieved, the process is robust. Nova Energy did not meet the requirement for initial submissions to be within ±10% or < 200 GJ of the final submission for each gas gate on 373 occasions for submission periods between February 2020 and July 2022. For three submission periods (May 2022 – 25.18%, June 2022 – 26.85% and July 2022 – 17.05%) the overall submission volumes have exceeded the ± 10% threshold. MegaTEL did not meet the requirement for initial submissions to be within ±10% or < 200 GJ of the final submission for each gas gate on eight occasions for submission periods between February 2020 and July 2022. For four submission periods (January 2022 – 14.12%, May 2022 – 34.26%, June 2022 – 51.98% and July 2022 – 29.20%) the overall submission volumes have exceeded the ± 10% threshold.
Forward estimates	5.4	Effective	Compliant	Nova Energy uses historic seasonal adjustment daily shape values to improve the accuracy of forward estimates. One recommendation made to improve process effectiveness. Investigate the use of permanent estimates in the read attainment process to ensure all consumption volumes are included in the submission process once a read is finally obtained for ICP with read attainment issues.

Issue	Section	Control Rating (Refer to Appendix 1 for definitions)	Compliance Rating	Comments
Historic estimates	5.5	Effective	Compliant	Compliance was achieved for all of the scenarios provided during the audit. Nova Energy applies monthly conversion factors to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods. This does not ensure that the conversion factors that applied at the time the gas was consumed are used, and can result conversion factors outside permissible errors, and create differences between the total allocated consumption for a read to read period, and the total consumption for the read to read period.
Proportion of HE	5.6	Effective	Compliant	Reporting has been provided as required.
Billed vs consumption comparison	5.7	Needs Improvement	Not compliant	Prior period invoice reversals are not reflected in the Nova Energy GAS070 as billed volumes resulting in an overreporting of as billed volumes when revised invoices are produced. The MegaTEL GAS070 report should reflect the quantities in GJ billed in the previous invoice month. Invoices are selected for inclusion based on the billing period, not the invoice date. In almost all cases, the bill period and invoice date are the same.
Gas Trading Notifications	5.8	Effective	Compliant	Processes are in place to ensure that trading notifications are issued where required.

Persons Involved in This Audit

Auditor:

Bernie Cross

Crosshaven Consulting Limited

Nova and MegaTEL personnel assisting in this audit were:

Title	Organisation
Energy Connections Manager	Nova Energy
Billing Services Manager	Nova Energy
Manager Metering Services	Nova Energy
Metering and New Connections Team member	Nova Energy
Metering and New Connections Team Leader	Nova Energy
Service Performance Manager	Nova Energy
Team Leader Reconciliation	Nova Energy
Energy Analyst	Nova Energy
Manager Industrial Gas Portfolio & Pricing	Nova Energy
Digital Operations Manager	MegaTEL
Operations Team Member	MegaTEL

Service providers assisting with processes within the audit scope:

Company	**Processes**
Meter Reading Services	Gathering and storing raw meter data
Wells Instrument & Electrical Services Ltd	Gathering and storing raw meter data and TOU downloads
Powerco	TOU downloads
Vector Metering	TOU downloads

Contents

1. Pre-Audit and Operational Infrastructure Information

1.1 Scope of Audit

This Performance Audit was conducted at the request of the Gas Industry Company (GIC) in accordance with Rule 65 of the Gas (Downstream Reconciliation) Rules 2008 effective from 14 September 2015. Rule 65 is inserted below:

65. Industry body to commission performance audits

65.1 The industry body must arrange at regular intervals performance audits of the allocation agent and allocation participants.

65.2 The purpose of a performance audit under this rule is to assess in relation to the allocation agent or an allocation participant, as the case may be, -

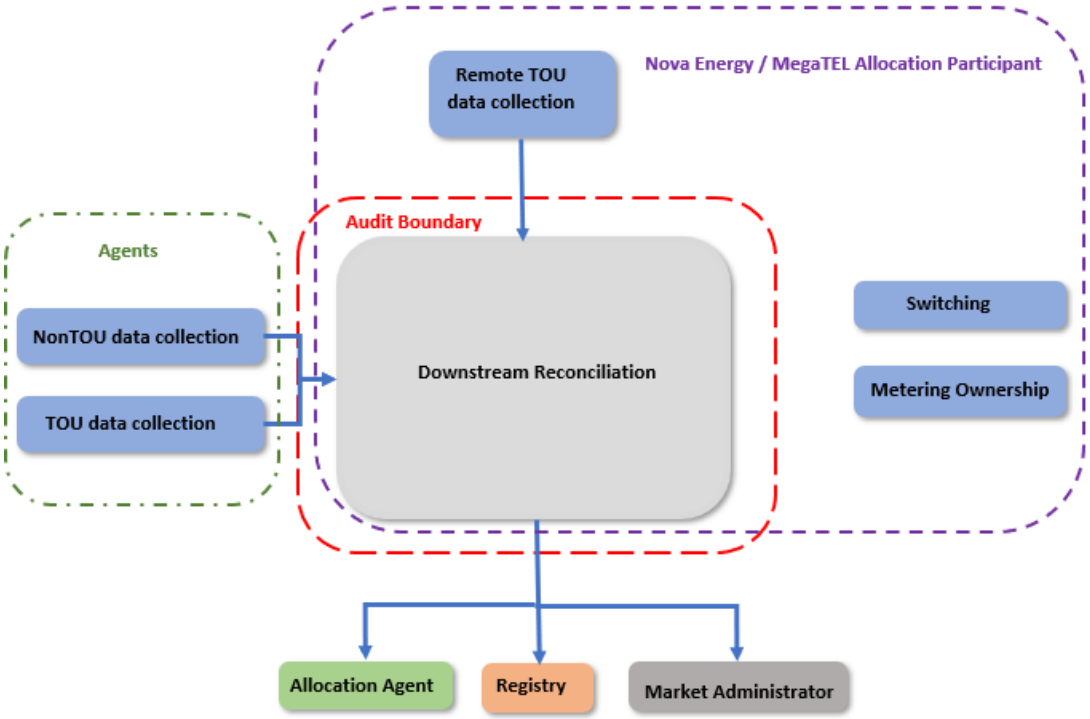
65.2.1 The performance of the allocation agent or that allocation participant in terms of compliance with these rules; and

65.2.2 The systems and processes of the allocation agent or that allocation participant that have been put in place to enable compliance with these rules.

The audit was conducted in accordance with terms of reference prepared by the GIC, and in accordance with the "Guideline note for rules 65 to 75 and 80: the commissioning and carrying out of performance audits and event audits, V3.0" which was published by GIC in June 2013.

The audit was completed by site visits to the Auckland office on November 13, 2023, and the Wellington office on November 15 2023, and via video conference on November 28 & 29 2023, and December 4 2023.

The scope of the audit includes "downstream reconciliation" only, as shown in the diagram below. Switching, metering ownership and data collection functions are not within the audit scope.



1.2 Audit Approach

As mentioned in **section 1.1** the purpose of this audit is to assess the performance of Nova Energy in terms of compliance with the rules, and the systems and processes that have been put in place to enable compliance with the rules.

This audit has examined the effectiveness of the controls Nova Energy has in place to achieve compliance, and where it has been considered appropriate, sampling has been undertaken to determine compliance.

Where sampling has occurred, this has been conducted using the Auditing Standard 506 (AS-506) which was published by the Institute of Chartered Accountants of New Zealand. I have used my professional judgement to determine the audit method and to select sample sizes, with an objective of ensuring that the results are statistically significant.[1]

Where calculations are performed by Nova Energy's systems, the algorithm has been checked by using one or two examples as a "sample". Multiple examples are not required because they will not introduce any different variables.

Where compliance is reliant on manual processes, manual data entry for example, the sample size has been increased to a magnitude that, in my judgement, ensures the result has statistical significance.

Where errors have been found or processes found not to be compliant the materiality of the error or non conformance has been evaluated.

1.3 General Compliance

The Market Administrator confirmed that no alleged breaches have been recorded for Nova between November 2020 and August 2023, when this audit was commenced.

1.3.1 Summary of Previous Audit

Nova Energy and MegaTEL provided a copy of their previous audits conducted in 2020 by Veritek Ltd. 14 breach allegations were made, and resolution of these matters is summarised in the table below:

Breach notice number	Participant Code	Breach Allegation	Rule	Section in this report	Resolution
2020-023	GNVG	For ICP 1000579992PG543 the altitude used to calculate the altitude factor matches the registry but does not match the actual altitude of the ICP. The difference resulted in the altitude factor applied being outside of the maximum permissible error under NZS 5259:2015	28.2	2.12	Further non-conformance was found during this audit.
2020-024	GNVG	TOU metering has not been installed within three months of becoming aware of actual or expected rolling consumption over 10,000 GJ per annum for the following ICPs: • 1001287625NG7A2 - in progress.	29.1	3.2	No further issues were identified.

[1] In statistics, a result is considered statistically significant if it is unlikely to have occurred by chance. (Wikipedia)

Breach notice number	Participant Code	Breach Allegation	Rule	Section in this report	Resolution
		• 0001788311QTA6F- in progress • 001152000QT0BD - in progress. • 1001290576QTA2E - awaiting approval. • 002320611QT6F6 - awaiting approval. • 001269290QT725 - awaiting approval. • 0000073238NAF5B - bypass network • 000071569NA754 - bypass network. • 000073568NA851 - bypass network. I note that in some cases there have been delays between Nova Energy requesting upgrades to TOU from meter owners, and the metering being installed.			
2020-025	GNVG	ICPs 0001406092QTBB7, 0001411878QTF10, 0008000037NG731, 0001033930NG351, and 0004206692NGE42 have TOU metering and consume more than 250 GJ pa but have allocation group 4 assigned. ICP 1000527270PG7C6 has TOU metering and consumes more than 250 GJ pa but has allocation group 6 assigned.	29.1	3.2	This issue is still existing.
2020-026	GNVG	When establishing continuous supply dates, the GAS080 report considered periods of supply by any of Nova Energy's participant codes rather than only the code the report was being generated for. The report was corrected during the audit, and due to the technical nature of the non conformance no alleged breach is raised. Where a gap in supply occurs but is less than a whole calendar month, the ICP is treated as if it has been continuously supplied.	26.2.1	3.3	No further issues were identified.
2020-027	GNVG	Exceptional circumstances not demonstrated for four ICPs not read in the 12 months ending February 2020.	29.4.3	3.3	No further issues were identified.

Breach notice number	Participant Code	Breach Allegation	Rule	Section in this report	Resolution
2020-028	GNVG	The following ICPs had incorrect pressure factors applied: • 0002000627NG33E (01/06/19- 26/06/19: applied pressure 35 kPa correct pressure 2.5 kPa) • 0002003184NGA03 (04/10/19- 08/10/19: applied pressure 35 kPa correct pressure 2.75 kPa) • 0002254911QT1AC (19/12/18- 12/05/19: applied pressure 2.5 kPa correct pressure 7 kPa) The differences resulted in the pressure factors being outside of the maximum permissible error under NZS 5259:2015	26.2.1 and 26.5.4	3.5	Further non-conformance was found during this audit
2020-029	GNVG	The registry was populated late for at least five new connections resulting in submission information not being provided for the initial allocation.	26.2.1 and 28.3	5.2	Further non-conformance was found during this audit
2020-030	GNVG	The initial submission accuracy did not meet the required accuracy percentage for some gas gates for the period January 2017 to January 2019.	37.2	5.3	Further non-conformance was found during this audit
2020-031	GNVG	Meter G418267X for ICP 0001730550PGB3E does not have a closing read entered on 02/05/2019, which resulted in forward estimate being calculated invalidly from 02/05/2019 onwards.	26.2	5.4	Further non-conformance was found during this audit

Breach notice number	Participant Code	Breach Allegation	Rule	Section in this report	Resolution
2020-032	GNVG	Nova Energy applies monthly conversion factors to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods. This does not ensure that the conversion factors that applied at the time the gas was consumed are used, and can result conversion factors outside permissible errors, and create differences between the total allocated consumption for a read to read period, and the total consumption for the read to read period. ICP 1001261127QT65E had a CV difference outside the maximum permissible error for NZS 5259:2015 for its 25/04-25/05/19 read period.	26.5.4	5.5	Further non-conformance was found during this audit
2020-057	MEGA	MegaTEL applies monthly conversion factors to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods. This does not ensure that the conversion factors that applied at the time the gas was consumed are used, and can result conversion factors outside permissible errors, and create differences between the total allocated consumption for a read to read period, and the total consumption for the read to read period.	35	5.5	Further non-conformance was found during this audit
2020-033	GNVG	The GAS070 report should reflect the quantities in GJ billed in the previous invoice month. Invoices are selected for inclusion based on the billing period, not the invoice date. In almost all cases, the bill period and invoice date are the same.	52.2.1	5.7	No further issues were identified.
2020-056	MEGA	The GAS070 report should reflect the quantities in GJ billed in the previous invoice month. Invoices are selected for inclusion based on the billing period, not the invoice date. In almost all cases, the bill period and invoice date are the same.	52.2.1	5.7	Further non-conformance was found during this audit

The table below shows the recommendations made during the previous audit and whether they have been adopted.

Section	Recommendation	Status
2.1.1	Identify any ICPs where the network pressure is less than the meter pressure to confirm whether both values are correct.	Adopted
2.1.2	Identify any ICPs where altitudes appear unusually high or low, relative to other ICPs at the gas gate. If review of topography data for the discrepancies confirms the altitude is likely to be inaccurate, it should be queried with the network and updated if necessary.	Not Adopted
2.2	Identify any ICPs where register content codes and non-TOU metering details are inconsistent, to confirm which values are correct.	Not Adopted
3.3	Ensure that all gaps in supply are identified by the GAS080 report and correctly reported. Currently, where a gap in supply occurs but is less than a whole calendar month, the ICP is treated as if it has been continuously supplied	Adopted
5.5	MegaTEL should apply the conversion factors for the read period, and then profile consumption between the reconciliation periods. This will ensure that the conversion factors that applied at the time the gas was consumed are used, and will increase consistency where read periods span more than one reconciliation period	Not Adopted

1.3.2 Breach Allegations

Nova Energy and MegaTEL have one alleged breach recorded by the Market Administrator between 1 November 2020 and 31 July 2023 excluding the 13 alleged breaches raised in relation to the 2020 performance audits. This is summarised as below:

Breach Allegation	Breach No.	Rule	Section in this report	Outcome
Alleged breaches raised by Allocation Agent				

Over-submission of TOU consumption information for notional gas gate MMU08001 for October 2021 due to incorrect application of a multiplier	2021-086	26.2	5.2	The Market Administrator did not raise any material issues.

13 alleged breaches were recorded in relation to the 2020 performance audits, and the outcomes are recorded in the table below.

Participant Code	Breach Allegation	Breach No.	Rule	Section in this report	Outcome
GNVG	For ICP 1000579992PG543 the altitude used to calculate the altitude factor matches the registry but does not match the actual altitude of the ICP. The difference resulted in the altitude factor applied being outside of the maximum permissible error under NZS 5259:2015	2020-023	28.2	2.12	The Market Administrator did not raise any material issues
GNVG	TOU metering has not been installed within three months of becoming aware of actual or expected rolling consumption over 10,000 GJ per annum for the following ICPs: • 1001287625NG7A2 - in progress. • 0001788311QTA6F- in progress • 001152000QT0BD - in progress. • 1001290576QTA2E - awaiting approval. • 002320611QT6F6 - awaiting approval. • 001269290QT725 - awaiting approval. • 0000073238NAF5B - bypass network • 000071569NA754 - bypass network. • 000073568NA851 - bypass network. I note that in some cases there have been delays between Nova Energy requesting upgrades to TOU from meter owners, and the metering being installed.	2020-024	29.1	3.2	Awaiting decision by Market Administrator

GNVG	ICPs 0001406092QTBB7, 0001411878QTF10, 0008000037NG731, 0001033930NG351, and 0004206692NGE42 have TOU metering and consume more than 250 GJ pa but have allocation group 4 assigned. ICP 1000527270PG7C6 has TOU metering and consumes more than 250 GJ pa but has allocation group 6 assigned.	2020-025	29.1	3.2	The Market Administrator did not raise any material issues.
GNVG	When establishing continuous supply dates, the GAS080 report considered periods of supply by any of Nova Energy's participant codes rather than only the code the report was being generated for. The report was corrected during the audit, and due to the technical nature of the non conformance no alleged breach is raised. Where a gap in supply occurs but is less than a whole calendar month, the ICP is treated as if it has been continuously supplied.	2020-026	26.2.1	3.3	The Market Administrator did not raise any material issues.
GNVG	Exceptional circumstances not demonstrated for four ICPs not read in the 12 months ending February 2020.	2020-027	29.4.3	3.3	The Market Administrator did not raise any material issues.
GNVG	The following ICPs had incorrect pressure factors applied: • 0002000627NG33E (01/06/19- 26/06/19: applied pressure 35 kPa correct pressure 2.5 kPa) • 0002003184NGA03 (04/10/19- 08/10/19: applied pressure 35 kPa correct pressure 2.75 kPa) • 0002254911QT1AC (19/12/18- 12/05/19: applied pressure 2.5 kPa correct pressure 7 kPa) The differences resulted in the pressure factors being outside of the maximum permissible error under NZS 5259:2015	2020-028	26.2.1 and 26.5.4	3.5	The Market Administrator did not raise any material issues.

GNVG	The registry was populated late for at least five new connections resulting in submission information not being provided for the initial allocation.	2020-029	26.2.1 and 28.3	5.2	The Market Administrator did not raise any material issues.
GNVG	The initial submission accuracy did not meet the required accuracy percentage for some gas gates for the period January 2017 to January 2019.	2020-030	5.5	GNVG	The Market Administrator did not raise any material issues.
GNVG	Meter G418267X for ICP 0001730550PGB3E does not have a closing read entered on 02/05/2019, which resulted in forward estimate being calculated invalidly from 02/05/2019 onwards.	2020-031	5.7	GNVG	The Market Administrator did not raise any material issues.
GNVG	Nova Energy applies monthly conversion factors to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods. This does not ensure that the conversion factors that applied at the time the gas was consumed are used, and can result conversion factors outside permissible errors, and create differences between the total allocated consumption for a read to read period, and the total consumption for the read to read period. ICP 1001261127QT65E had a CV difference outside the maximum permissible error for NZS 5259:2015 for its 25/04-25/05/19 read period.	2020-032	5.7	MEGA	Awaiting decision by Market Administrator
MEGA	MegaTEL applies monthly conversion factors to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods. This does not ensure that the conversion factors that applied at the time the gas was consumed are used, and can result conversion factors outside permissible errors, and create differences between the total allocated consumption for a read to read period, and the total consumption for the read to read period.	2020-057	35	3.5	The Market Administrator did not raise any material issues

GNVG	The GAS070 report should reflect the quantities in GJ billed in the previous invoice month. Invoices are selected for inclusion based on the billing period, not the invoice date. In almost all cases, the bill period and invoice date are the same.	2020-033	52.2.1	5.7	Awaiting decision by Market Administrator
MEGA	The GAS070 report should reflect the quantities in GJ billed in the previous invoice month. Invoices are selected for inclusion based on the billing period, not the invoice date. In almost all cases, the bill period and invoice date are the same.	2020-056	52.2.1	5.7	The Market Administrator did not raise any material issues

As noted in the Summary of Report Findings, this audit recorded non conformance in ten sections leading to 20 breach allegations, as shown in the table below.

Breach Allegation	Participant code	Rule	Section in this report
One error relating to ICP (0001026382PG8D5) resulted in an altitude factor which was over the maximum permissible error in NZS 5259:2015. Nova Energy gained this ICP from 21 January 2023 and has corrected the altitude value from 27 October 2023 to now align with the registry value.	GNVG	28.2	2.1.2
Two ICPs were identified with a difference in altitude value recorded between Orion and the registry had an incorrect altitude recorded in Orion. One error relating to ICP (0001000879NG56D) resulted in an altitude factor which was over the maximum permissible error in NZS 5259:2015. MegaTEL gained this ICP from 21 August 2023 and has corrected the altitude value from 27 October 2023 to now align with the registry value.	MEGA	28.2	2.1.2
11 ICPs with meter pressure differences had an incorrect meter pressure recorded in Orion and seven were corrected during the audit. Five of the differences were over the maximum permissible error in NZS 5259:2015. For two ICPs the fieldwork paperwork stated that the as found meter pressure did not match the registry meter pressure value and was found to be outside the maximin permissible errors (± 0.9%) set out in NZS5259:2015. In both cases the meter pressure correction was only applied from the date of the meter change and no investigation was undertaken to determine if the previous meter set up was correct.	GNVG	28.2	2.2
15 ICPs with meter pressure differences had an incorrect meter pressure recorded in. 11 of the differences were over the maximum permissible error in NZS 5259:2015.	MEGA	28.2	2.2

Breach Allegation	Participant code	Rule	Section in this report
12 ICPs were identified as having temperature factor values outside the maximum permissible error (± 0.9%) due to the network pressure in Orion being recorded as meter pressure.	GNVG	28.2	2.3.1
443 ICPs with annualised consumption over 250 GJ incorrectly assigned to Allocation group 6.	GNVG	29.2.2	3.2
189 ICPs with annualised consumption under 250 GJ incorrectly assigned to Allocation group 4.	GNVG	29.3	3.2
Eight ICPs with annualised consumption over 250 GJ incorrectly assigned to Allocation group 6.	MEGA	29.2.2	3.2
Four ICPs with annualised consumption under 250 GJ incorrectly assigned to Allocation group 4.	MEGA	29.3	3.2
Some allocation group 4 ICPs have not been successfully read monthly. Analysis of the allocation group 4 submission volumes relating to final GAS040 revisions for April (36.058 GJ), May (30.748 GJ) and June 2022(4.943 GJ) identified that forward estimate volumes were present. Nova Energy does not have a separate no read escalation process for allocation group 4 ICPs resulting in the allocation group 6 process being applied to try and obtain one read each 12 months instead of escalating the access issue after one missed read.	GNVG	29.4.2	3.3
The volume correction for ICP 1001290219QT502 has not been applied – Nova Energy have requested updated paperwork confirming the meter pressure change post meter change.	GNVG	26.2	3.5
For ICP 0008000038NG8EF, the incorrect register content (TGS instead of TG) was applied in Orion since April 2022. The impact of this error was assessed to be 1.14% or 4.3 TJ per annum. For three ICPs, the difference between the reference meter pressure used in the daily compressibility factor calculation and the daily measured meter pressure resulted in the compressibility factor being outside the ±0.2% maximum permissible error set out in NZS 5259:2015. • 0000026779GNAAE - 0.29% 37.5 GJ pa • 0000073197NAB99 – 0.28% 64.4 GJ pa • 1002112585QTDE3 – 0.051% 54.1 GJ pa For ICP 0078000094PG227, for two days in August 2022 the difference between the reference meter pressure used in the daily	GNVG	28.2	4

Breach Allegation	Participant code	Rule	Section in this report
compressibility factor calculation and the daily measured meter pressure resulted in the compressibility factor being outside the ±0.2% maximum permissible error set out in NZS 5259:2015. The impact to the submission volumes for these two days was assessed to be 0.3 GJ. Nova Energy applies monthly conversion factors to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods. This does not ensure that the conversion factors that applied at the time the gas was consumed are used, and can result conversion factors outside permissible errors, and create differences between the total allocated consumption for a read to read period, and the total consumption for the read to read period. • ICPs 0000869021QTA8A (read period 16/11-12/12/2022) and 0001445641QT546 (21/09-19/12/2022) had a temperature factor difference outside the maximum permissible error for NZS 5259:2015 • ICP 0000072523NA580 had a CV difference outside the maximum permissible error for NZS 5259:2015 for its 18/10-16/11/2022 read period			
Nova Energy applies monthly conversion factors to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods. This does not ensure that the conversion factors that applied at the time the gas was consumed are used, and can result conversion factors outside permissible errors, and create differences between the total allocated consumption for a read to read period, and the total consumption for the read to read period. • ICPs 1002040310QTD15 (read period 13/8-08/11/2022), 1001262671QT23B (read period 19/11-20.12/2022) and 0009000259NG7E4 (read period 07/09-02/11/2022) had temperature factor differences outside the maximum permissible error for NZS 5259:2015	MEGA	28.2	4
For four ICPs (0009000150NGAB6 - 1 to 31 August 2021, 0000326561QT81A - 1 to 30 November 2020, 0009000926NGE69 - 1 to 31 May 2021, 0001745054NAEEC - 1 to 30 June 2022), the estimation applied was not consistent with schedule 1 of the Gas Downstream Regulations	GNVG	Schedule 1	5.1
Some ICPs were identified in the Initial GAS040 submission exception reporting as missing and ICP 0001616881QTDEE remained unresolved from the Interim submission and are not included in the GAS040 Submission. For four ICPs overlapping or gaps in the ICP level data records where identified. • The records for ICP 0001015096NGFC5 has overlapping records relating to the current meter ID of 05E880659 (1 to 31 July 2023) but also for a Meter ID of 600657872 (1 to 31 July	GNVG	26.2	5.2

Breach Allegation	Participant code	Rule	Section in this report
2023) which the registry has recorded against ICP 1001299067NG3A5. 4.805 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023. • The records for ICP 0001793611QT86B has overlapping records relating to the current meter ID of 22EG0710 (1 to 31 July 2023) but also for a Meter ID of 834100290 (1 to 31 July 2023) which the registry has recorded as being removed on 1 February 2023. 4.805 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023. • The records for ICP 0004004320NG2E8 has overlapping records relating to the current meter ID of 99EW3566 (1 to 31 July 2023) but also for a Meter ID of 600587945 (3 to 31 July 2023) which the registry has recorded against ICP 0004004323NGE28. 4.495 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023. • The records for ICP 0003026278NG25D has a gap in records for July 2023. One record spans 1 to 4 July 2023 and a second record is for 31 July 2023 only. The period 5 July to 30 July 2023 is missing from submission and there are no switching or status events that could explain this gap in submission data. For ICP 0001409424QTDEB the historic estimate calculation was applied across a time slice one day less than the correct period between the switch date and the first actual read date due to an incorrect meter install date being applied in Orion. Actual TOU data for 0078000094PG227 (gas gate KAP12901) for August 2022 was reviewed as the UFG for this month significantly deviated from historical trends. The TOU data for this ICP showed unexpected volumes for two days (28 & 29 August 2022) which were four times the expected volumes for this ICP and also exceeded the gas gate volumes for these days (approximately 800 GJ over submission). ICP 0009000969NG312 had installed an additional gas boiler at this ICP and the additional gas load has now exceeded the meters measurement capacity when the ICP was running at full load resulting in some gas volumes not being measured. There was a delay in updating the registry for seven new connections and the consumption information not provided until the final revision.			
For five ICPs overlapping or gaps in the ICP level data records where identified. • The records for ICP 0000147781QT387 has overlapping records relating to meter ID of 895294 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 61.38 GJ of default consumption is incorrectly recorded against this meter ID for July 2023. • The records for ICP 0000601981QTED2 has overlapping records relating to meter ID of 151238 (1 to 31 July 2023) covering	MEGA	26.2	5.2

Breach Allegation	Participant code	Rule	Section in this report
historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023. • The records for ICP 1001261664QT739 has overlapping records relating to meter ID of 02C589009 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023. • The records for ICP 1001270891NG3ED has overlapping records relating to meter ID of 15EG0006 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023. • The records for ICP 0000313861QTB1E has overlapping records relating to the current meter ID of 05E805871 (1 to 31 July 2023) but also for a Meter ID of 05E805871X (1 to 31 July 2023). 0.155 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023. There was a delay in updating the registry for eight new connections and the consumption information not provided until the final revision.			
Nova Energy did not meet the requirement for initial submissions to be within ±10% or < 200 GJ of the final submission for each gas gate on 373 occasions for submission periods between February 2020 and July 2022. For three submission periods (May 2022 – 25.18%, June 2022 – 26.85% and July 2022 – 17.05%) the overall submission volumes have exceeded the ± 10% threshold.	GNVG	37.2	5.3
MegaTEL did not meet the requirement for initial submissions to be within ±10% or < 200 GJ of the final submission for each gas gate on eight occasions for submission periods between February 2020 and July 2022. For four submission periods (January 2022 – 14.12%, May 2022 – 34.26%, June 2022 – 51.98% and July 2022 – 29.20%) the overall submission volumes have exceeded the ± 10% threshold.	MEGA	37.2	5.3
Prior period invoice reversals are not reflected in the GAS070 as billed volumes resulting in an overreporting of as billed volumes when revised invoices are produced.	GNVG	52.2.1	5.7
The GAS070 report should reflect the quantities in GJ billed in the previous invoice month. Invoices are selected for inclusion based on the billing period, not the invoice date.	MEGA	52.2.1	5.7

1.4 Provision of Information to the Auditor (Rule 69)

In conducting this audit, the auditor may request any information from Nova Energy, the allocation agent and any allocation participant.

Information was provided by Nova Energy and MegaTEL in a timely manner in accordance with this rule.

Information was requested from metering equipment owners and non TOU meter reading agents and was provided within the requested timeframe. I consider that all parties have complied with the requirements of this rule.

1.5 Draft Audit Report Comments

A draft audit report was provided to the industry body (GIC), the allocation agent, and allocation participants that I considered had an interest in the report. In accordance with rule 70.3 of the 2015 Amendment Version of the Gas (Downstream Reconciliation) Rules 2008, those parties were given an opportunity to comment on the draft audit report and indicate whether they would like their comments attached as an appendix to the final audit report. The following responses were received:

Party	Response	Comments provided	Attached to report
Nova Energy / MegaTEL	Comments on the draft audit report	12 March 2024 by email	Nova Energy / MegaTEL's comments have been added to the remedial action and audited party comment sections of the non compliance and recommendation boxes within this report. In addition to the comments in the boxes: • In the summary of report findings and sections 5.2, regarding ICP 0001502790PGC62, after a further review confirmed that no non compliance occurred, I have corrected the wording from "Two ICPs (0001502790PGC62, 0001616881QTDEE) remain unresolved since the Interim submission", to "One ICP (0001616881QTDEE) remains unresolved since the Interim submission".
Firstgas Ltd	Queries regarding the required network pressure corrections to address inaccurate Joule-Thomson effect calculations	15 February 2024 by email	In the summary of report findings and sections 2.3.1 and 6, the wording in regarding required network pressure corrections has been updated to clearly identify that the corrections are required in Nova Energy's Orion system.
Vector Metering (Bluecurrent)	Comments on the final audit report	8 April 2024 by email	Vector Metering provided additional information regarding ICP

			0009000969NG312 in section 5.2 confirming that Nova's agent Wells were performing the monthly TOU downloads during the period that the customers load was exceeding the metering capacity therefore there was no opportunity for Vector metering to validate the actual measured hourly quantities against the meter capacity (Q_{max}). The alleged breach recorded for Vector metering (NGCM) has been removed in section 5.2 and the wording in section 3.6 regarding the parties collecting TOU data for Allocation group 2 ICPs has been amended to reflect that Wells performs this service for NGCM and some POCO ICPs for Nova.

1.6 Transmission Methodology and Audit Trails (Rule 28.4.1)

The audit trail was evaluated for all data gathering, validation and processing functions. This rule requires that "The consumption information supplied to the allocation agent in accordance with rules 29 to 40 is transferred in such a manner that it cannot be altered without leaving a detailed audit trail..."

A sample of GAS040 and GAS050 reports submitted on the Allocation Portal were checked against the original reports on Nova Energy's network. This check confirmed that the original files were still available, and that they had not been edited after the submission date and time.

Audit trails are created in Orion when data used to create the GAS040 or GAS050 reports is changed.

2. Set-up and Maintenance of Information in Systems (Rule 28.2)

Every retailer must ensure the conversion of measured volume to volume at standard conditions and the conversion of volume at standard conditions to energy complies with **NZS 5259:2015**, for metering equipment installed at each consumer installation, for which the retailer is the responsible retailer.

Compliance with this rule has been examined in relation to the set-up of ICP, metering and billing information. I have also considered the Gas (Downstream Reconciliation) Rules 2008 Billing factors guideline note v1.0 (Billing Factors Guideline) published by GIC on 30 November 2015 when examining the set up and maintenance of information.

2.1 ICP Set Up Information

2.1.1 New Connections Process

The process was examined for the connection and activation of new ICPs.

NOVA ENERGY

As soon as Nova Energy are aware of a new connection application where Nova Energy is the proposed retailer and the ICP number has been created, the ICP is claimed on the registry and the status updated

to inactive – transitional (INACT). Attempts are then made to contact the proposed customer and complete a customer agreement.

New connections are managed via the networks' portals. Progress notifications are automatically generated, and the relevant details are manually loaded into Orion.

The "Maintenance Breach History Report (RET breaches)" report was examined for the period August 2022 to July 2023. This report contained 88 ICPs where the initial registry update was later than two business days out of a total of 242 new connections for the same period. I checked the records for nine ICPs where the registry update was more than ten business days late and another 13 ICPs selected randomly and found:

- 11 examples were populated late due to the "ready" status update being delayed by Powerco. Nova Energy updated the registry within two business days of Powerco's backdated event update.
- Eight examples were correctly claimed, and registry populated on time initially with a status event of INACT until the metering paperwork is received at which point the status is updated to ACTC or ACTV.
- For three examples, the proposed trader was not initially Nova Energy. Once the distributor had amended their network event with an updated proposed retailer, Nova Energy updated the registry within two business days of the distributors updated network event.

The design of Powerco's new connection process means that ICPs are not changed to "ready", and the retailer is not notified until the ICP is connected and metered. Once Nova Energy was notified that these ICPs were connected, customer contact was made, and the registry was populated within two business days of confirming all relevant details.

Because of the potential delays with receiving the metering paperwork from the field service agents, for some ICPs where the status has changed to ACTC, consumption information may not be provided to the allocation agent for the initial allocation. I checked seven ICPs where the update to the registry was later than 30 business days and I found that submission of consumption information to the allocation agent occurred at the next available revision (final) for all seven. This is discussed further in **Section 5.2**.

Nova Energy has a daily report to identify ICPs at "new" or ready" where they are the proposed retailer. The "RSREADY" report did not identify any ICPs at the ready status where Nova Energy was the expected retailer confirming that the reporting and supporting process are effective.

MEGATEL

The "Maintenance Breach History Report (RET breaches)" report was examined for the period August 2022 to July 2023. This report contained eight ICPs where the initial registry update was later than two business days out of a total of eight new connections. I checked the records for all eight ICPs where the registry update was recorded by the Maintenance Breach History Report as being late and found:

- For all eight ICPs the updates did not occur within two business days of entering into a contract to supply gas to the consumer. MegaTEL wait for the confirmation of the meter installation before claiming the ICP and updating the status to Active – Contracted (ACTC).

The table below shows the ICPs and the number of days late the registry update occurred.

ICP	Event date	Input date	Days Overdue
1002167748QT2C9	16/12/2022	16/01/2023	15
1002162591QTCFD	16/12/2022	16/01/2023	15
1002168254QT71F	14/11/2022	28/11/2022	8

1001302869NGC7B	12/04/2022	26/04/2022	5
1002152491QT4D5	23/02/2022	04/03/2022	5
1002165907QTAF9	20/10/2022	31/10/2022	4
1002163228QTEBC	18/10/2022	27/10/2022	4
1002152490QT890	23/02/2022	01/03/2022	2

MegaTEL does not actively monitor the registry RSREADY report. The 'RSREADY' report for November 2023 contained seven ICPs at GIR (ready) status where MegaTEL was the proposed retailer. One ICP was a timing difference and the ICP has been moved to ACTC-GAS status. Six ICPs remain at 'RSREADY' status.

Non conformance is recorded in **section 2.1.1** of the Gas Registry and Switching Performance Audit Report because the registry was not populated within two business days of MegaTEL entering into an agreement to supply gas to a consumer for the eight ICPs listed above.

2.1.2 Altitude Information

It is a distributor's responsibility to populate the registry with correct altitude information to support compliance with **NZS 5259:2015**, and it is a retailer responsibility to comply with **NZS 5259:2015** for the conversion of volume to energy.

NZS 5259:2015, contains the following requirements regarding the way that altitude information should be managed.

1. **Table 3 NZS 5259:2015 – Maximum permissible errors for conversion (% of conversion)** - The maximum permissible error is ± 1.0% where the meter pressure is less than or equal to 100kPa, and ±0.5% where the meter pressure is greater than 100kPa.
2. The following note is also included **section 3.8.2.3 of NZS5259** "Altitude should be determined within 10m where practicable."

NOVA ENERGY

Nova Energy has reporting to identify altitude, and status discrepancies daily. However due to recent personnel changes and resource challenges these exceptions reports have not been consistently worked.

Altitude values were compared between the registry values and the value held by the Orion system for all ICPs recorded from the registry list as of 29 August 2023. Five ICPs were identified as having a difference of more than 20 metres. The table below shows the ICPs and the difference in altitudes values between Nova Energy's Orion system, the registry and also compared to Google Earth.

ICP	Meter Pressure	Registry ICP Altitude	Orion Altitude	Google Earth Altitude	Altitude factor based on registry value	Altitude factor based on Orion value	Difference in altitude factors
1000572786PG70F	2.5	70	0	74	0.991963	1.000000	0.8%
0001100670PG523	70	70	4	77	0.995129	0.999722	0.5%
1001304246NG13A	2.75	41	1		0.995304	0.999885	0.5%
0001023910PGA9D	62	43	4	47	0.996862	0.999708	0.3%
0001026382PG8D5	2.5	94	315	96	0.989207	0.963834	-2.6%

The incorrect altitude values populated in Orion is recorded as non conformance in **section 8** of the **Registry and Switching Performance Audit report**.

ICP 0001026382PG8D5 was identified as being outside the maximum permissible error. Nova Energy gained this ICP from 21 January 2023 and has corrected the altitude value from 27 October 2023 to now align with the registry value.

A sample of 20 non-TOU ACTC or ACTV ICPs per distributor from the registry list as of 29 August 2023 was selected from a subset of ICPs where the standard deviation of altitude minimum and maximum values by street was more than 10 standard deviations. A further random sample of ten non-TOU ACTC or ACTV ICPs per distributor were also selected.

This sample of ICPs were checked against 'google earth' data. The 'google earth' data is based on the "Shuttle Radar Topography Mission" (SRTM) results and a number of recent studies indicate an accuracy of ± 10m for altitude. An evaluation against this data is considered an appropriate test for "reasonableness". Altitude figures that are within approximately 90m of the actual altitude will ensure an accuracy of ± 1.0%.

Section **3.8.2.3** of **NZS5259:2015** recommends altitude figures are determined to within 10m where practicable. An evaluation of altitude data on the registry was conducted to check whether this recommendation had been met. As noted above, the margin of error of the 'google earth' data appears to be approximately ± 10m, therefore, to allow for this margin, I have checked that the registry data is within 20m of 'google earth' data.

As shown in the table below the altitude data on the registry for non-TOU ICPs appears to be accurate in most areas.

Distributor	Total ACTC and ACTV non TOU ICPs	ICPs checked	Quantity outside 20m	Quantity outside 90m
UNLG	7,314	30	2	-
NGCD	6,637	30	1	-
POCO	18,657	30	4	-
GNET	695	30	-	-
Total	**33,300**	**120**	**7**	**-**

I have considered whether distributors have potentially breached any rules by populating the registry with inaccurate altitude information. Distributors have responsibility for populating the registry with altitude figures[2] and for maintaining the accuracy of this information. Distributors must also comply with rule 26.5 of the Gas (Downstream Reconciliation) Rules 2008, which requires them to ensure that any information on the registry is accurate and complete and supports compliance with **NZS 5259:2015**. There were no altitude discrepancies which resulted in an altitude factor which was outside the threshold allowed by **NZS 5259:2015**.

A further evaluation was conducted of ICPs where the altitude was zero on the registry. This data historically appears to be less accurate than when a figure other than zero is populated. All 30 ICPs have an altitude difference of less than 20m.

Non-TOU gas conversion was checked for a sample of five ICPs, and I confirmed that the altitude factors were correctly calculated and applied.

Altitude adjustments are applied for TOU ICPs, except where the metering system corrects for absolute pressure. TOU gas conversion was checked for five ICPs with TA, TG or TGS register content codes and I confirmed that the altitude factors were correctly calculated and applied.

[2] Gas (Switching Arrangements) Rules 2008, Part A, ICP parameters maintained by Distributors and rules 41 and 58.

Auditor comment			
Non-compliance	Description		
Report section: 2.1.2 Rule: 28.2 From: 21 January 2023 To: 27 October 2023	Audit history: Yes Controls: Needs improvement Impact: Minor	One error relating to ICP (0001026382PG8D5) resulted in an altitude factor which was over the maximum permissible error in NZS 5259:2015. Nova Energy gained this ICP from 21 January 2023 and has corrected the altitude value from 27 October 2023 to now align with the registry value.	
Remedial action rating	Remedial timeframe	Remedial comment	
Completed	27/10/2023	Correction has been processed in Orion. The update script to correct issues is being run more frequently. Nova is investigating automated solutions.	
Audited party comment			
The circumstances of the matters outlined in the breach notice.	The solution to resolve discrepancies had been paused in November 2022, meaning this ICP was not resolved within standard timeframes. This process has been resumed.		
Whether or not the participant admits or disputes that it is in breach.	Breach admitted		
Estimate of the impact of the breaches (where admitted).	Minor. Reconciliation for this site was impacted by applying the incorrect altitude by -2.6%. This has a total submission volume impact of -120 kWh for the period 21/1/2023 to 26/10/2023. The error in Orion has been resolved and corrected volume will be submitted for R14.		
What steps or processes were in place to prevent the breaches?	A semi-automated update of altitude was run periodically		
What steps have been taken to prevent recurrence?	The periodicity of the update has been increased and full automation is being investigated.		

MEGATEL

Nova Energy monitors reporting to identify altitude, and status discrepancies for MegaTEL ICPs maintain in Orion for reconciliation purposes and performs any required updates in Orion to ensure alignment. However due to recent personnel changes and resource challenges these exceptions reports have not been consistently worked.

Altitude values were compared between the registry values and the value held by the Orion system for all ICPs recorded from the registry list as of 29 August 2023. Five ICPs were identified as having a difference of more than 20 metres. The table below shows the ICPs and the difference in altitudes values between Nova Energy's Orion system, the registry and also compared to Google Earth.

ICP	Meter Pressure	Registry ICP Altitude	Orion Altitude	Google Earth Altitude	Altitude factor based on registry value	Altitude factor based on Orion value	Difference in altitude factors
1001295218QTE67	2.75	35	3	28	0.995991	0.999656	0.4%
0001000879NG56D	2.5	165	1656	168	0.981056	0.809868	-17.4%

ICP 0001000879NG56D was identified as being outside the maximum permissible error. MegaTEL gained this ICP from 21 August 2023 and has corrected the altitude value from 27 October 2023 to now align with the registry value.

Section **3.8.2.3** of **NZS5259:2015** recommends altitude figures are determined to within 10m where practicable. An evaluation of altitude data on the registry was conducted to check whether this recommendation had been met. As noted above, the margin of error of the "google earth" data appears to be approximately ± 10m, therefore, to allow for this margin, I have checked that the registry data is within 20m of "google earth" data.

As shown in the table below the altitude data on the registry for non-TOU ICPs appears to be accurate in most areas.

Distributor	Total ACTC and ACTV nonTOU ICPs	ICPs checked	Quantity outside 20m	Quantity outside 90m
UNLG	1,385	30	1	-
NGCD	427	30	-	-
POCO	303	30	-	-
GNET	8	8	-	-
Total	**2,573**	**98**	**1**	**-**

I have considered whether distributors have potentially breached any rules by populating the registry with inaccurate altitude information. Distributors have responsibility for populating the registry with altitude figures[3] and for maintaining the accuracy of this information. Distributors must also comply with rule 26.5 of the Gas (Downstream Reconciliation) Rules 2008, which requires them to ensure that any information on the registry is accurate and complete and supports compliance with **NZS 5259:2015**. There were no altitude discrepancies which resulted in an altitude factor which was outside the threshold allowed by **NZS 5259:2015**.

A further evaluation was conducted of ICPs where the altitude was zero on the registry. This data historically appears to be less accurate than when a figure other than zero is populated. There were no ICPs with zero altitude value where MegaTEL were recorded as the retailer.

Non-TOU gas conversion was checked for a sample of four ICPs, and I confirmed that the altitude factors were correctly calculated and applied.

[3] Gas (Switching Arrangements) Rules 2008, Part A, ICP parameters maintained by Distributors and rules 41 and 58.

Auditor comment			
Non-compliance	Description		
Report section: 2.1.2 Rule: 28.2 From: 21 August 2023 To: 27 October 2023	Audit history: Yes Controls: Needs improvement Impact: Minor	Two ICPs were identified with a difference in altitude value recorded between Orion and the registry had an incorrect altitude recorded in Orion. One error relating to ICP (0001000879NG56D) resulted in an altitude factor which was over the maximum permissible error in NZS 5259:2015. MegaTEL gained this ICP from 21 August 2023 and has corrected the altitude value from 27 October 2023 to now align with the registry value.	
Remedial action rating	Remedial timeframe	Remedial comment	
Completed	27/10/2023	Correction has been processed in Orion. This process is managed for MegaTEL by Nova, response is the same as to the above breach	
Audited party comment			
The circumstances of the matters outlined in the breach notice.	Response is the same as to the above breach.		
Whether or not the participant admits or disputes that it is in breach.	Breach admitted		
Estimate of the impact of the breaches (where admitted).			
What steps or processes were in place to prevent the breaches?	Response is the same as to the above breach		
What steps have been taken to prevent recurrence?	Response is the same as to the above breach		

2.2 Metering Set-up Information

NOVA ENERGY

Nova Energy has a set of validation reports and processes to identify and resolve discrepancies, which was demonstrated during the audit. The validation reports compare Orion data to registry data for all relevant fields. Whilst reporting is in place to identify discrepancies, there are delays with the resolution of some of these discrepancies due to resource challenges and recent changes of personnel within the metering team. This has had an effect on billing and reconciliation for the ICPs identified. Correction processes are discussed in **section 3.5** for non TOU and **section 5.1** for TOU.

A number of the exceptions identified are due to user error when manually entering the information into Orion. When an exception is identified it is corrected by a different user to who initially entered the data incorrectly and there is no current mechanism to identify and inform a user of any error made. It is recommended that a feedback loop is implemented to ensure users are aware of the need to check

that the meter attributes are correctly applied in the initial meter set up and this will reduce the ongoing volume of required remedial meter set up corrections.

Recommendation	Audited party comment
As part of the meter set up correction process ensure there is a feedback loop to the original user who made the error to ensure users are aware of the need to check that the meter attributes are correctly applied in the initial meter set up. This will reduce the ongoing volume of required remedial meter set up corrections.	**Response:** Accepted **Comments:** Recommendation will be incorporated into an ongoing review of the data integrity processes due to complete September 2024

Aggregation factors (including gas gates) are checked against registry information prior to each submission. The pre submission checks are discussed further in section 5.2.

No ICPs with an ACTC ICP status code had metering indicated to be removed on the registry.

Nova Energy compares their metering fields against registry metering fields on a daily basis.

Meter pressure

Meter pressure is a static field in Orion recorded against the meter. Where a pressure change occurs without a physical meter change, or a correction is required from a certain date, Nova Energy processes a meter change within the Orion system and updates the pressure on the new version of the meter. The end date for the old version of the meter is the day before the pressure change was effective, and the start date for the new version of the meter is the day the pressure change becomes effective. Any reads on or after the date of the pressure change are recorded against the new meter.

If a correction is required for the entire period that the meter was installed, the pressure on the current version of the meter can be updated.

The recorded meter pressure value will be used in the pressure factor calculation for all invoices and reconciliation submissions created after the date and time Orion pressure is updated. This includes any wash up submissions created for earlier periods. However, where a meter pressure has been overwritten after invoicing has been performed, then any future reversal and rebilling activity will also reflect the backdated billing factor change without the user being aware of the historical change in value.

Orion and registry meter information as of 29 August 2023 was compared and 11 differences were identified. Three were corrected as part of BAU, seven were corrected during the audit and one is being followed up with the meter owner in relation to waiting for paperwork.

Five of the differences corrected during the audit resulted in pressure factors outside the maximum permissible errors (± 0.9%) set out in Table 3 (Maximum permissible error for conversions) of **NZS 5259:2015**.

ICP	Orion Meter Pressure (kPa)	Registry Pressure (kPa)	Orion Pressure Factor	Registry Pressure Factor	% Error	Assessed annualised Volume Impact (GJ)
1000511243PG812	1	2.5	1.00987	1.02467	-1.44%	0.0
1001290219QT502	7	2.75	1.06908	1.02714	4.08%	1.401
1001303702NG3F0	1	2.75	1.00987	1.02714	-1.68%	-0.368
0001719801QT5A8	1.5	2.5	1.01480	1.02467	-0.96%	0.0

ICP	Orion Meter Pressure (kPa)	Registry Pressure (kPa)	Orion Pressure Factor	Registry Pressure Factor	% Error	Assessed annualised Volume Impact (GJ)
1000549806PG386	1	2.5	1.00987	1.02467	-1.44%	0.0

A list of 33 ICPs which had pressure discrepancies identified by Nova Energy during the audit period were also reviewed and the time it took to correct these meter pressure values in Orion. 30 discrepancies resulted in differences over the maximum permissible pressure factor errors (± 0.9%) allowable under **NZS 5259:2015** and seven were identified where the incorrect meter pressure value was used in the initial allocation process and these are listed below.

ICP	Orion Meter Pressure (kPa)	Registry Pressure (kPa)	% Error	Time taken to correct (Days	Revision corrected data provided
0000110181QT295	2.50	1.50	1.0%	34	Interim
1000604368PG1E2	1.00	2.50	1.5%	14	Interim
1000604412PG92C	1.00	2.50	1.5%	31	Interim
1000604411PG5EC	1.00	2.50	1.5%	31	Interim
1001304500NGD12	1.00	2.75	1.7%	20	Interim
0000292441QT0AE	3.00	7.00	3.9%	441	Final[4]
0009000232NG6C0	35.00	400.00	360.2%	29	Interim

Corrections were processed as discussed in **section 3.5**.

The fieldwork paperwork for a further sample of 15 ICPs was reviewed to identify any instances where the as found meter pressure did not match the registry and if so, what steps were taken by Nova Energy to determine if the historical meter set up for the removed meter was incorrect. The paperwork for two ICPs stated that the as found meter pressure did not match the registry meter pressure value. In both cases the meter pressure correction was only applied from the date of the meter change and no investigation was undertaken to determine if the previous meter set up was correct.

ICP	Meter Change date	As found pressure (kPa)	Registry pressure (kPa)	Fp % error
0003026573NG38B	15/04/2022	2.5	1.5	1.0%
0001719801QT5A8	26/06/2023	2.5	1.5	1.0%

Recommendation	Audited party comment
Work with field service agents to ensure that in all cases where the as found meter pressure does not match the registry meter pressure that these scenarios are escalated so that Nova Energy can investigate and apply any required corrections for the prior periods.	**Response:** Acknowledged **Comments:** Nova will work with field services agents to ensure all relevant information is provided and provide additional training to staff to ensure the appropriate actions are taken to resolve discrepancies when identified.

[4] While part of the period requiring correction was outside available revision window, the meter reading history was reviewed and confirmed that zero consumption occurred outside the revision window.

Meter numbers and digits

Nova Energy has a validation report and processes to identify and resolve meter number and number of digit discrepancies between Orion and the registry in case field work paperwork from the meter owner is late or incorrect. Additionally, the meter reading processes are designed to identify meter number or digit discrepancies.

The meter number is stored in the hand held device. If the meter reader's hand held device is expecting more digits than the number of dials, then the reading is entered as normal and notification is made in the "readers notes" field for investigation. If the hand held is expecting fewer digits than the number of dials, then the reading is entered into the "readers notes" field and once again an investigation is conducted. This "safety net" appears to be robust.

A review of meter serial numbers between the registry and Orion was conducted and 19 meter number mismatches were identified and a sample of ten were reviewed. Two exceptions were due to timing issues relating to when the audit registry list file was produced. For the remaining eight ICPs the mismatch reasons are listed in the table below.

ICP	Registry meter Identifier	Orion Meter Number	Comment
1002152897QT956	600701127	21EG4071	Paperwork not received from meter owner. Was on exception report but no action taken due to resource issues.
1002163232QT680	600701713	16EG5807	Paperwork not received from meter owner. Was on exception report but no action taken due to resource issues.
0003015639NG370	00S1063013	00B1063013	Incorrect serial number in original paperwork from meter owner. Orion now updated.
1001114890QT102	06F827443	M	Incorrect serial number in Orion - Typo, human error. Updated.
0001830941QT51E	08K771101	3	Incorrect serial number in Orion - Typo, human error. Updated.
0002379467QT7F7	10L631877	A	Incorrect serial number in Orion - Typo, human error. Updated.
0002253921QT234	21EG4950	242542	Paperwork not received from meter owner for this meter change. Was on exception report but no action taken due to resource issues. Escalated to meter owner requesting paperwork.
0002006336NG513	93E0999	240529	Paperwork not received from meter owner for this meter change. Was on exception report but no action taken due to resource issues. Escalated to meter owner requesting paperwork.

Recommendation	Audited party comment
Ensure the meter serial number report is actively monitored and exceptions actioned in a timely manner to ensure the billing, switching and submission processes are not impacted.	**Response**: Accepted **Comments**: Further training has been provided to the team actioning the discrepancy reporting. Enhancements to reporting have been identified and will be implemented by 30 September 2024.

A comparison of meter digits between the registry and Orion was conducted and seven meter digit mismatches were identified, and these were reviewed. All seven exceptions were identified in exception reporting and six were corrected prior to the audit. For these six ICPs, the Orion number of digits was blank due to human error populating this field at the time the meter was being installed. Additional training has been provided to ensure this field is consistently populated. For one ICP, the registry field was blank and the meter owner has been advised of the meter registry value.

Meter multipliers

A comparison of Orion and registry information as of 29 August 2023 was performed and no multiplier mismatches were identified.

Meter types and content codes

I compared the Orion metering information to the registry list as of 29 August 2023 and found four ICPs where the TOU flag was set to Y and the allocation group was 4.

ICP	Orion register content code	Expected content code	Annualised consumption	Comment
0001406092QTBB7	TG	TG	1.8 TJ	Allocation group 4 with TOU metering.
0001411878QTF10	TG	TG	3.2 TJ	Allocation group 4 with TOU metering.
0008000037NG731	TG	TG	2.6 TJ	Allocation group 4 with TOU metering.
1001109035QT69E	TG	TG	9.9 TJ	Registry updated to Allocation group 2 / XTOU as part of audit back to switch date - no impact to submission.

Register content codes are not checked for reasonableness against meter content codes for TOU ICPs. A review of TOU register content codes between the TOU meter owners and Orion was conducted and three exceptions were identified and are listed in the table below.

ICP	Orion register content code	Meter Owner content code	Comment
1002112585QTDE3	U	TG	Monthly conversion factors calculated rather than daily – small impact on temperature, pressure, compressibility and calorific value factor accuracy, but within maximum permissible errors.

ICP	Orion register content code	Meter Owner content code	Comment
1002144532QT42F	U	TG	Monthly conversion factors calculated rather than daily – small impact on temperature, pressure, compressibility and calorific value factor accuracy, but within maximum permissible errors.
0008000038NG8EF	TGS	TG	Corrector function changed as part of meter change in April 2022. Prior to meter change the corrector function was temperature gauge pressure and super compressibility adjusted (TGS) and since the meter change the corrector function is temperature and gauge pressure adjusted (TG). This updated corrector function was not reflected in Orion. Compressibility factor inaccuracy calculated - 1.14% exceeding maximum permissible error of +/- 0.2%. Assessed annual volume impact of 4.3 TJ

Non conformance is recorded in **section 4** regarding the compressibility factor not being applied to ICP 0008000038NG8EF.

Recommendation	**Audited party comment**
Implement process to regularly compare meter equipment owner records of the corrector function to Orion's register content code for the ICP to ensure alignment and correct application of gas factors.	**Response:** Accepted **Comments:** Nova will implement regular reporting and correction processes to address any discrepancies.

Auditor comment		
Non-compliance	Description	
Report section: 2.2 Rule: 28.2 From: 25 July 2017 To: 31 October 2023	Audit history: No Controls: Needs improvement Impact: Minor	11 ICPs with meter pressure differences had an incorrect meter pressure recorded in Orion. Three were corrected as part of BAU and seven were corrected during the audit. Five of the differences were over the maximum permissible error in NZS 5259:2015. For two ICPs the fieldwork paperwork stated that the as found meter pressure did not match the registry meter pressure value and was found to be outside the maximin permissible errors (± 0.9%) set out in NZS5259:2015. In both cases the meter pressure correction was only applied from the date of the meter change and no investigation was undertaken to determine if the previous meter set up was correct.

Remedial action rating	Remedial timeframe	Remedial comment
In progress	30/09/2024	Nova has accepted the auditor recommendations Further training has been undertaken with the team member responsible for this report and further potential enhancements have been documented and will be implemented by 30/09/2024
Audited party comment		
The circumstances of the matters outlined in the breach notice.		
Whether or not the participant admits or disputes that it is in breach.	Breach admitted	
Estimate of the impact of the breaches (where admitted).	1000511243PG812– No impact as meter pressure updated from start date 29/07/2023. 1001290219QT502 – No impact as meter pressure updated from start date 11/5/2023. 1001303702NG3F0 – No impact as meter pressure updated from start date 20/4/2023	
What steps or processes were in place to prevent the breaches?	Exception reports exist to identify Registry vs Billing pressure discrepancies.	
What steps have been taken to prevent recurrence?		

MEGATEL

Nova Energy manage MegaTEL 's ICPs within Orion for switching and reconciliation functions. While Nova Energy has validation reporting around meter data exceptions, the current reporting criteria does not include the MEGA participant code. As a consequence, no MEGA exceptions are identified relating to meter set up data. Nova Energy has initiated a project to refresh all gas exception reporting to include the MEGA participant code.

Meter pressure

Meter pressure is a static field in Orion recorded against the meter. Where a pressure change occurs without a physical meter change, or a correction is required from a certain date, MegaTEL processes a meter change within the Orion system and updates the pressure on the new version of the meter. The end date for the old version of the meter is the day before the pressure change was effective, and the start date for the new version of the meter is the day the pressure change becomes effective. Any reads on or after the date of the pressure change are recorded against the new meter.

If a correction is required for the entire period that the meter was installed, the pressure on the current version of the meter can be updated.

The recorded meter pressure value will be used in the pressure factor calculation for all invoices and reconciliation submissions created after the date and time Orion pressure is updated. This includes any wash up submissions created for earlier periods. However, where a meter pressure has been overwritten after invoicing has been performed, then any future reversal and rebilling activity will also

reflect the backdated billing factor change without the user being aware of the historical change in value.

Orion and registry meter information as of 29 August 2023 was compared and 15 differences were identified. 11 of the differences resulted in pressure factors outside the maximum permissible errors (± 0.9%) set out in **NZS 5259:2015**.

ICP	Orion Meter Pressure (kPa)	Registry Pressure (kPa)	Orion Pressure Factor	Registry Pressure Factor	% Error	Assessed annualised Volume Impact (GJ)
0000253341QTABC	1.5	2.75	1.01480	1.02714	-1.20%	-0.223
0000360361QT049	3	7	1.02961	1.06908	-3.69%	-16.133
0001394911QTABB	2.5	7	1.02467	1.06908	-4.15%	-0.598
1000384531QT9F5	1	2.75	1.00987	1.02714	-1.68%	-5.293
0002000667NG19B	0	35	1	1.34542	-25.67%	-34.214
0002348571QT55D	1	2.5	1.00987	1.02467	-1.44%	-0.390
1001278937QT8BF	2.75	7	1.02714	1.06908	-3.92%	-10.071
0007001717NG830	1.5	2.5	1.01480	1.02467	-0.96%	-2.184
0004225093NGF2C	1.5	2.5	1.01480	1.02467	-0.96%	-0.578
0000268221QT284	1.5	2.5	1.01480	1.02467	-0.96%	-0.249
0001766631QT782	1	2	1.00987	1.01974	-0.97%	-0.176

A list of 48 ICPs which had pressure discrepancies identified by Nova Energy for MegaTEL during the audit period was also reviewed. 22 discrepancies resulted in differences over the maximum permissible pressure factor errors (± 0.9%) allowable under **NZS 5259:2015** and where the incorrect meter pressure value was used in the initial allocation process.

ICP	Orion Meter Pressure (kPa)	Registry Pressure (kPa)	% Error	Time taken to correct (Days	Revision corrected data provided
0003031437NG5A1	1.00	2.50	1.5%	39	Interim
0002379973QT958	1.00	2.50	1.5%	58	Interim
1000500571PG92C	1.00	2.50	1.5%	41	Interim
1001115374QT81C	1.00	2.50	1.5%	14	Interim
0000135611QTC9D	1.00	2.50	1.5%	33	Interim
1000587475PGA67	1.00	2.50	1.5%	14	Interim
1002105953QT1A3	1.00	2.75	1.7%	55	Interim
1002105950QTD63	1.00	2.75	1.7%	62	Interim
1002093009QT45B	1.00	2.75	1.7%	77	Interim
0000570621QTE6F	1.00	2.75	1.7%	71	Interim

ICP	Orion Meter Pressure (kPa)	Registry Pressure (kPa)	% Error	Time taken to correct (Days	Revision corrected data provided
1002109761QTB55	1.00	2.75	1.7%	30	Interim
1002136988QT1F9	1.00	2.75	1.7%	34	Interim
1002141910QT2D3	1.00	2.75	1.7%	14	Interim
1002109763QTBD0	1.00	2.75	1.7%	380	Final
1001264735QTD50	1.00	2.75	1.7%	32	Interim
1002152491QT4D5	1.00	2.75	1.7%	13	Interim
0003010037NG1CD	1.00	2.75	1.7%	25	Interim
1001277410QT448	1.00	2.75	1.7%	28	Interim
0000883761QT410	1.00	3.00	2.0%	11	Interim
0000602941QTBDD	1.00	3.00	2.0%	36	Interim
0000900001QTD4B	1.00	3.00	2.0%	33	Interim
0000884361QTC71	1.00	3.00	2.0%	18	Interim

In all cases the initial meter pressure set up in Orion was 1 kPa indicating human error when manually setting up the meter in Orion. Corrections were processed as discussed in **section 3.5**.

Recommendation	Audited party comment
As part of the meter set up correction process ensure there is a feedback loop to the original user who made the error to ensure users are aware of the need to check that the meter attributes are correctly applied in the initial meter set up. This will reduce the ongoing volume of required remedial meter set up corrections.	**Response:** Acknowledged **Comments:** Recommendation will be incorporated into an ongoing review of the data integrity processes due to complete September 2024

Meter numbers and digits

While Nova Energy has validation reporting around meter data exceptions, the current reporting criteria does not include the MEGA participant code. As a consequence, no MEGA exceptions are identified relating to meter set up data. Nova Energy has initiated a project to refresh all gas exception reporting to include the MEGA participant code.

Additionally, the meter reading processes are designed to identify meter number or digit discrepancies. The meter number is stored in the handheld device. If the meter reader's handheld device is expecting more digits than the number of dials, then the reading is entered as normal and notification is made in the "readers notes" field for investigation. If the handheld is expecting fewer digits than the number of dials, then the reading is entered into the "readers notes" field and once again an investigation is conducted. This "safety net" appears to be robust.

A review of meter serial numbers between the registry and Orion was conducted and 12 meter number mismatches were identified. In all 12 cases the mismatch was due to the registry meter serial number having a zero as a prefix to the meter serial number.

A comparison of meter digits between the registry and Orion was conducted and five meter digit mismatches were identified and these were reviewed. As the current exception reporting does not

identify MEGA digit mismatches no investigations were undertaken prior to the audit. All exceptions have now been corrected in Orion.

Meter multipliers

A comparison of Orion and registry information as of 29 August 2023 was performed and no multiplier mismatches were identified.

Meter types and content codes

I compared the Orion metering information to the registry list as of 29 August 2023 and no differences were identified.

<table>
<tr><td colspan="4">Auditor comment</td></tr>
<tr><td>Non-compliance</td><td colspan="3">Description</td></tr>
<tr><td>Report section: 2.2
Rule: 28.2
From: 12 August 2020
To: 29 August 2023</td><td>Audit history: No
Controls: Needs improvement
Impact: Minor</td><td colspan="2">15 ICPs with meter pressure differences had an incorrect meter pressure recorded in Orion. 11 of the differences were over the maximum permissible error in NZS 5259:2015.</td></tr>
<tr><td colspan="2">Remedial action rating</td><td>Remedial timeframe</td><td>Remedial comment</td></tr>
<tr><td colspan="2">In progress</td><td>31/03/2024</td><td>Nova manages this for MegaTEL. Commentary from Nova’s breach response applies.</td></tr>
<tr><td colspan="4">Audited party comment</td></tr>
<tr><td colspan="2">The circumstances of the matters outlined in the breach notice.</td><td colspan="2">Response is the same as to the above breach</td></tr>
<tr><td colspan="2">Whether or not the participant admits or disputes that it is in breach.</td><td colspan="2">Breach admitted.</td></tr>
<tr><td colspan="2">Estimate of the impact of the breaches (where admitted).</td><td colspan="2"></td></tr>
<tr><td colspan="2">What steps or processes were in place to prevent the breaches?</td><td colspan="2">Response is the same as to the above breach</td></tr>
<tr><td colspan="2">What steps have been taken to prevent recurrence?</td><td colspan="2">Response is the same as to the above breach</td></tr>
</table>

2.3 Billing Factors

2.3.1 Temperature Information

For ICPs where the actual temperature is not measured NZS 5259:2015 states that temperature may be estimated and four methodologies are provided. These are listed below in order of decreasing preference.

(a) Gas temperature records for the GMS location under flowing conditions. Historic records can be used if similarity is preserved.

(b) Records of actual gas temperature in similar installations at similar locations over corresponding periods.

(c) For compact installations directly connected to short risers and well shaded from direct sunlight, the average ground temperature at 300mm depth. NOTE – Reliable and relevant climatic temperature data may be used as a basis for estimating average 300mm ground temperatures. This may include published data.

(d) For installations where the inlet pipes are exposed to ambient air conditions the temperature may be estimated from the mean temperature obtained at reliable and relevant weather recording stations. The installation should be shielded from direct sunlight.

NOVA ENERGY

Nova Energy has chosen option (c) and uses the GIC's published monthly average temperatures for each gas gate. Option (c) seems to be the most logical choice because it matches the majority of GMS installations.

A comparison of the GIC published ground temperatures for January to December to the Orion ground temperatures recorded for January 2022 to December 2022 for all allocated gas gates and confirmed that they matched.

NZS 5259:2015 states that correction for temperature drop due to Joule-Thomson effect of pressure reduction is applicable if temperature methodologies (b), (c) or (d) are used, provided the reduction is made in the same installation and immediately upstream of the GMS. "In other cases or for large pressure drops or high flow rates the actual temperature drop should be measured. For natural gas the temperature drop is about 0.5º per 100kPa of pressure drop." This indicates that adjustment for the Joule-Thomson effect is desirable.

The Billing Factors Guideline contains the following expectations by GIC:

- network owners ensure nominal operating pressures are correctly populated in the registry for all ICPs on their networks, and
- once network pressures are correctly populated, retailers ensure that they account for the Joule-Thomson effect by using the network pressure in the registry in their conversions of metered volumes to standard volume, particularly in situations where failure to do so will result in conversion errors greater than those allowed in **Table 3** of **NZS 5259:2015**.

Nova Energy applies the Joule-Thomson effect adjustment, and the formula was checked and confirmed correct.

The accuracy of the Joule-Thomson adjustment is dependent on correct inputs, including network pressure and gas gate.

Network pressure

Prior to the inclusion of Joule-Thomson effect in the temperature factor calculation by Nova Energy, the network pressure field in Orion was populated with the meter pressure value. There are currently 25,959 ICPs out of a population of 33,300 ICP (78%) where the network pressure is set to the meter pressure within Orion. In order to update the network pressure value in Orion the meter attribute will need to be removed and reinstalled manually with the revised network pressure value. This would require considerable effort by Nova Energy to perform this data update. Nova Energy currently monitors the impact of Joule-Thomson Effect with a report to identify ICPs where the difference between network and meter pressure is likely to result in the temperature factor calculated by Orion to outside the maximum permissible error (± 0.9%).

The current meter set up process is to apply the registry network pressure in Orion, however since January 2022 the current meter for more than 740 ICPs were set up with the meter pressure applied to the network pressure field in Orion.

Recommendation	Audited party comment
Review meter set up process and exception monitoring for Orion to ensure the correct network pressure is applied for all new meter set ups.	**Response:** Accepted **Comments:** Nova has reviewed our meter set up processes and identified opportunities to implement improvements. Nova is investigating automation for correcting pressure for new meters and is actively managing the issues identified in our existing exception reporting.

An assessment of the temperature factor accuracy was performed across all Nova Energy active ICPs. 12 ICPs were identified as having temperature factor values outside the maximum permissible error (± 0.9%) due to the network pressure in Orion being recorded as meter pressure.

ICP	Orion Network Pressure	Registry Network Pressure	temp factor (Inc JT) Orion	temp factor (Inc JT) Registry	% difference FT (± 0.9%)	volume impact (GJ)
0000071761QT9BD	7	700	0.99611	1.00819	-0.97%	-63.749
1001163752QT7BE	35	1000	0.99611	1.01301	-1.67%	-17.03
0000072523NA580	7	650	1.00139	1.01270	-1.12%	-73.926
0000071761QT9BD	7	700	0.99611	1.00819	-1.20%	-1.379
0000189721QT7E8	140	700	0.99614	1.00588	-0.97%	-0.249
0000360031QTB42	140	700	0.99611	1.00585	-0.97%	0.000
0001787571QTAF9	7	560	1.00119	1.01090	-0.96%	-0.440
0001793051QTCC8	1.5	560	1.00119	1.01100	-0.97%	-6.509
0001824091QTF34	3	560	1.00217	1.01198	-0.97%	-4.286
1000503649PGD23	7	560	1.00183	1.01155	-0.96%	-6.986
1000589555PG6F6	2.5	560	1.00206	1.01187	-0.97%	-0.075
1000589557PG673	2.5	560	1.00206	1.01187	-0.97%	-0.090

ICP 0000071761QT9BD did not appear in the Orion exception report as its billing class was set as Industrial and the report criteria did not include these groups of ICPs as it was expected that all industrial ICPs would be TOU which is not always the case. Nova Energy have issued a report enhancement request to amend the reporting criteria. The network pressure has been incorrectly applied since 1 February 2019, therefore any attempted backdated correction is likely to result in some revised volumes not being included in the available wash up submissions.

The other 10 ICPs did appear on the exception report however due to personnel changes this report had not been actively worked.

While only two ICPs did not meet the maximum permissible errors requirement of NZS5259:2015, the overall impact of 25,959 ICPs where the network pressure is set to the meter pressure within Orion was assessed in terms of its contribution to UFG due to small increments of under submission at ICP level. The annual assessment of the impact of Joule-Thomson effect not able to be applied due to incorrect data inputs was calculated to be approximately 9.5TJ. The top 25 ICPs accounts for 1TJ of this impact and the top 500 ICPs accounts for 4.7TJ.

Recommendation	Audited party comment
To reduce the impact of incorrect Joule-Thomson effect calculations on industry UFG investigate the effort to implement network pressure corrections in the Orion system for all Allocation Group 4 ICPs.	**Response:** Acknowledged **Comments:** Nova is investigating potential bulk update methods. Nova is prioritising the correction of the most impactful ICPs identified, which will be completed manually if required.
Review all current exception reporting to ensure any non TOU ICPs classified as Industrial are included in all exception reporting.	**Response:** Acknowledged **Comments:** Nova is investigating potential bulk update methods. Nova is prioritising the correction of the most impactful ICPs identified, which will be completed manually if required.

The meter at ICP 0000026443GNCC4 is currently recorded on the registry as operating at network pressure (nominal network pressure 210 kPa) and has an assessed annualised consumption of 1 TJ. The maximum permissible error for pressure factor is ± 0.9% or ± 3kPa. There is a possibility that at time of high network or customer load that the meter may not operate within the maximum permissible errors specified by **NZS5259:2015**.

Recommendation	Audited party comment
Working with the meter owner for ICP 0000026443GNCC4, determine whether the current GMS configuration operating at network pressure (210kPa) meets NZS5259:2015 maximum permissible errors requirements.	**Response:** Accepted **Comments:** MEO response and evidence provided to auditor.

Gas gate

Aggregation factors (including gas gates) are checked against registry information prior to each submission. The pre submission checks are discussed further in **section 5.2**.

I compared the Orion and registry gas gate information as of 29 August 2023, and all ICPs matched the registry gas gate assignment.

Auditor comment			
Non-compliance	Description		
Report section: 2.3.1 Rule: 28.2 From: 1 February 2019 To: 3 August 2023	Audit history: No Controls: Acceptable Impact: Minor	12 ICPs (were identified as having temperature factor values outside the maximum permissible error (± 0.9%) due to the network pressure in Orion being recorded as meter pressure.	
Remedial action rating	Remedial timeframe	Remedial comment	
In progress	30/09/2024	Nova is working through the corrections and has updated reporting to ensure discrepancies are identified and corrected as soon as possible. An additional process to automate corrections for new meters will be implemented.	
Audited party comment			
The circumstances of the matters outlined in the breach notice.			
Whether or not the participant admits or disputes that it is in breach.	Breach admitted		
Estimate of the impact of the breaches (where admitted).	Minor		
What steps or processes were in place to prevent the breaches?			
What steps have been taken to prevent recurrence?			

MEGATEL

MegaTEL ICPs are set up in Nova Energy's Orion system for reconciliation purposes and the process for maintaining temperature information is the same as Nova Energy.

Nova Energy applies the Joule-Thomson effect adjustment, and the formula was checked and confirmed correct.

The accuracy of the Joule-Thomson adjustment is dependent on correct inputs, including network pressure and gas gate.

There are currently 2,3599 ICPs out of a population of 2,591 ICPs (91%) where the network pressure is set to the meter pressure within Orion. In order to update the network pressure value in Orion the meter will need to be removed and reinstalled manually with the revised network pressure value. This would require considerable effort by Nova Energy / MegaTEL to perform this data update. The current exception report that monitors the impact of Joule-Thomson Effect currently does not include MEGA ICPs. A report enhancement request has been issued to add the participant code MEGA to all Orion vs gas registry attribute exception reports.

Network pressure

An assessment of the temperature facture accuracy was performed across all MegaTEL active ICPs. All ICPs were identified as having temperature factor values within the maximum permissible error (± 0.9%).

While all MegaTEL ICPs met the maximum permissible errors requirement of NZS5259:12015, the overall impact of 2,359 ICPs where the network pressure is set to the meter pressure within Orion was assessed in terms of its contribution to UFG due to small increments of under submission at ICP level. The annual assessment of the impact of Joule-Thomson effect not able to be applied due to incorrect data inputs was calculated to be approximately 560 GJ. The top 25 ICPs accounts for 231 GJ of this impact.

Recommendation	Audited party comment
To reduce the impact of incorrect Joule-Thomson effect calculations on industry UFG investigate the effort to implement network pressure corrections for all Allocation Group 4 ICPs.	**Response:** Acknowledged **Comments:** Nova is investigating potential bulk update methods. Nova is prioritising the correction of the most impactful ICPs identified, which will be completed manually if required.

There were no ICPs identified as operating at network pressure.

Gas gate

Aggregation factors (including gas gates) are checked against registry information prior to each submission. The pre submission checks are discussed further in **section 5.2**.

I compared the Orion and registry gas gate information as of 29 August 2023, and all ICPs matched the registry gas gate assignment.

2.3.2 Calorific Values

Open Access Transmission Information System (OATIS) gas composition data is imported into EnergyMarket daily, and a copy of the file is added to the O:\ drive for manual import into Orion.

An automated email is sent to the billing and reconciliation teams if calorific values or temperature information has not been added for the previous day. Each day is initially populated with an average value, which is the same for all gas types, before replaced by the actual figures from OATIS once they are available.

The accuracy of the Orion information was confirmed by comparing an OATIS file with the contents of Orion for August 2022 to July 2023.

3. Meter Reading and Validation

3.1 Archiving of Register Reading Data (Rule 28.4.2)

Retailers are required to keep register reading data for a period of 30 months. Data was examined during the audit and it is confirmed that Nova Energy securely archives data for a period in excess of 30 months.

Some data provided by Nova Energy and MegaTEL's meter reading contractor was checked, and it was found that the readings matched the data in Orion. This proves the end-to-end process.

3.2 Retailer to Ensure Certain Metering Interrogation Requirements are Met (Rule 29)

This rule requires that for consumer installations where the actual or expected consumption is greater than 10TJ, a TOU meter will be installed and the installation will be assigned to allocation group 1 or 2. For consumer installations where the actual or expected consumption is between 250GJ and 10TJ a non-TOU meter will be installed and the installation will be assigned to allocation group 4. Other installations should be assigned to allocation group 6.

All ACTC and ACTV ICPs had a value recorded in their allocation group on the registry. Allocation groups are assigned based on the expected or actual annual load for the ICP and their metering. Daily reporting is in place based on consumption bands to identify ICPs with the incorrect allocation group.

NOVA ENERGY

The October 2023 analysis by Nova Energy found the following:

- 443 allocation group 6 ICPs had estimated annual consumption exceeding 250GJ.
- 189 allocation group 4 ICPs had estimated consumption under 250GJ per annum.
- Four allocation group 4 ICPs connected to allocated gas gates have consumption greater than 10TJ per annum.
- Three ICPs with annualised consumption between 250 GJ and 10 TJ and TOU metering installed but assigned to Allocation group 4 and submitted as non TOU.

The allocation group monitoring report has not been actively worked by Nova Energy since March 2022 due to personnel changes and resource challenges which is the reason for the higher than expected ICP counts identified as part of this audit. All non TOU ICPs are scheduled to be read monthly meaning the impact of the incorrect allocation group assignment for these affected ICPs is limited to incorrect aggregation of consumption volumes to allocation group. A recommendation is recorded in **section 8** of the **Registry and Switching Performance audit report**.

As discussed in **section 3.3**, Nova Energy has a process to monitor read attainment for non TOU ICPs. This process is designed around the Allocation group 6 requirements of ensuring at least one read every 12 months unless exceptional circumstances prevent such an interrogation.

For Allocation group 4 ICPs the read attainment requirements are that all ICPs must have register readings recorded monthly. Exceptional circumstances do not apply to allocation group 4 ICPs. Nova Energy does not apply a separate meter reading escalation process for allocation group 4 ICPs to ensure any unread ICPs are escalated immediately to attempt to resolve the issue impacting read attainment. Analysis of the allocation group 4 submission volumes relating to final GAS040 revisions for April, May and June 2022 identified forward estimate volumes present for seven gas gates as listed below.

Gas Gate	April 2022 FE volume	May 2022 FE volume	June 2022 FE volume
BEL24510	2.023	2.93	
HEN74101	3.762	5.549	
PAP06610	1.466	2.164	2.574
TWA35610	7.981	6.349	
TWB24810	8.175	11.762	

Gas Gate	April 2022 FE volume	May 2022 FE volume	June 2022 FE volume
WKM17701	11.301		
WST03610	1.35	1.994	2.369

While the volume of forward estimate is relatively small and the number of affected gas gates reduces from seven to two between April and June 2022, the presence of FE at final revision confirms the current read attainment process is not adequate for allocation group 4 ICPs.

Recommendation	Audited party comment
Review read attainment process for allocation group 4 ICPs to ensure any meter read attainment issues are escalated and resolved as soon as possible.	**Response:** Accepted **Comments:** Improved consecutive estimate process from Q4 2023. All sites gas (incl GRP4) will be tracked daily and attempt made to get actual meter reading. We have two dedicated resources for read attainment in Since August 2023. New reporting created for GRP4 site read attainment process from January 2024
Review outstanding allocation group 4 forward estimate volumes for interim revisions as a measure of the reading performance for allocation group 4 ICPs and ensure the read issues impacting these ICPs are resolved prior to final revisions.	**Response:** Accepted **Comments:** As above

Since the last audit Nova Energy has implemented a monthly monitoring of ICPs consuming or expected to consume more than 9 TJ for possible upgrade to TOU metering. A monthly meeting is conducted between the billing team and Account Managers to:

- Confirm with the customer that the gas requirements for the ICP is likely to exceed the 10 TJ threshold for requiring TOU metering to be installed.
- Working with the meter owner to design, supply and installed TOU metering.

A review of the monthly meeting minutes confirms that this process is being consistently applied and TOU metering is being installed as soon as practicable.

Allocation groups are recorded on the registry and the profile code is hard coded into the GAS040 and GAS050 reports to ensure that the correct profile code is applied. Allocation groups were checked against the metering type for consistency. I found five ICPs with TOU metering which are read and settled as non-TOU. Under rule 29.2.1 all ICPs where the rolling 12-month actual or expected consumption is greater than 250 GJ and with TOU metering installed, are required to be settled as TOU in allocation groups 1 or 2:

ICP	Annualised Consumption (GJ)	Orion register content code	Operating at network pressure	Expected content code	Comment
0000064521QTEDE	3129.353	U	N	TG	Allocation group 4 with TOU metering
0008000037NG731	2695.922	TG	N	TG	Allocation group 4 with TOU metering
0001406092QTBB7	1845.306	TG	Y	TG	Allocation group 4 with TOU metering

ICP	Annualised Consumption (GJ)	Orion register content code	Operating at network pressure	Expected content code	Comment
0001411878QTF10	12.707	TG	Y	TG	Allocation group 4 with TOU metering

Two of the ICPs (0001406092QTBB7, 0001411878QTF10) are operating at network pressure and a corrector / logger is fitted to ensure the conversion of volume to energy meets the requirement of **NZS5259:2015**.

The Gas Industry Company acknowledges that the allocation group rules for ICPs with TOU flag set to Y and consumption of less than 10,000 GJ per annum are unclear. Rule 29.2.1 states that if TOU metering is installed the ICP should be in AG1 or AG2 and rule 29.3 states that ICPs in AG5 or AG6 may have TOU metering. These rules are being revisited by the Gas Industry as part of a statement of proposal. I have recorded compliance because rules 29.2.1 and 29.3 are inconsistent, and Nova Energy is compliant with rule 29.3.

29.2 For a **consumer installation** at an **allocated gas gate** where the rolling 12-month actual or expected consumption is greater than 250 **GJ**, every **retailer** that supplies that **consumer installation** must either:

29.2.1 Ensure a **TOU meter** is installed and assign that **consumer installation** to **allocation group** 1 or 2; or

29.2.2 Ensure a **non-TOU meter** is installed and assign that **consumer installation** to **allocation group** 3 or 4.

29.3 For a **consumer installation** at an **allocated gas gate** which has not been assigned to **allocation groups** 1 to 4 under rules 29.1 and 29.2, every **retailer** that supplies that **consumer installation** must ensure a **TOU meter** or **non-TOU meter** is installed and assign that **consumer installation** to **allocation group** 5 or 6.

Auditor comment		
Non-compliance	Description	
Report section: 3.2 Rule: 29.2.2 From: 1 October 2020 To: 31 October 2023	Audit history: Yes Controls: Needs Improvement Impact: Insignificant	443 ICPs with annualised consumption over 250 GJ incorrectly assigned to Allocation group 6.

Remedial action rating	Remedial timeframe	Remedial comment
In progress	30/09/2024	Reporting is run regularly and an automated update will be instigated upon review of the current reporting parameters to ensure that there is not incorrect or excessive movements between allocation groups

Audited party comment	
The circumstances of the matters outlined in the breach notice.	
Whether or not the participant admits or disputes that it is in breach.	Breach admitted
Estimate of the impact of the breaches (where admitted).	Insignificant impact. Nova attempts to read all sites monthly regardless of allocation group.
What steps or processes were in place to prevent the breaches?	
What steps have been taken to prevent recurrence?	

Auditor comment			
Non-compliance	Description		
Report section: 3.2 Rule: 29.3 From: 1 October 2020 To: 31 October 2023	Audit history: Yes Controls: Needs Improvement Impact: Insignificant	189 ICPs with annualised consumption under 250 GJ incorrectly assigned to Allocation group 4.	
Remedial action rating	Remedial timeframe		Remedial comment
In progress	30/09/2024		Reporting is run regularly and an automated update will be instigated upon review of the current reporting parameters to ensure that there is not incorrect or excessive movements between allocation groups
Audited party comment			
The circumstances of the matters outlined in the breach notice.			
Whether or not the participant admits or disputes that it is in breach.	Breach admitted		
Estimate of the impact of the breaches (where admitted).	Insignificant impact. Nova attempts to read all sites monthly regardless of allocation group.		

What steps or processes were in place to prevent the breaches?	
What steps have been taken to prevent recurrence?	

Auditor comment			
Non-compliance	Description		
Report section: 3.2 Rule: 29.4.2 From: 1 October 2020 To: 31 October 2023	Audit history: Yes Controls: Needs Improvement Impact: Minor	Allocation group 4 forward estimate volumes present for seven gas gates for final revision relating to April 2022, six gas gates relating to May 2022 and two gas gates for June 2022 due to ICPs not being consistently read monthly. No permanent estimates were applied resulting in potential over / under submission once an actual read is obtained for the affected ICPs.	
Remedial action rating	Remedial timeframe		Remedial comment
In progress	31/03/2024		Please see response to Section 3.3 Rule 29.4.2
Audited party comment			
The circumstances of the matters outlined in the breach notice.			
Whether or not the participant admits or disputes that it is in breach.	Breach admitted		
Estimate of the impact of the breaches (where admitted).			
What steps or processes were in place to prevent the breaches?			
What steps have been taken to prevent recurrence?			

MEGATEL

The October 2023 analysis by Nova Energy on behalf of MegaTEL found the following:

- Eight allocation group 6 ICPs had estimated annual consumption exceeding 250GJ.
- Four allocation group 4 ICPs had estimated consumption under 250GJ per annum.

The allocation group monitoring report has not been actively worked by Nova Energy since March 2022 due to personnel changes and resource challenges which is the reason for the higher than expected ICP counts identified as part of this audit. All non TOU ICPs are scheduled to be read monthly meaning the impact of the incorrect allocation group assignment for these affected ICPs is limited to incorrect aggregation of consumption volumes to allocation group.

For Allocation group 4 ICPs the read attainment requirements are that all ICPs must have register readings recorded monthly. Exceptional circumstances do not apply to allocation group 4 ICPs. Nova Energy on behalf of MegaTEL does not apply a separate meter reading escalation process for allocation group 4 ICPs to ensure any unread ICPs are escalated immediately to attempt to resolve the issue impacting read attainment. Analysis of the allocation group 4 submission volumes relating to final GAS040 revisions for April, May and June 2022 identified no forward estimate volumes present.

Auditor comment			
Non-compliance	Description		
Report section: 3.2 Rule: 29.2.2 From: 1 October 2020 To: 31 October 2023	Audit history: Yes Controls: Needs Improvement Impact: Insignificant	Eight ICPs with annualised consumption over 250 GJ incorrectly assigned to Allocation group 6.	
Remedial action rating	Remedial timeframe	Remedial comment	
In progress	30/09/2024	Nova manages this for MegaTEL. Breach response commentary for Nova applies.	
Audited party comment			
The circumstances of the matters outlined in the breach notice.			
Whether or not the participant admits or disputes that it is in breach.	Breach admitted		
Estimate of the impact of the breaches (where admitted).			
What steps or processes were in place to prevent the breaches?			
What steps have been taken to prevent recurrence?			

Auditor comment		
Non-compliance	Description	
Report section: 3.2 Rule: 29.3 From: 1 October 2020	Audit history: Yes Controls: Needs Improvement	Four ICPs with annualised consumption under 250 GJ incorrectly assigned to Allocation group 4.

To: 31 October 2023	Impact: Insignificant	

Remedial action rating	Remedial timeframe	Remedial comment
In progress	30/09/2024	Nova manages this for MegaTEL. Breach response commentary for Nova applies.

Audited party comment	
The circumstances of the matters outlined in the breach notice.	
Whether or not the participant admits or disputes that it is in breach.	Breach admitted
Estimate of the impact of the breaches (where admitted).	
What steps or processes were in place to prevent the breaches?	
What steps have been taken to prevent recurrence?	

3.3 Meter Reading Requirements (Rules 29.4.3, 29.5 & 40.2)

Each month, retailers must report the number and percentage of validated meter readings obtained in accordance with rules 29.4.3 and 29.5 in the GAS080 report.

NOVA ENERGY

The GAS080 report is created in EnergyMarket using raw data which is imported from Orion. I compared the July 2023 GAS080 ICP level detail report to the registry list with history for 01/01/2022 to 31/07/2023 and reviewed a sample of discrepancies and found:

All allocation group 6 consumer installations with non-TOU meters must have validated register readings recorded at least once every 12 months unless exceptional circumstances prevent such an interrogation. 90% of consumer installations with non-TOU meters must have a validated reading every four months. All ICPs are read monthly and various methods are employed to obtain readings in instances where a reading is not obtained for each 90 day period. Depending on the customer's choice of communication method, a message is sent to the customer via email, SMS or letter requesting the customer to contact Nova Energy to arrange access to enable a reading to be obtained. The message second and third requests to the customer are tailored to recognise the period of time since the last successful read obtained for the site.

Each January Nova Energy also instigates a program of work to attempt to collect compliance reads using multiple attempts to communicate with the customer and meter reading attempts outside normal business hours are conducted. Nova Energy uses a consecutive estimates report to monitor the progress of its read attainment processes.

Additionally, Nova Energy reviews its list of do not read (DNR) ICPs where for health and safety reason a meter read is not sent to an ICP and customer reads are regularly obtained. ICPs are transitioned to standard meter reading rounds where possible.

A sample of 20 active contracted (ACTC) ICPs from the consecutive estimates report that have had more than 12 estimates were reviewed. In all cases multiple attempts using different communication methods had been applied. For 14 ICPs read have now been obtained.

Nova Energy's meter reading processes for allocation group 6 ICPs appear robust and reduce the reliance on forward estimates to ensure submission accuracy.

To confirm compliance with the meter reading frequency rules, Nova Energy provided a copy of the GAS080 report for April, May, June and July 2023.

Target	Rolling 4 months (target 90%)	12 months (target 100%)
Apr-2023	99.22%	99.86%
May-2023	99.27%	99.86%
Jun-2023	99.36%	99.91%
Jul-2023	99.32%	99.92%

Allocation group 4 ICPs consumer installations with non-TOU meters must have validated register readings recorded monthly. Exceptional circumstances do not apply to allocation group 4 ICPs. Nova Energy does not apply a separate meter reading escalation process for allocation group 4 ICPs to ensure any unread ICPs are escalated immediately to attempt to resolve the issue impacting read attainment. Analysis of the allocation group 4 submission volumes relating to final GAS040 revisions for April (36.058 GJ), May (30.748 GJ) and June 2022(4.943 GJ) identified that forward estimate volumes were present.

As part of the read attainment process, meter readers are able to escalate potential issues with the meter using meter conditions codes which map to a standard set of meter issues. A sample of nine meter condition codes provided by one of the meter reading agents were reviewed to see what actions have been undertaken by Nova Energy to investigate the reported issue. The process to monitor gas meter condition codes has not been performed due to personnel changes and resource challenges. Training is currently underway to ensure the metering team can reinstate this process. For three of the ICPs, subsequent meter reads have been obtained and the consumption is consistent with historical volumes. For six ICPs investigations are now underway.

Recommendation	Audited party comment
Ensure all reported gas meter condition codes are investigated in a timely manner to support the read attainment processes.	**Response:** Accepted **Comments:** Nova is currently undertaking a review of the management of the meter condition code reporting to ensure all issues are resolved.

Auditor comment		
Non-compliance	Description	
Report section: 3.3 Rule: 29.4.2 From: 1 October 2020 To: 31 October 2023	Audit history: No Controls: Needs Improvement Impact: Minor	Some allocation group 4 ICPs have not been successfully read monthly. Analysis of the allocation group 4 submission volumes relating to final GAS040 revisions for April (36.058 GJ), May (30.748 GJ) and June 2022(4.943 GJ) identified that forward estimate volumes were present. Nova Energy does not have a separate no read escalation process for allocation group 4 ICPs resulting in the allocation group 6 process being applied to try and obtain one read each 12 months instead of escalating the access issue after one missed read.

Remedial action rating	Remedial timeframe	Remedial comment
In progress	31/03/2024	New validation process for group 4 ICPs to be developed and implemented in early 2024.

Audited party comment	
The circumstances of the matters outlined in the breach notice.	Nova does not distinguish read validation process for allocation group 4 & 6
Whether or not the participant admits or disputes that it is in breach.	Breach admitted
Estimate of the impact of the breaches (where admitted).	Minor. 83 sites identified with estimates in January 2024. Nova will work towards obtaining meter reads for these sites
What steps or processes were in place to prevent the breaches?	Consecutive estimate process to obtain meter read however it was not specific to group 4. New reporting for GRP4 exception has been created in January 2024.
What steps have been taken to prevent recurrence?	Nova will create a new process for validation of group 4 ICPs in early 2024

MEGATEL

Nova Energy creates the GAS080 report on behalf of MegaTEL using the same process as for Nova Energy. I compared the July 2023 GAS080 ICP level detail report to the registry list with history for 01/01/2022 to 31/07/2023 and reviewed a sample of discrepancies and found:

All allocation group 6 consumer installations with non-TOU meters must have validated register readings recorded at least once every 12 months unless exceptional circumstances prevent such an interrogation. 90% of consumer installations with non-TOU meters must have a validated reading every four months. All ICPs are read monthly and various methods are employed to obtain readings in instances where a reading is not obtained.

Two ICPs were identified as having not been read for 12 months. In addition to the monthly scheduled meter read attempts each customer was called and text multiple times to attempt to contact the

customer and arrange access during this period. I recommend that MegaTEL review their no access escalation process to also include email and letters to ensure multiple forms of communication are used in addition to calling and texting the same contact number without success.

Recommendation	Audited party comment
Recommend that MegaTEL review their no access escalation process to also include email and letters to ensure multiple forms of communication are used in addition to calling and texting the same contact number without success.	**Response**: Accepted **Comments**: MegaTEL will develop and implement new processes to utilise additional contact methods.

Depending on the customer's choice of communication method, a message is sent to the customer via email, SMS or letter requesting the customer to contact Nova Energy to arrange access to enable a reading to be obtained. The message second and third requests to the customer are tailored to recognise the period of time since the last successful read obtained for the site.

MegaTEL's meter reading processes for allocation group 6 ICPs appear robust and reduce the reliance on forward estimates to ensure submission accuracy.

Allocation group 4 ICPs consumer installations with non-TOU meters must have validated register readings recorded monthly. Exceptional circumstances do not apply to allocation group 4 ICPs. Nova Energy does not apply a separate meter reading escalation process for allocation group 4 ICPs to ensure any unread ICPs are escalated immediately to attempt to resolve the issue impacting read attainment. Analysis of the allocation group 4 submission volumes relating to final GAS040 revisions for April, May and June 2022 identified no forward estimate volumes present.

To confirm compliance with the meter reading frequency rules, Nova Energy provided a copy of the GAS080 report for April, May, June and July 2023.

Target	Rolling 4 months (target 90%)	12 months (target 100%)
Apr-2023	97.97%	99.31%
May-2023	97.88%	99.5%
Jun-2023	97.76%	99.57%
Jul-2023	97.35%	99.68%

3.4 Non-TOU Validation

Meter reading validation occurs at multiple levels.

At source, the handheld data input devices perform a localised validation, to ensure that the reading is within expected high-low parameters. These parameters are set as a "high/low" limit, based on an agreed setting with Nova Energy.

Readings that fail this initial validation must be re-entered, and if the second reading is the same, it will be accepted; if it is different (indicating an error with the first reading) then it must be re-entered. Once the same reading has been entered twice consecutively, it will be accepted.

The second level of validation occurs when the data reaches Nova Energy. This validation includes the following checks:

- meter not found for a premise,
- high reading,

- low reading,
- meter reading already present in the system,
- another reading exists for the same day,
- meter could not be read, and
- meter reading date is earlier than existing billed reads.

Readings that fail validation are manually investigated and any issues resolved.

Readings are then subject to "billing validation". Each bill produced is subject to a number of individual validation checks. Bills that fail validation end up on an "exceptions" list and any issues are investigated and resolved prior to sending the bill. These validation checks include:

- high dollar amount,
- negative dollar amount,
- long billing days,
- short billing days,
- high percentage variation from previous bill, and
- electricity consumption without gas consumption.

Meter readings are not edited during this process. If a reading fails validation and an incorrect meter reading is suspected, then a check reading will be performed.

3.5 Non-TOU Error Correction

The process for error correction was examined by a "walk through" of the process to ensure that corrected consumption is included in the revision process and provided to the allocation agent.

NOVA ENERGY

Stopped or faulty meters

Where a meter is found to have stopped an estimated removal reading is entered which adds the estimated unrecorded volume to the removal reading recorded on the meter. This process results in consumption information appearing in the relevant revision files.

There were no examples of gas stopped meters identified by Nova Energy during the audit period. The gas stopped meter report has not been actively monitored during the audit period due to personnel changes and resource challenges during the audit period. As a result, potentially stopped meters have not been investigated. Nova Energy provided a copy of the 'All Active Gas Meters with No Consumption' report and there were 337 ICPs where zero consumption has been recorded for more than 12 months.

Nova Energy has now reinitiated monitoring of this report.

Recommendation	Audited party comment
Include Allocation group and customer type fields to the 'All Active Gas Meters with No Consumption' report to enable potential higher volume ICPs to be prioritised for investigation.	**Response:** Accepted **Comments**: Recommended improvements have been incorporated into the existing reports.

Prioritise business ICPs for monitoring and investigation of potential gas stopped meters.	**Response:** Acknowledged **Comments:** Nova is reviewing current processes due to be finalised by 30/09/2024.

Meter pressure corrections-

As recorded in **section 2.2**, when meter pressure corrections are made, the corrected value will be used in the pressure factor calculation for all invoices and reconciliation submissions created after the date and time Orion pressure is updated. This includes any wash up submissions created for earlier periods. Pressure changes often occur due to data correction, but there may be a genuine pressure upgrade or downgrade on a specific date. If a correction is required for the entire period that the meter was installed, the pressure on the current version of the meter can be updated.

The recorded meter pressure value will be used in the pressure factor calculation for all invoices and reconciliation submissions created after the date and time Orion pressure is updated. This includes any wash up submissions created for earlier periods. However, where a meter pressure has been overwritten after invoicing has been performed, then any future reversal and rebilling activity will also reflect the backdated billing factor change without the user being aware of the historical change in value.

Error correction was examined by a "walk through" of the process and by examining an extreme case sample of the five largest positive and five largest negative differences where the meter pressure was corrected. For all meter pressure corrections provided, Orion was updated to match the registry meter pressure and the correction aligned with the registry metering event date.

In **section 2.2** one ICP was identified where a complete correction for the affected volume was not applied:

- ICP 1001290219QT502 – the meter pressure correction has not yet been applied as Nova Energy have requested updated paperwork confirming the meter pressure change post meter change.

Inactive status corrections

Consumption is reported for all ICPs which have a metered status. Nova Energy provided eight examples of ICPs with inactive consumption, and I confirmed that consumption during the inactive period was correctly reported.

Auditor comment		
Non-compliance	Description	
Report section: 3.5 Rule: 26.2 From: 16 July 2021 To: 31 October 2023	Audit history: No Controls: Needs improvement Impact: Insignificant	The volume correction for ICP 1001290219QT502 has not been applied – Nova Energy have requested updated paperwork confirming the meter pressure change post meter change.

Remedial action rating	Remedial timeframe	Remedial comment
Completed	21/11/2023	Paperwork was received and correction processed in Orion, Due to the wash up process the volume correction will mean there is no impact to submissions

Audited party comment	
The circumstances of the matters outlined in the breach notice.	Nova was not notified of a meter pressure correction and therefore the change was not processed into our system.
Whether or not the participant admits or disputes that it is in breach.	Breach admitted
Estimate of the impact of the breaches (where admitted).	Insignificant as corrected within washup period.
What steps or processes were in place to prevent the breaches?	
What steps have been taken to prevent recurrence?	

MEGATEL

Corrections are completed by Nova Energy on MegaTEL's behalf.

Stopped or faulty meters

Where a meter is found to have stopped an estimated removal reading is entered which adds the estimated unrecorded volume to the removal reading recorded on the meter. This process results in consumption information appearing in the relevant revision files.

MegaTEL ICPs are included in the Nova Energy 'All Active Gas Meters with No Consumption' report however as recorded above the report has not been actively monitored during the audit period due to personnel changes and resource challenges during the audit period. As a result, potentially stopped meters have not been investigated. Nova Energy provided a copy of the 'All Active Gas Meters with No Consumption' report and there were 8 ICPs where zero consumption has been recorded for more than 12 months.

Meter pressure corrections-

The Nova Energy process to perform meter pressure corrections is also applied to MegaTEL ICPs.

Currently the MEGA participant code is not included in the metering exception reporting undertaken by Nova Energy on MegaTEL's behalf, therefore no examples of stopped or faulty meters were identified during the audit. Nova Energy has initiated a project to refresh all gas exception reporting to include the MEGA participant code.

Inactive status corrections

Consumption is reported for all ICPs which have a metered status. Nova Energy provided four examples of MegaTEL ICPs with inactive consumption, and I confirmed that consumption during the inactive period was correctly reported.

3.6 TOU Validation

Nova Energy supplies 140 Allocation Group 1 ICPs and 95 Allocation Group 2 ICPs.

TOU data is collected from all Allocation Group 1 ICPs by Vector Data Services, who perform data validation checks, time monitoring / synchronisation and also performs meter health checks using the meter event logs. Where any issues are identified, then Vector Data Services deals directly with the

respective meter owner. Nova Energy is not involved in the escalation process and is also not advised when a time correction is performed on any ICP. Appendix B of **NZS5259:2015** provides guidance on the accuracy requirements for the time parameter of time stamped data which records a threshold of ± 300 seconds.

Vector Data services also provides D+1 daily data to the allocation agent on behalf of Nova Energy.

Recommendation	Audited party comment
Work with the TOU data collectors to implement a notification process for time corrections greater than ± 300 seconds enable Nova Energy to review the TOU data and determine if a data correction is also required.	**Response:** Acknowledged **Comments:** Nova will engage with our service providers to confirm their time correction processes for data correction and take required action from there.

For Allocation Group 2 ICPs, TOU data is collected from most Powerco (POCO) metered ICPs by Powerco. Powerco performs monthly meter health checks using the meter event logs. For Nova (NOVA), Vector Metering (NGCM), Gasnet (GNET) and some Powerco (POCO) ICPs, Wells performs monthly TOU meter downloads and the files from these meters are then processed and reformatted using proprietary systems such as Masterlink (Mercury Correctors). Event logs are also captured within these proprietary systems for review and action by Nova personnel. A check of clock time occurs in the field and is checked as part of the periodic accuracy checks.

All TOU data files are then imported through a validation system, then directly loaded into Orion.

TOU validation checks occur manually each month in the Auckland office and include 50 individual checks, including the following:

- file formats,
- invalid dates and times,
- status,
- missing data, including temperature and pressure data,
- negative corrected volume,
- minimum and maximum pressure compared against the reference meter pressure recorded in Orion,
- minimum and maximum temperature compared against the reference GIC gas gate temperature recorded in Orion, and
- uncorrected data calculation vs corrected data.

Prior to submission of the GAS050 report, consumption is reviewed. Refer to **section 5.2** for an explanation of the checks completed. Compliance is confirmed.

4. Energy Consumption Calculation (Rule 28.2)

To evaluate energy consumption calculations, a spreadsheet was prepared which converts volume between meter readings to volume at standard conditions and then to energy consumption. The relevant information for some TOU and non-TOU ICPs was entered into the spreadsheet and the resulting energy value was compared to that calculated by Orion. This comparison confirmed the accuracy of the Orion calculation and confirmed compliance with **NZS 5259:2015**.

When non-TOU reconciliation submissions are prepared, a conversion factor for the submission month, rather than the read period is applied. This is discussed further in **section 5.5**.

NOVA ENERGY

TOU Energy Consumption Calculation

Raw TOU data is converted to energy within Orion and differs based on the register content code. All Nova Energy's TOU meters have TA (temperature and absolute pressure corrected), TG (temperature and gauge pressure corrected) or TGS (temperature, gauge pressure and supercompressibility corrected) register content codes. Register content codes are not checked for non-TOU ICPs and also not reviewed on a regular basis for TOU ICPs. A recommendation is recorded in **section 2.2**.

- Altitude factors are calculated for all TOU ICPs, but only applied in the conversion process where the register content code is TG or TGS.
- Compressibility factors are calculated and applied for all TOU ICPs where the register content code is TG or TA. Orion uses a reference meter pressure recorded against the installed meter attribute in Orion rather than the daily measured average meter pressure in the daily compressibility calculation. Daily gas composition values are applied in the compressibility calculation. The use of a reference meter pressure means that where a daily metered meter pressure deviates by a small amount compared to the reference meter pressure then the compressibility factor is likely to fall outside the maximum permissible errors set out in **NZS 5259:2015.**
- Pressure and temperature factors of 1 are applied for all TOU ICPs, because the data is already corrected for temperature and pressure.

The register content for a sample of five ICPs were compared against the meter owner's information and one ICP (0008000038NG8EF) the register content did not match the meter owner's information. Nova Energy investigated the cause of this difference and identified that there was a corrector change in April 2022 that resulted in a change in content code from TGS to TG where the change in register content was not applied in Orion.

I checked the TOU conversion process by reperforming the conversion process for a sample of seven ICPs with a mix of TA, TG, and TGS register content codes for August and September 2022 and found:

- For one ICP (1002144532QT42F) the daily volume to energy conversion factors were confirmed to be within the maximum permissible errors set out in **NZS 5259:2015**.
- ICP 0001014051NG440 related to a gas gate direct connected customer where DDR files from the transmission owner are used for submission – no volume to energy conversion is undertaken by Nova Energy.
- For ICP 0008000038NG8EF, as described above the incorrect register content was applied in Orion since April 2022. The impact of this error was assessed to be 1.14% or 4.3 TJ per annum.
- For three ICPs (0000026779GNAAE - 0.29% 37.5 GJ pa, 0000073197NAB99 – 0.28% 64.4 GJ, 1002112585QTDE3 – 0.051% 54.1 GJ)), the difference between the reference meter pressure used in the daily compressibility factor calculation and the daily measured meter pressure resulted in the compressibility factor being outside the ±0.2% maximum permissible error set out in **NZS 5259:2015.**
- For ICP 0078000094PG227, for two days in August 2022 the difference between the reference meter pressure used in the daily compressibility factor calculation and the daily measured meter pressure resulted in the compressibility factor being outside the ±0.2% maximum permissible error set out in **NZS 5259:2015.** The impact to the submission volumes for these two days was assessed to be 0.3 GJ.

Non-TOU Energy Consumption Calculation

As described in **section 5.5**, The historic estimate process first normalises the read to read CM using the most recent SADSV profiles available for the period. The normalised CM data is then converted to GJ by applying the average seasonal conversion factors (temperature factor, compressibility factor and calorific value) for the ICP for the month. According to rule 35.2, read to read period consumption

should be converted to GJ, then normalised using the SADSV. This ensures that sum of consumption apportioned to each month matches the total consumption for the read to read period. If different monthly temperature, compressibility and calorific value conversion factors are applied, the total CM apportioned to each month will be consistent with the total, but the GJ is likely to differ.

Testing confirmed that the Orion system is calculating pressure and altitude factors correctly for non-TOU ICPs. However, if any inputs into these calculations are incorrect, including Orion static data, errors will occur. Non conformance is recorded in **sections 2.1.2** and **3.5** because some incorrect altitudes and network pressures resulted in factors outside the maximum permissible errors set out in **NZS 5259:2015**.

Compressibility factors are validated using a daily exception report, which recalculates the factor and reports any ICPs with meter pressure over 50 kPa where the recalculated value differs from Orion. Any ICPs appearing on this report are reviewed and resolved.

I recalculated the conversion factors that would have applied had conversion occurred for the read to read period for five ICPs and compared these to the monthly conversion factors applied by Nova Energy for a read to read period. The factors calculated by Orion for two ICPs were within the maximum permissible errors set out in **NZS 5259:2015.**

For two ICPs the temperature factor difference was found to be outside the maximum permissible error (± 0.9%) set out in **NZS 5259:2015** due to:

- The network pressure attribute in the Orion system for this ICP has been incorrectly populated with meter pressure resulting in no Joule-Thomson effect being applied.
- Nova Energy applies a monthly temperature factor to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods.

ICP	Read to read period	Applied Ft (based on November 2022 values)	Correct Ft (based on the read period)	Percentage difference
0000869021QTA8A	16/11-12/12/2022	0.987903	0.99760	0.98%
0001445641QT546	21/09-19/12/2022	0.991058	1.00062	0.96%

For one ICP the CV difference was found to be outside the maximum permissible error (± 0.5%) set out in **NZS 5259:2015**, all other differences were within the permissible errors for their factor type.

ICP	Read to read period	Applied CV (based on October 2022 values)	Correct CV (based on the read period)	Percentage difference
0000072523NA580	18/10-16/11/2022	40.34471	40.0111	-0.83%

Auditor comment		
Non-compliance	Description	
Report section: 4 Rule: 28.2 From: 1 April 2022 To: 31 October 2023	Audit history: No Controls: Needs Improvement Impact: Moderate	For ICP 0008000038NG8EF, the incorrect register content (TGS instead of TG) was applied in Orion since April 2022. The impact of this error was assessed to be 1.14% or 4.3 TJ per annum. For three ICPs, the difference between the reference meter pressure used in the daily compressibility factor calculation and the daily measured meter pressure resulted in the

		compressibility factor being outside the ±0.2% maximum permissible error set out in NZS 5259:2015. • 0000026779GNAAE - 0.29% 37.5 GJ pa • 0000073197NAB99 – 0.28% 64.4 GJ pa • 1002112585QTDE3 – 0.051% 54.1 GJ pa For ICP 0078000094PG227, for two days in August 2022 the difference between the reference meter pressure used in the daily compressibility factor calculation and the daily measured meter pressure resulted in the compressibility factor being outside the ±0.2% maximum permissible error set out in NZS 5259:2015. The impact to the submission volumes for these two days was assessed to be 0.3 GJ. Nova Energy applies monthly conversion factors to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods. This does not ensure that the conversion factors that applied at the time the gas was consumed are used, and can result conversion factors outside permissible errors, and create differences between the total allocated consumption for a read to read period, and the total consumption for the read to read period. • ICPs 0000869021QTA8A (read period 16/11-12/12/2022) and 0001445641QT546 (21/09-19/12/2022) had temperature factor differences outside the maximum permissible error for NZS 5259:2015. • ICP 0000072523NA580 had a CV difference outside the maximum permissible error for NZS 5259:2015 for its 18/10-16/11/2022 read period.

Remedial action rating	Remedial timeframe	Remedial comment
Completed In progress	Ongoing	Nova has made the correction to the register content to the impacted ICPs. Nova will liaise with our vendor to investigate the compliance of the billing systems conversion calculation.

Audited party comment	
The circumstances of the matters outlined in the breach notice.	
Whether or not the participant admits or disputes that it is in breach.	Breach admitted
Estimate of the impact of the breaches (where admitted).	Minor impact in the volume of GJs

What steps or processes were in place to prevent the breaches?	
What steps have been taken to prevent recurrence?	

MEGATEL

Non-TOU Energy Consumption Calculation

As described in **section 5.5**, The historic estimate process first normalises the read to read CM using the most recent SADSV profiles available for the period. The normalised CM data is then converted to GJ by applying the average seasonal conversion factors (temperature factor, compressibility factor and calorific value) for the ICP for the month. According to rule 35.2, read to read period consumption should be converted to GJ, then normalised using the SADSV. This ensures that sum of consumption apportioned to each month matches the total consumption for the read to read period. If different monthly temperature, compressibility and calorific value conversion factors are applied, the total CM apportioned to each month will be consistent with the total, but the GJ is likely to differ.

Testing confirmed that the Orion system is calculating pressure and altitude factors correctly for non-TOU ICPs. However, if any inputs into these calculations are incorrect, including Orion static data, errors will occur. Non conformance is recorded in **sections 2.1.2** and **3.5** because some incorrect altitudes and network pressures resulted in factors outside the maximum permissible errors set out in **NZS 5259:2015**.

Compressibility factors are validated using a daily exception report, which recalculates the factor and reports any ICPs with meter pressure over 50 kPa where the recalculated value differs from Orion. Any ICPs appearing on this report are reviewed and resolved.

I recalculated the conversion factors that would have applied had conversion occurred for the read to read period for four ICPs and compared these to the monthly conversion factors applied for each historic estimate scenario. For three ICPs the factors calculated by Orion were within the maximum permissible errors set out in **NZS 5259:2015.** For three ICPs the temperature factor difference was found to be outside the maximum permissible error (± 0.9%) set out in **NZS 5259:2015** due to:

- The network pressure attribute in the Orion system for this ICP has been incorrectly populated with meter pressure resulting in no Joule-Thomson effect being applied.
- Nova Energy applies a monthly temperature factor to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods.

ICP	Read to read period	Applied Ft (based on November 2022 values)	Correct Ft (based on the read period)	Percentage difference
1002040310QTD15	13/08-08/11/2022	0.991399	1.00758	1.63%
1001262671QT23B	19/11-20.12/2022	0.982944	0.99265	0.99%
0009000259NG7E4	07/09-02/11/2022	1.005935	1.01595	1.00%

All other differences were within the permissible errors for their factor type.

Auditor comment		
Non-compliance	Description	
Report section: 4 Rule: 28.2 From: 13 August 2022 To: 8 November 2022	Audit history: No Controls: Needs Improvement Impact: Minor	Nova Energy applies monthly conversion factors to normalised data, instead of applying the conversion factors for the read period, and then profiling consumption between the reconciliation periods. This does not ensure that the conversion factors that applied at the time the gas was consumed are used, and can result conversion factors outside permissible errors, and create differences between the total allocated consumption for a read to read period, and the total consumption for the read to read period. • ICPs 1002040310QTD15 (read period 13/8-08/11/2022), 1001262671QT23B (read period 19/11-20.12/2022), 0009000259NG7E4 (read period 07/09-02/11/2022) had temperature factor differences outside the maximum permissible error for NZS 5259:2015 for its 18/10-16/11/2022 read period.

Remedial action rating	Remedial timeframe	Remedial comment
In progress	Ongoing	Same as the response for Nova Energy above

Audited party comment	
The circumstances of the matters outlined in the breach notice.	
Whether or not the participant admits or disputes that it is in breach.	Breach admitted.
Estimate of the impact of the breaches (where admitted).	Response is the same as to the above breach.
What steps or processes were in place to prevent the breaches?	
What steps have been taken to prevent recurrence?	

5. Estimation and Submission Information

5.1 TOU Estimation and Correction (Rule 30.3)

This rule requires that retailers must provide the best estimate of consumption information to the allocation agent in situations where actual data is not available. Schedule 1 of the Downstream Regulations provides a matrix of correction criteria based on the type of metering issue.

Interim estimations are performed by either the billing team for ICPs billed in Orion or reconciliation team for wholesale ICPs which are billed outside of Orion. These initial consumption estimations are

derived from historic consumption patterns available in Orion for existing ICPs or reference consumption profiles provided by the customer for new ICPs. If the ICP is an allocation group 1 site, then the D+1 estimate produced by the Vector Data Services team on behalf of Nova Energy may be used.

Where it is known that the site has been impacted by an event affecting their normal consumption pattern (extreme weather event, Pandemic) then this initial estimation is adjusted to reflect this. The estimated data is appropriately labelled. The Billing team maintains an electronic journal of all interim estimations performed, affected period, methodology applied and who completed the estimation.

Permanent estimation and correction activities are conducted by the Account Managers. Various methods are used depending on the nature of the issue.

If there is a data gap and register readings are available as part of the hourly / daily TOU data provided to Nova Energy, then these corrected / uncorrected reads are used to determine the total volume consumed for the affected period. A historical shape is then applied to the total corrected volume derived from meter reads to produce daily volume values which are then loaded into Orion to calculate daily GJ values.

The customer may be consulted to ensure the historic shape is reflective of the consumption pattern for the affected period where the site may have been impacted by an event affecting their normal consumption pattern (extreme weather event, Pandemic). If data and register readings are not provided as part of the TOU data file received by Nova Energy, then consumption history over the past 24 months, recent usage patterns and consultation with the customer are used to determine a likely profile and usage.

30 temporary estimates performed for the periods February, March, April and May 2022 were reviewed to determine the accuracy of the initial estimate. Nine estimations were found to be greater than ± 10% and a review of GAS050 gas gate submission accuracy confirmed no gas gates exceeded this accuracy threshold for these affected consumption periods.

Seven permanent estimates were reviewed to determine if the correction criteria described in Schedule 1 of the Downstream Regulations has been followed based on the type of metering error identified.

- For ICP 1002106493QT1A4 (1 August to 31 October 2021), the issue was identified as a corrector failure and the affected volume was calculated from mechanical uncorrected reads.
- For ICPs 0004226811NG80E (1 December 2022 to 23 January 2023) and 0002038251QT107 (1 July 2021 to 23 February 2022) the issue was identified as a meter failure, and the affected volume was calculated based on historic consumption patterns.
- For four ICPs (0009000150NGAB6 - 1 to 31 August 2021, 0000326561QT81A - 1 to 30 November 2020, 0009000926NGE69 - 1 to 31 May 2021, 0001745054NAEEC - 1 to 30 June 2022), the issues identified related to data being unable to be downloaded from the corrector. Register reads are not provided in the TOU data file format received by Nova Energy. Corrected / uncorrected register reads are available from the data collector but were not requested by Nova Energy. Estimations were based on historic volume with approval from the customer. Non conformance is recorded as the correction criteria described in schedule 1 of the downstream regulations was not followed for these four ICPs.

An audit trail of the workings to generate the permanent estimation are retained by the Account Mager in the form of emails sent to the billing team to load the estimation into Orion. The electronic journal maintained by the billing team is not updated with the revised estimation methodology applied or the user undertaking this permanent estimation.

The Account Managers do not maintain an operational relationship with the TOU data collectors as this function is performed by the billing team. Corrected / uncorrected meter reads are available from

the data collector, but these are not requested by Nova Energy, in part due to the split responsibilities of the TOU estimation function between teams. Additionally, a number of the periods where estimations have been performed are for entire consumption periods. Nova Energy does not confirm with the TOU data collectors whether any further data is available additional to the standard data delivery service that provides only the previous months data. It is unlikely that TOU devices failure at exactly the beginning of a month and then their function is restored exactly at the end of a month.

Recommendation	**Audited party comment**
Implement process to confirm missing periods of TOU data with the data collectors to ensure all available data is provided to Nova Energy.	**Response:** Accepted **Comments:** Nova will implement process to ensure all available data is gathered from data collectors.
Once a TOU data gap has been confirmed obtain corrected / uncorrected register reads either side of the data gap from the data collector to enable an accurate calculation of the volume of gas consumed during the affected period.	**Response:** Accepted **Comments:** Nova accepts this recommendation and will implement the change into our processes.

Auditor comment		
Non-compliance	Description	
Report section: 5.1 Rule: Schedule 1 From: 1 October 2020 To: 31 October 2023	Audit history: No Controls: Needs Improvement Impact: Minor	For four ICPs (0009000150NGAB6 - 1 to 31 August 2021, 0000326561QT81A - 1 to 30 November 2020, 0009000926NGE69 - 1 to 31 May 2021, 0001745054NAEEC - 1 to 30 June 2022), the estimation applied was not consistent with schedule 1 of the Gas Downstream Regulations.

Remedial action rating	Remedial timeframe	Remedial comment
In progress	31/12/2024	Nova has accepted the auditors' recommendations and will review the estimation processes to ensure that all applied estimates are consistent with Schedule 1.

Audited party comment	
The circumstances of the matters outlined in the breach notice.	
Whether or not the participant admits or disputes that it is in breach.	Breach admitted
Estimate of the impact of the breaches (where admitted).	Minor

What steps or processes were in place to prevent the breaches?	
What steps have been taken to prevent recurrence?	

5.2 Provision of Retailer Consumption Information (Rules 30 to 33)

Nova Energy and MegaTEL's compliance with rules 30 to 33 was examined by a "walk through" of their processes and controls to confirm compliance.

NOVA ENERGY

GAS040 non-TOU energy submissions

Nova Energy validates non-TOU consumption at gas gate and ICP level prior to submission:

- High consumption detail and negative consumption detail reports are worked through daily and prior to submission. Anomalies are investigated and corrected as necessary.
- A LIS discrepancy report is worked through to correct aggregation factor discrepancies, and any ICPs which have been incorrectly included in or excluded from the submission.
- A node summary history compares the previous month, initial submission, and previous revision (if available) for each gas gate. Any exceptions are investigated by reviewing the data at ICP level.
- An ICP summary history compares the previous month, initial submission, billed submission, and previous revision (if available) for each gas gate. The 100-150 largest differences are checked.
- The full ICP level result set is reviewed and checked to identify ICPs missing from the GAS040 submission or registry, allocation group discrepancies, ICPs with inactive status, ICPs with vacant consumption, and pricing discrepancies. ICP's missing from the GAS040 are followed up from the Interim submission cycle as most Initial submission exceptions are resolved by BAU processes prior to the next submission.
- A 'RP wash up change' report checks differences between submissions, ensures that the correct version of the GAS040 report is submitted and detects any zero lines which need to be imported.

Further analysis was undertaken comparing the GAS040 ICP level data to registry LIS with history ICP level data for the month of July 2023 and found:

- 453 additional ICPs were reported by Nova Energy – all the additional ICPs were confirmed as inactive ICPs. Nova Energy's reconciliation includes all Nova Energy ICPs that have a current meter installed irrespective of connection status.
- 30 ICPs were in the registry LIS with history report but not in the initial GAS040 file due to set up timing issues and backdated switches.
- 18 ICPs were the registry LIS with history report but not in the initial GAS040 file due to internal data correction to enable the ICP's to pass the various levels of validation in Orion to be eligible for inclusion in the submission process. All 18 ICPs were identified in the Initial GAS040 submission exception reporting but are not escalated for revision as most are resolved by BAU processes prior to the next submission cycle. One ICP (0001616881QTDEE) remains unresolved since the Interim submission. Non conformance is recorded below due to

unresolved issues identified during the Initial submission process remained unresolved after the Interim submission was processed.

An additional comparison of the July 2023 ICP level data was conducted to identify any potential gaps or overlapping records in the ICP level data, and the following was found:

- The records for ICP 0001015096NGFC5 has overlapping records relating to the current meter ID of 05E880659 (1 to 31 July 2023) but also for a Meter ID of 600657872 (1 to 31 July 2023) which the registry has recorded against ICP 1001299067NG3A5. 4.805 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023.
- The records for ICP 0001793611QT86B has overlapping records relating to the current meter ID of 22EG0710 (1 to 31 July 2023) but also for a Meter ID of 834100290 (1 to 31 July 2023) which the registry has recorded as being removed on 1 February 2023. 4.805 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023.
- The records for ICP 0004004320NG2E8 has overlapping records relating to the current meter ID of 99EW3566 (1 to 31 July 2023) but also for a Meter ID of 600587945 (3 to 31 July 2023) which the registry has recorded against ICP 0004004323NGE28. 4.495 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023.
- The records for ICP 0003026278NG25D has a gap in records for July 2023. One record spans 1 to 4 July 2023 and a second record is for 31 July 2023 only. The period 5 July to 30 July 2023 is missing from submission and there are no switching or status events that could explain this gap in submission data.

Recommendation	Audited party comment
Review current process of identifying ICP level exceptions identified during the initial GAS040 submission checks to include a mechanism to confirm all exceptions are resolved prior to the interim submission or the following months initial submission.	**Response:** Accepted **Comments:** Nova will implement a regular process to correct Registry discrepancies prior to Interim submissions. The enhanced monitoring will be used to request correction sooner to support achievement of this rule.
Investigate implementing an additional check for overlapping consumption records in the ICP level GAS040 consumption information.	**Response:** Acknowledged **Comments:** Nova will investigate this further
Investigate implementing an additional check for gaps in consumption records compared to the Registry Retailer, Status and Metering events in the ICP level GAS040 consumption information.	**Response:** Acknowledged **Comments:** Nova will investigate this further

As mentioned in **section 2.1.1**, when there is a delay in updating the registry for new connections, the consumption information is not always included for the initial allocation. I checked seven ICPs where the registry update was backdated. The table below shows the results.

ICP	Event date	ACTC status event entry date	Date of first submission
0075001363PGCDD	15/03/2022	15/03/2023	Final (03/2022)
0048117700PGCB8	10/05/2022	18/04/2023	Final (05/2022)
0041112300PG4F6	5/07/2022	19/04/2023	Final (07/2022)
0002006236NGC17	5/07/2022	15/03/2023	Final (07/2022)
0003002165NGBE5	4/08/2022	14/03/2023	Final (08/2022)
0001809931QTDCF	16/08/2022	10/03/2023	Final (08/2022)

ICP	Event date	ACTC status event entry date	Date of first submission
1002072497QT8FB	2/12/2022	10/05/2023	Final (12/2022)

In **section 5.4** differences were observed for ICP 0001409424QTDEB relating to historic estimate scenario d (ICP switches in part way through a month) however the cause of this difference was confirmed to be an incorrect meter install date being applied in Orion causing the historic estimate calculation being applied across a time slice one day less than the correct period between the switch date and the first actual read date. Non Conformance is recorded below.

Vacant ICPs

The matter of "vacant consumption" was also examined. Meter reading still occurs and any volume that is recorded is converted into validated consumption and is then included in the allocation process. A sample of active vacant ICPs were reviewed and found to be correctly included in the GAS040 submissions.

When an ICP is vacant, a "dummy" customer is "moved in" to the account to ensure credit processes continue as expected and to ensure the consumption information is identified, validated and submitted. A sample of vacant ICPs with consumption were reviewed. In cases where the consumption was genuine, consumption was reported and the status updated. Where consumption occurred due to an error (e.g. misread or incorrectly recorded opening read) no consumption was reported.

GAS050 TOU energy submissions

GAS050 submissions are generated directly from the Orion production system.

Nova Energy validates TOU consumption prior to submission. The GAS050 data is added to an Excel template, which is used to review the data including:

- counts to determine whether any ICPs are missing, or days are missing for the ICP,
- comparison to a registry list, to identify any ICPs which have been incorrectly included in or excluded from the submission, and check aggregation factors including network and gas gate,
- for initial submissions, the total monthly volume for the ICP is compared to the previous month, the current year's consumption pattern and the last year's consumption pattern, then each ICP is reviewed, and conditional formatting is applied to highlight the ten highest positive and ten highest negative differences, and
- for revisions, the GAS050 data is compared to the previous revision, and any differences are checked to confirm that they are as expected.

The submission checks performed compare the ICP monthly volumes against either monthly historical consumption patterns or prior submissions. Where an ICP is identified as being outside the expected consumption threshold a user will review the monthly consumption information and will either release the ICP or escalate it to the Account Manager for review. Actual TOU data for 0078000094PG227 (gas gate KAP12901) for August 2022 was reviewed as the UFG for this month significantly deviated from historical trends. The TOU data for this ICP showed unexpected volumes for two days (28 & 29 August 2022) which were four times the expected volumes for this ICP and also exceeded the gas gate volumes for these days (approximately 800 GJ over submission). The TOU data collector did not advise Nova Energy of any issues identified in the meter event logs that could explain the TOU data corruption. Nova Energy does not actively monitor gas gate UFG where TOU data has been submitted therefore the potential data corruption for ICP 0078000094PG227 was not identified and resolved prior to the final revision submission.

Recommendation	Audited party comment
Include review of the daily TOU data whenever an ICP is identified in the submission checks as being outside the expected volume thresholds compared to historical consumption patterns or previous submissions.	**Response:** Accepted **Comments:** Nova will implement a regular process to correct Registry discrepancies prior to Interim submissions. The enhanced monitoring will be used to request correction sooner to support achievement of this rule.
Investigate validating daily consumption volumes against contracted MDQ values as part of submission checks to identify daily TOU data outliers for investigation prior to submission.	**Response:** Acknowledged **Comments:** Nova will investigate this further
Investigate implementing post submission UFG monitoring of TOU gas gates to ensure any potential TOU data corruption is identified and resolved in a timely manner.	**Response:** Acknowledged **Comments:** Nova will investigate this further

The allocation Agent and GIC identified a change in the volume of UFG at gas gate TKN17001 (Te Kuiti North) and requested Nova Energy investigate the possible cause of this UFG. Nova Energy were able to identify that one of their TOU customers (ICP 0009000969NG312) had installed an additional gas boiler at this ICP and the additional gas load has now exceeded the meters measurement capacity when the ICP was running at full load resulting in some gas volumes not being measured. A review of the UFG volumes at this gas gate indicates that the issue began around June 2020. The meter was upgraded in October 2023 and Nova Energy is now working with the customer and the GIC to determine the affected volumes and the mechanism to wash up these volumes.

While the customer failed to inform Nova Energy of the installation of the additional gas boiler that would have enabled both the retailer and meter owner to be able to determine if a metering upgrade were required and ensure this was implemented prior to the additional gas boiler commissioning. There were also no checks in place to monitor the maximum hourly quantity (MHQ) recorded by the TOU meter to the meters maximum flow rate Q_{max} as part of the TOU data validation process.

Recommendation	Audited party comment
Work with the TOU gas meter owners to implement a validation check of TOU meters design maximum flow rate (Q_{max}) to the measured hourly flow rate to identify meters that may be close to or are exceeding the meter design maximum flow rate.	**Response:** Accepted **Comments:** Nova will engage with meter owners to identify and implement a workable solution.

GAS050 files were checked for September and October 2022, including tracing data from the source read files though the Orion conversion process into the GAS050 submissions. The GAS050 submissions were correctly generated for the sample of ICPs checked.

Auditor comment		
Non-compliance	Description	
Report section: 5.2 Rule: 26.2 From: 1 July 2022 To: 31 August 2022	Audit history: No Controls: Needs Improvement Impact: Moderate	Some ICPs were identified in the Initial GAS040 submission exception reporting as missing and one ICP (0001616881QTDEE) remains unresolved from the Interim submission and are not included in the GAS040 Submission. For four ICPs overlapping or gaps in the ICP level data records where identified. • The records for ICP 0001015096NGFC5 has overlapping records relating to the current meter ID of 05E880659 (1 to 31 July 2023) but also for a Meter ID of 600657872 (1 to 31 July 2023) which the registry has recorded against ICP 1001299067NG3A5. 4.805 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023. • The records for ICP 0001793611QT86B has overlapping records relating to the current meter ID of 22EG0710 (1 to 31 July 2023) but also for a Meter ID of 834100290 (1 to 31 July 2023) which the registry has recorded as being removed on 1 February 2023. 4.805 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023. • The records for ICP 0004004320NG2E8 has overlapping records relating to the current meter ID of 99EW3566 (1 to 31 July 2023) but also for a Meter ID of 600587945 (3 to 31 July 2023) which the registry has recorded against ICP 0004004323NGE28. 4.495 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023. • The records for ICP 0003026278NG25D has a gap in records for July 2023. One record spans 1 to 4 July 2023 and a second record is for 31 July 2023 only. The period 5 July to 30 July 2023 is missing from submission and there are no switching or status events that could explain this gap in submission data. For ICP 0001409424QTDEB the historic estimate calculation was applied across a time slice one day less than the correct period between the switch date and the first actual read date due to an incorrect meter install date being applied in Orion. Actual TOU data for 0078000094PG227 (gas gate KAP12901) for August 2022 was reviewed as the UFG for this month significantly deviated from historical trends. The TOU data for this ICP showed unexpected volumes for two days (28 & 29 August 2022) which were four times the expected

		volumes for this ICP and also exceeded the gas gate volumes for these days (approximately 800 GJ over submission). ICP 0009000969NG312 had installed an additional gas boiler at this ICP and the additional gas load has now exceeded the meters measurement capacity when the ICP was running at full load resulting in some gas volumes not being measured. There was a delay in updating the registry for seven new connections and the consumption information not provided until the final revision.

Remedial action rating	Remedial timeframe	Remedial comment
In progress	30/06/2024	The enhanced monitoring will be used to request correction sooner to support achievement of this rule.

Audited party comment	
The circumstances of the matters outlined in the breach notice.	Nova energy checks for Registry discrepancies before each submission. The ICP 0001616881QTDEE found in the Audit, was previously found in the July23 Interim exceptions reports and subsequently fixed for the next submission.
Whether or not the participant admits or disputes that it is in breach.	Breach admitted
Estimate of the impact of the breaches (where admitted).	July23 (Interim) submission impact (GJ) 0001616881QTDEE – 0 GJ All the necessary corrections were made before the final washup.
What steps or processes were in place to prevent the breaches?	Registry discrepancy report is produced prior to all submissions which identifies Registry discrepancies.
What steps have been taken to prevent recurrence?	Nova Energy's processes are effective as identified in the Audit. Nova will implement regular process to correct Registry discrepancies prior to Interim submissions.

MEGATEL

GAS040 non-TOU energy submissions

Nova Energy validates non-TOU consumption at gas gate and ICP level prior to submission on behalf of MegaTEL:

- High consumption detail and negative consumption detail reports are worked through daily and prior to submission. Anomalies are investigated and corrected as necessary.
- A LIS discrepancy report is worked through to correct aggregation factor discrepancies, and any ICPs which have been incorrectly included in or excluded from the submission.
- A node summary history compares the previous month, initial submission, and previous revision (if available) for each gas gate. Any exceptions are investigated by reviewing the data at ICP level.

- An ICP summary history compares the previous month, initial submission, billed submission, and previous revision (if available) for each gas gate. The 100-150 largest differences are checked.
- The full ICP level result set is reviewed and checked to identify ICPs missing from the GAS040 submission or registry, allocation group discrepancies, ICPs with inactive status, ICPs with vacant consumption, and pricing discrepancies.
- A RP wash up change report checks differences between submissions, ensures that the correct version of the GAS040 report is submitted and detects any zero lines which need to be imported.

GAS040 consumption and customer numbers for July, August and September 2023 were examined and compared to the data in Nova Energy's system at ICP level for a sample of gas gates; the totals matched which confirms compliance. This also proves that MegaTEL's consumption information provided to the allocation agent is calculated at ICP level and then aggregated.

Further analysis of the July 2023 ICP level data was conducted to identify any potential gaps or overlapping records in the ICP level data, and the following was found:

- The records for ICP 0000147781QT387 has overlapping records relating to meter ID of 895294 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 61.38 GJ of default consumption is incorrectly recorded against this meter ID for July 2023.
- The records for ICP 0000601981QTED2 has overlapping records relating to meter ID of 151238 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023.
- The records for ICP 1001261664QT739 has overlapping records relating to meter ID of 02C589009 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023.
- The records for ICP 1001270891NG3ED has overlapping records relating to meter ID of 15EG0006 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023.
- The records for ICP 0000313861QTB1E has overlapping records relating to the current meter ID of 05E805871 (1 to 31 July 2023) but also for a Meter ID of 05E805871X (1 to 31 July 2023). 0.155 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023.

As mentioned in **section 2.1.1**, when there is a delay in updating the registry for new connections, the consumption information is not always included for the initial allocation. I checked eight ICPs where the registry update was backdated. The table below shows the results.

ICP	Event date	ACTC status event entry date	Date of first submission
1002167748QT2C9	16/01/2023	16/12/2022	Interim (12/2022)
1002162591QTCFD	16/01/2023	16/12/2022	Interim (12/2022
1002168254QT71F	28/11/2022	14/11/2022	Initial (11/2022)
1001302869NGC7B	26/04/2022	12/04/2022	Initial (04/2022)
1002152491QT4D5	4/03/2022	23/02/2022	Interim (02/2022)
1002165907QTAF9	31/10/2022	20/10/2022	Initial (10/2022)
1002163228QTEBC	27/10/2022	18/10/2022	Initial (10/2022)
1002152490QT890	1/03/2022	23/02/2022	Initial (02/2022)

Vacant ICPs

The matter of "vacant consumption" was also examined. Meter reading still occurs and any volume that is recorded is converted into validated consumption and is then included in the allocation process. A sample of active vacant ICPs were reviewed and found to be correctly included in the GAS040 submissions.

When an ICP is vacant, a "dummy" customer is "moved in" to the account to ensure credit processes continue as expected and to ensure the consumption information is identified, validated and submitted. A sample of vacant ICPs with consumption were reviewed. In cases where the consumption was genuine, consumption was reported and the status updated. Where consumption occurred due to an error (e.g. misread or incorrectly recorded opening read) no consumption was reported.

Auditor comment		
Non-compliance	Description	
Report section: 5.2 Rule: 26.2 From: 1 July 2022 To: 31 July 2022	Audit history: No Controls: Needs Improvement Impact: Minor	For five ICPs overlapping or gaps in the ICP level data records where identified. • The records for ICP 0000147781QT387 has overlapping records relating to meter ID of 895294 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 61.38 GJ of default consumption is incorrectly recorded against this meter ID for July 2023. • The records for ICP 0000601981QTED2 has overlapping records relating to meter ID of 151238 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023. • The records for ICP 1001261664QT739 has overlapping records relating to meter ID of 02C589009 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023. • The records for ICP 1001270891NG3ED has overlapping records relating to meter ID of 15EG0006 (1 to 31 July 2023) covering historic and forward estimation records as well and default consumption records. 4.805 GJ of default consumption is incorrectly recorded against this meter ID for July 2023. • The records for ICP 0000313861QTB1E has overlapping records relating to the current meter ID of 05E805871 (1 to 31 July 2023) but also for a Meter ID of 05E805871X (1 to 31 July 2023). 0.155 GJ of default consumption is incorrectly recorded against this incorrect meter ID for July 2023.

		There was a delay in updating the registry for eight new connections and the consumption information not provided until the final revision.

Remedial action rating	Remedial timeframe	Remedial comment
In progress	30/06/2024	Nova Energy manages this for MegaTEL so the response for Nova applies.

Audited party comment	
The circumstances of the matters outlined in the breach notice.	
Whether or not the participant admits or disputes that it is in breach.	Breach admitted
Estimate of the impact of the breaches (where admitted).	
What steps or processes were in place to prevent the breaches?	
What steps have been taken to prevent recurrence?	

5.3 Initial Submission Accuracy (Rule 37.2)

Rule 37.2 requires that the accuracy of consumption information, for allocation groups 3 to 6, for initial allocation must be within a certain percentage of error published by the industry body.

NOVA ENERGY

Nova Energy did not meet this requirement for some gas gates during the 36 month periods shown.

The results are summarised in the table below.

Month	Total Gas Gates	Number Within 10%	% Compliant	Within ±10% or >10% but < 200 GJ	% Compliant or immaterial
Aug-19	79	64	81%	77	97%
Sep-19	80	55	69%	75	94%
Oct-19	78	51	65%	73	94%
Nov-19	77	41	53%	71	92%
Dec-19	77	43	56%	69	90%
Jan-20	77	52	68%	76	99%
Feb-20	77	54	70%	73	95%
Mar-20	77	19	25%	59	77%
Apr-20	77	19	25%	53	69%

Month	Total Gas Gates	Number Within 10%	% Compliant	Within ±10% or >10% but < 200 GJ	% Compliant or immaterial
May-20	78	26	33%	58	74%
Jun-20	78	40	51%	64	82%
Jul-20	78	61	78%	72	92%
Aug-20	78	61	78%	76	97%
Sep-20	78	59	76%	76	97%
Oct-20	78	45	58%	70	90%
Nov-20	78	52	67%	74	95%
Dec-20	78	39	50%	71	91%
Jan-21	78	47	60%	72	92%
Feb-21	79	60	76%	75	95%
Mar-21	78	51	65%	74	95%
Apr-21	79	40	51%	66	84%
May-21	77	19	25%	48	62%
Jun-21	76	50	66%	66	87%
Jul-21	76	58	76%	71	93%
Aug-21	76	29	38%	59	78%
Sep-21	76	46	61%	66	87%
Oct-21	76	23	30%	53	70%
Nov-21	76	34	45%	60	79%
Dec-21	76	32	42%	63	83%
Jan-22	77	38	49%	66	86%
Feb-22	77	49	64%	72	94%
Mar-22	77	47	61%	73	95%
Apr-22	77	38	49%	62	81%
May-22	77	26	34%	53	69%
Jun-22	77	29	38%	54	70%
Jul-22	78	50	64%	73	94%

The table below shows the difference between consumption information for initial and final submissions at an aggregated level for all gas gates.

Month	Initial Submission All Gas Gates (GJ)	Final Submission All Gas Gates (GJ)	Percentage Variation
Aug-19	450,750.872	458,074.92	1.62%
Sep-19	394,789.994	392,911.817	0.48%
Oct-19	363,742.726	373,129.51	2.58%

Month	Initial Submission All Gas Gates (GJ)	Final Submission All Gas Gates (GJ)	Percentage Variation
Nov-19	289,289.324	289,365.019	0.03%
Dec-19	259,985.223	249,440.119	4.06%
Jan-20	237,062.195	235,866.837	0.50%
Feb-20	224,916.842	219,019.315	2.62%
Mar-20	256,488.948	222,219.559	13.36%
Apr-20	224,151.072	201,655.882	10.04%
May-20	329,071.039	352,002.603	6.97%
Jun-20	406,637.485	426,105.015	4.79%
Jul-20	484,596.245	499,200.667	3.01%
Aug-20	438,476.706	447,936.845	2.16%
Sep-20	400,331.274	419,908.629	4.89%
Oct-20	346,382.435	358,881.535	3.61%
Nov-20	307,000.091	318,781.734	3.84%
Dec-20	276,372.082	276,121.841	0.09%
Jan-21	241,193.138	239,560.93	0.68%
Feb-21	226,330.983	229,109.852	1.23%
Mar-21	271,097.117	273,759.513	0.98%
Apr-21	278,863.173	303,996.087	9.01%
May-21	356,055.843	418,437.448	17.52%
Jun-21	418,446.938	448,765.577	7.25%
Jul-21	484,004.452	498,275.184	2.95%
Aug-21	486,943.774	433,887.198	10.90%
Sep-21	406,673.359	365,836.835	10.04%
Oct-21	367,897.785	317,491.712	13.70%
Nov-21	296,894.674	262,100.899	11.72%
Dec-21	270,233.976	240,667.43	10.94%
Jan-22	239,714.621	211,064.315	11.95%
Feb-22	217,317.255	211,245.707	2.79%
Mar-22	247,618.718	248,748.037	0.46%
Apr-22	255,697.279	277,093.506	8.37%
May-22	309,080.613	386,910.231	25.18%
Jun-22	362,928.252	460,384.966	26.85%
Jul-22	420,419.396	492,157.862	17.06%

The tables above show that the consumption information submitted to the allocation agent for the initial submission was sometimes over estimated and at other times under estimated. This analysis

indicates the impact that Covid-19 lockdowns had on estimation of non TOU load during these periods and also for subsequent periods where the estimation algorithms applied use previous periods as a basis of the estimation.

Nova Energy monitors variances at gas gate and ICP level, and this reporting showed large variances were investigated and most differences were due to Covid-19 level 3 and 4 lockdown periods listed below.

- All New Zealand – 25 March 2020 to 13 May 2020.
- Auckland – 12 August 2020 to 30 August 2020.
- Auckland – 28 February 2021 to 7 March 2021.
- All New Zealand – 18 August 2021 to 7 September 2021.
- Auckland – 7 September 2021 to 31 December 2021.

For three submission periods (May 2022 – 25.18%, June 2022 – 26.85% and July 2022 – 17.05%) post Covid-19 lockdowns the overall submission volumes have exceeded the ± 10% threshold.

Auditor comment		
Non-compliance	Description	
Report section: 5.3 Rule: 37.2 From: August 2019 final submission To: July 2022 final submission	Audit history: Yes Controls: Effective Impact: Minor	Nova Energy did not meet the requirement for initial submissions to be within ±10% or < 200 GJ of the final submission for each gas gate on 373 occasions for submission periods between August 2019 and July 2022. For three submission periods (May 2022 – 25.18%, June 2022 – 26.85% and July 2022 – 17.05%) the overall submission volumes have exceeded the ± 10% threshold.

Remedial action rating	Remedial timeframe	Remedial comment
No action		Nova Energy's performance in respect of rule 37.2 is effective.

Audited party comment	
The circumstances of the matters outlined in the breach notice.	Turned off seasonal profile estimation for forward estimates in the initial submission starting from April 2021, because of the D+1 allocation at the Initial.
Whether or not the participant admits or disputes that it is in breach.	Breach admitted
Estimate of the impact of the breaches (where admitted).	None
What steps or processes were in place to prevent the breaches?	There are processes in place to resolve these breaches across all industry participants
What steps have been taken to prevent recurrence?	

MEGATEL

MegaTEL did not meet this requirement for some gas gates during the 36 month periods shown.

The results are summarised in the table below.

Month	Total Gas Gates	Number Within 10%	% Compliant	Within ±10% or < 200 GJ	% Compliant or immaterial
Aug-19	4	1	25%	4	100%
Sep-19	6	2	33%	6	100%
Oct-19	6	1	17%	6	100%
Nov-19	6	6	100%	6	100%
Dec-19	7	2	29%	7	100%
Jan-20	7	5	71%	7	100%
Feb-20	9	7	78%	9	100%
Mar-20	9	4	44%	9	100%
Apr-20	9	3	33%	8	89%
May-20	10	4	40%	10	100%
Jun-20	14	10	71%	14	100%
Jul-20	15	10	67%	15	100%
Aug-20	17	4	24%	17	100%
Sep-20	21	10	48%	21	100%
Oct-20	22	11	50%	22	100%
Nov-20	23	12	52%	23	100%
Dec-20	25	14	56%	25	100%
Jan-21	25	16	64%	25	100%
Feb-21	26	18	69%	26	100%
Mar-21	27	16	59%	27	100%
Apr-21	27	17	63%	27	100%
May-21	26	7	27%	25	96%
Jun-21	26	15	58%	26	100%
Jul-21	29	16	55%	28	97%
Aug-21	29	16	55%	29	100%
Sep-21	29	18	62%	28	97%
Oct-21	29	11	38%	29	100%
Nov-21	29	14	48%	29	100%
Dec-21	31	18	58%	31	100%
Jan-22	31	15	48%	30	97%
Feb-22	31	19	61%	31	100%
Mar-22	32	20	63%	32	100%

Month	Total Gas Gates	Number Within 10%	% Compliant	Within ±10% or < 200 GJ	% Compliant or immaterial
Apr-22	31	20	65%	31	100%
May-22	30	8	27%	29	97%
Jun-22	30	12	40%	29	97%
Jul-22	32	21	66%	31	97%

The table below shows the difference between consumption information for initial and final submissions at an aggregated level for all gas gates.

Month	Initial Submission All Gas Gates (GJ)	Final Submission All Gas Gates (GJ)	Percentage Variation
Aug-19	880.468	939.35	6.69%
Sep-19	1,396.027	1,263.206	9.51%
Oct-19	1,451.896	1,433.313	1.28%
Nov-19	1,360.144	1,299.625	4.45%
Dec-19	1,459.686	1,226.666	15.96%
Jan-20	1,402.155	1,254.106	10.56%
Feb-20	1,344.423	1,265.068	5.90%
Mar-20	1,544.165	1,530.693	0.87%
Apr-20	1,230.176	1,469.477	19.45%
May-20	2,659.241	2,691.867	1.23%
Jun-20	3,321.178	3,445.921	3.76%
Jul-20	4,288.908	4,440.377	3.53%
Aug-20	3,847.529	4,375.024	13.71%
Sep-20	4,041.09	4,363.675	7.98%
Oct-20	3,913.438	3,990.85	1.98%
Nov-20	3,521.968	3,607.627	2.43%
Dec-20	3,294.08	3,441.09	4.46%
Jan-21	3,262.228	3,098.979	5.00%
Feb-21	2,989.523	2,876.987	3.76%
Mar-21	3,695.881	3,531.745	4.44%
Apr-21	3,680.307	4,028.591	9.46%
May-21	4,651.664	5,359.056	15.21%
Jun-21	5,490.217	5,911.213	7.67%
Jul-21	6,471.158	7,517.722	16.17%
Aug-21	7,432.612	6,881.463	7.42%
Sep-21	6,793.411	5,478.566	19.35%

Month	Initial Submission All Gas Gates (GJ)	Final Submission All Gas Gates (GJ)	Percentage Variation
Oct-21	5,753.574	5,204.5	9.54%
Nov-21	4,959.496	4,538.169	8.50%
Dec-21	4,821.928	4,507.973	6.51%
Jan-22	4,721.359	4,054.75	14.12%
Feb-22	4,139.261	3,835.471	7.34%
Mar-22	4,495.893	4,308.729	4.16%
Apr-22	4,528.104	4,752.107	4.95%
May-22	5,050.585	6,780.682	34.26%
Jun-22	5,414.768	8,229.202	51.98%
Jul-22	6,826.303	8,819.381	29.20%

The tables above show that the consumption information submitted to the allocation agent for the initial submission was sometimes over estimated and at other times under estimated. This analysis indicates the impact that Covid-19 lockdowns had on estimation of non TOU load during these periods and also for subsequent periods where the estimation algorithms applied use previous periods as a basis of the estimation.

Nova Energy on behalf of MegaTEL monitors variances at gas gate and ICP level, and this reporting showed large variances were investigated and most differences were due to Covid-19 level 3 and 4 lockdown periods listed below.

- All New Zealand – 25 March 2020 to 13 May 2020.
- Auckland – 12 August 2020 to 30 August 2020.
- Auckland – 28 February 2021 to 7 March 2021.
- All New Zealand – 18 August 2021 to 7 September 2021.
- Auckland – 7 September 2021 to 31 December 2021.

For four submission periods (January 2022 – 14.12%, May 2022 – 34.26%, June 2022 – 51.98% and July 2022 – 29.20%) post Covid-19 lockdowns the overall submission volumes have exceeded the ± 10% threshold.

<table>
<tr><td colspan="4">Auditor comment</td></tr>
<tr><td>Non-compliance</td><td colspan="3">Description</td></tr>
<tr><td>Report section: 5.3
Rule: 37.2

From: August 2019 final submission
To: July 2022 final submission</td><td>Audit history: Yes
Controls: Effective
Impact: Minor</td><td colspan="2">MegaTEL did not meet the requirement for initial submissions to be within ±10% or < 200 GJ of the final submission for each gas gate on eight occasions for submission periods between August 2019 and July 2022.
For four submission periods (January 2022 – 14.12%, May 2022 – 34.26%, June 2022 – 51.98% and July 2022 – 29.20%) the overall submission volumes have exceeded the ± 10% threshold.</td></tr>
<tr><td colspan="2">Remedial action rating</td><td>Remedial timeframe</td><td>Remedial comment</td></tr>
</table>

No action		Megatel's performance in respect of rule 37.2 is effective.
Audited party comment		
The circumstances of the matters outlined in the breach notice.	Turned off seasonal profile estimation for forward estimates in the initial submission starting from April 2021, because of the D+1 allocation at the Initial	
Whether or not the participant admits or disputes that it is in breach.	Breach admitted	
Estimate of the impact of the breaches (where admitted).	None	
What steps or processes were in place to prevent the breaches?	There are processes in place to resolve these breaches across all industry participants	
What steps have been taken to prevent recurrence?		

5.4 Forward Estimates (Rules 34 & 36)

The rules do not prescribe how forward estimates are to be calculated. Nova Energy uses a combination of previous consumption history (last two actual reads) for an ICP and historic seasonal adjustment daily shape values based on gas gate DDR (daily delivery report) data to produce forward estimate. Where no consumption history is present for an ICP then either the annualised consumption history provided in the GTN file from the losing retailer is used as a source for recently switched ICPs or a default consumption value of 0.155 GJ (43 kWh) per day for residential ICPs and 1.98 GJ (550 kWh) per day for business ICPs. Vacant ICPs have a forward estimate value of zero kWh per day applied.

This model enables Nova Energy to achieve a more accurate result than a "flat" estimate would.

Where a reading cannot be obtained within 12 months a permanent estimate is not applied that would ensure that once a reading is obtained, that there is no risk that some revised consumption volume will not be able to be included in the revision process as some periods may now fall outside the 13 month revision window.

NOVA ENERGY

In **section 5.2,** a number of ICPs were found to have had default forward estimate volumes invalidly produced on either removed or incorrectly installed meters. Historic and forward estimate were being correctly produced as required for the active meter register as recorded on the registry.

A review of the June 2022 final revision and found that Allocation Group 6 submission volumes had a total of 8.24 GJ of forward estimate remaining at the final revision.

Recommendation	Audited party comment
Investigate the use of permanent estimates in the read attainment process to ensure all consumption volumes are included in the submission process once a read is finally obtained for ICP with read attainment issues.	**Response:** Acknowledged **Comments:** Nova will investigate methods to achieve this recommendation.

MEGATEL

In **section 5.2,** a number of ICPs were found to have had default forward estimate volumes invalidly produced on either removed or incorrectly installed meters. Historic and forward estimate were being correctly produced as required for the active meter register as recorded on the registry.

A review of the May 2022 final revision and found that Allocation Group 6 submission volumes had a total of 0.333 GJ of forward estimate remaining at the final revision.

5.5 Historic Estimates (Rules 34 & 35)

Historic estimates are calculated within the EnergyMarket database using validated readings, permanent estimate readings, conversion factors, and seasonal adjusted shape values.

At midnight each night, a copy of Orion production data is automatically taken, and is restored to the Orion reporting database. The Orion reporting database is used for exception and ad hoc reporting on Orion's database, and reading and gas conversion data is provided to the EnergyMarket database each night.

Seasonal Adjusted Daily Shape Values (SADSV) are downloaded from the allocation when allocation results are published and are uploaded directly into EnergyMarket.

NOVA ENERGY

The historic estimate process first normalises the read to read CM using the most recent SADSV profiles available for the period. The normalised CM data is then converted to GJ by applying the average seasonal conversion factors (temperature factor, compressibility factor and calorific value) for the ICP for the month. According to rule 35.2, read to read period consumption should be converted to GJ, then normalised using the SADSV. This ensures that sum of consumption apportioned to each month matches the total consumption for the read to read period. If different monthly conversion factors are applied, the total CM apportioned to each month will be consistent with the total, but the GJ is likely to differ.

The altitude and pressure factors are expected to be static for non-TOU ICPs, and the compressibility factor, temperature factor, and calorific value are expected to change. I reviewed the potential impact of these changes on conversion.

- The annual temperature variance for the year ending 31 July 2023 at each gas gate is 9.8-12.7 degrees. Excluding the Joule Thomson effect, based on these temperature variances the temperature factors could vary by up to 4.51% across a year. As most ICPs are read regularly is expected that temperature differences across read periods are likely to be small, as most read periods are likely to cover one or two months. Non conformance is recorded in **section 4** relating to:
    - ICPs 0000869021QTA8A (read period 16/11-12/12/2022) and 0001445641QT546 (21/09-19/12/2022) had temperature factor differences outside the maximum permissible error for NZS 5259:2015
- As recorded in **section 2.4.1**, there are currently 25,959 ICPs out of a population of 33,300 ICP (78%) where the network pressure is set to the meter pressure within Orion meaning the Joule-Thomson effect is not being applied to the temperature factor for these ICPs. The average impact for the temperature factor across this population is 0.4%.
- The annual CV variance for each gas type for the year ending 31 July 2023 is 0.911-4.489. The CV values applied could vary by up to 16.6% across a year. While the annualised impact is likely to be small, the individual impact at ICP level to individual billing periods, given the seasonal nature of gas consumption could exceed ± 0.5%. Non conformance is recorded in **section 4** relating to:

- ICP 0000072523NA580 which was found to have a CV factor outside the maximum permissible errors set out in **NZS 5259:2015.**

- Compressibility factors vary significantly based on meter pressure, and 99.3% of Nova Energy's active non-TOU ICPs have meter pressures below 50 kPa resulting in compressibility factors which are very close to 1. Because meter pressure is static for non-TOU ICPs, it is expected that use of monthly conversion factors is unlikely to result in differences outside the maximum permissible errors for non-TOU ICPs.

To assist with determining compliance of the historic estimate processes, Nova Energy was supplied with a list of scenarios. For each scenario, a manual calculation was performed using the relevant seasonal adjustment shape file, and this was compared to the calculation performed in the Orion system. This test also proves that the correct shape file is used in each case. Differences were observed for ICP 0001409424QTDEB relating to scenario d (ICP switches in part way through a month) however the cause of this difference was confirmed to be an incorrect meter install date being applied in Orion causing the historic estimate calculation being applied across a time slice one day less than the correct period between the switch date and the first actual read date. Non Conformance is recorded in **section 5.2**.

Compliance is confirmed for the methodology applied for all historic estimate scenarios.

Test	Scenario	Test expectation	Result
a	ICP becomes Active part way through a month	Consumption is only calculated for the Active portion of the month.	Correct
b	ICP becomes Inactive part way through a month.	Consumption is only calculated for the Active portion of the month.	Correct
c	ICP's become Inactive then Active within a month.	Consumption is only calculated for the Active portion of the month.	Correct
d	ICP switches in part way through a month on an estimated switch event reading	Consumption is calculated to include the 1st day of responsibility.	Correct
e	ICP switches out part way through a month on an estimated switch event reading.	Consumption is calculated to include the last day of responsibility.	Correct
f	ICP switches out then back in within a month	Consumption is calculated for each day of responsibility.	Correct
g	Continuous ICP with a read during the month	Consumption is calculated assuming the readings are valid until the end of the day	Correct
h	Continuous ICP without a read during the month	Consumption is calculated assuming the readings are valid until the end of the day	Correct
i	Rollover Reads	Consumption is calculated correctly in the instance of meter rollovers.	Correct
j	ICP has a multiplier or fixed factor (if any)	Consumption is calculated including the multiplier or fixed factor.	No examples available
k	ICP with meter change part way through a month	No gaps or overlaps in HE records across meter change	Correct
l	ICP with meter pressure change part way through a month	Pressure change is applied correctly across the respective timeslices.	Correct

MEGATEL

Nova Energy applies the same historic estimate process described above for MegaTEL ICPs.

The altitude and pressure factors are expected to be static for non-TOU ICPs, and the compressibility factor, temperature factor, and calorific value are expected to change. I reviewed the potential impact of these changes on conversion.

Non conformance is recorded in **section 4** relating to ICPs 1002040310QTD15, 1001262671QT23B and 0009000259NG7E4 which were found to have a temperature factor differences outside the maximum permissible errors set out in **NZS 5259:2015.**

To assist with determining compliance of the historic estimate processes, MegaTEL was supplied with a list of scenarios. For each scenario, a manual calculation was performed using the relevant seasonal adjustment shape file, and this was compared to the calculation performed in the Orion system. This test also proves that the correct shape file is used in each case. Differences were observed for scenario d (ICP switches in part way through a month) however the cause of this difference was confirmed to be an incorrect meter install date being applied in Orion causing the historic estimate calculation being applied across a time slice one day less than the correct period between the switch date and the first actual read date. Compliance is confirmed for all historic estimate scenarios.

Test	Scenario	Test expectation	Result
a	ICP becomes Active part way through a month	Consumption is only calculated for the Active portion of the month.	Correct
b	ICP becomes Inactive part way through a month.	Consumption is only calculated for the Active portion of the month.	Correct
c	ICP's become Inactive then Active within a month.	Consumption is only calculated for the Active portion of the month.	Correct
d	ICP switches in part way through a month on an estimated switch event reading	Consumption is calculated to include the 1st day of responsibility.	Correct
e	ICP switches out part way through a month on an estimated switch event reading.	Consumption is calculated to include the last day of responsibility.	Correct
f	ICP switches out then back in within a month	Consumption is calculated for each day of responsibility.	Correct
g	Continuous ICP with a read during the month	Consumption is calculated assuming the readings are valid until the end of the day	Correct
h	Continuous ICP without a read during the month	Consumption is calculated assuming the readings are valid until the end of the day	Correct
i	Rollover Reads	Consumption is calculated correctly in the instance of meter rollovers.	Correct
j	ICP has a multiplier or fixed factor (if any)	Consumption is calculated including the multiplier or fixed factor.	No examples available
k	ICP with meter change part way through a month	No gaps or overlaps in HE records across meter change	Correct
l	ICP with meter pressure change part way through a month	Pressure change is applied correctly across the respective timeslices.	Correct

5.6 Proportion of Historic Estimates (Rule 40.1)

This rule requires retailers to report to the allocation agent the proportion of historic estimates contained within the consumption information for the previous initial, interim and final allocations. The relevant files were examined, and compliance is confirmed.

5.7 Billed vs Consumption Comparison (Rule 52)

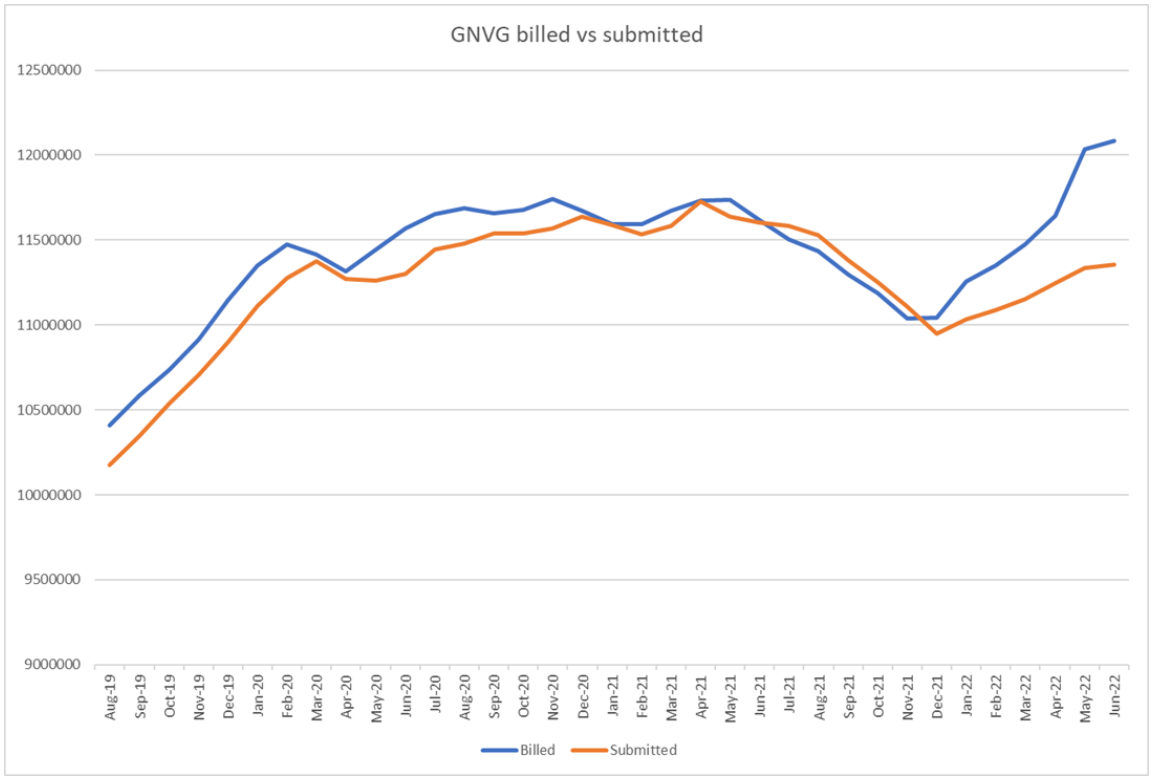
NOVA ENERGY

GAS070 reports are generated using invoice information calculated by Orion. Invoice data is included in the GAS070 if the billing period end date occurs within the period being reported. TOU invoices have an invoice date of the last day of the consumption month, therefore the GAS070 reporting has this consumption in the current month.

The content of the GAS070 files was proved by selecting some gas gates and checking the invoice data for all ICPs connected to the gas gate against the GAS070 file for June 2022. This confirmed the accuracy of the data, and all the invoices included had invoice dates within June 2022.

The chart below shows a comparison between rolling annual quantities billed and rolling annual consumption information submitted to the allocation agent for a 35-month period from the GAR080 (Report billed versus consumption comparison) report. Although the figures cannot be directly compared, as the submitted data is normalised, they can provide a useful indicator of whether under or over reporting of consumption is occurring.

Comparison between Rolling Annual Submitted Volumes and Gas Supplied



Year ending	Annual Billed GJ	Annual Consumption GJ	GJ difference	Percentage Difference
Jan-22	11,256,742.91	11,031,093.99	225,648.92	2.05%
Feb-22	11,350,551.41	11,088,041.97	262,509.44	2.37%
Mar-22	11,472,111.79	11,153,619.37	318,492.42	2.86%
Apr-22	11,643,365.80	11,246,682.23	396,683.58	3.53%
May-22	12,032,040.99	11,335,279.90	696,761.09	6.15%
Jun-22	12,086,201.66	11,355,729.96	730,471.70	6.43%

The gap between billed and submitted volumes is primarily caused by:

- Billed consumption is included in the GAS070 report based on the billing period, rather than invoice date. Each invoice generated in Orion is assigned to a billing period. In most cases, the billing period date and invoice date will fall within the same calendar month, as they did in the sample checked. However, it is possible for the invoice and billing period dates to fall in different months, most commonly around month end, or when an ICP is billed late. This is recorded as non conformance.
- When an invoice reversal or credit note is produced and rebilled, it is possible for the operator to manually select the billing period for the reversal. Because only one invoice is allowed per billing period, the billing team create reversal invoices / credit notes for the original billing periods, so that re-invoicing could occur in later periods. This can result in reversal invoices / credit notes being assigned to periods which have already had GAS070 submissions created and therefore not being reported, with re-bills included in future GAS070 reports. Nova Energy provides GAS070 revisions in an attempt minimise the impact the treatment of invoice reversals, however as there is no provision within the downstream regulations or the Allocation Agent functional specification for processing GAS070 revisions, these GAS070 revisions are not used for theGAR080 report produced by the Allocation Agent.

Auditor comment		
Non-compliance	Description	
Report section: 5.7 Rule: 52.2.1 From: 1 October 2020 To: 31 October 2023	Audit history: Yes Controls: Acceptable Impact: Insignificant	Prior period invoice reversals are not reflected in the GAS070 as billed volumes resulting in an overreporting of as billed volumes when revised invoices are produced.

Remedial action rating	Remedial timeframe	Remedial comment
In progress	Ongoing	Under investigation
Audited party comment		
The circumstances of the matters outlined in the breach notice.	The reason for the spike in billed consumption is that some ICPs had a billing period longer than one month, which was reflected in a single month's bill. This happened in Jan22 and June22 for the following ICPs: - For the billing period of 31/12/2021 - 28/02/2022, 5 TOU ICPs (0008000027NGD9C, 0008000047NG26C, 0008000074NG954, 0004420001PGA71, 0000038381QT833) were billed for Feb22 with 231,354 GJ's, while the submission for Jan22 (one month offset) was 118,908 GJ's. The difference of 112,446 GJ's. - For the billing period of 28/02/2022 - 30/06/2022, 7 TOU ICPs (0078000099PGD7C, 0008000027NGD9C, 0078000094PG227, 0008000047NG26C, 0004420001PGA71, 0000038381QT833, 0008000074NG954) were billed for May22 with 406,217 GJ's, while the submission for June23 (one month offset) was 98,437 GJ's. The difference was 307,781 GJ's.	
Whether or not the participant admits or disputes that it is in breach.	Breach admitted	
Estimate of the impact of the breaches (where admitted).	Insignificant	
What steps or processes were in place to prevent the breaches?	GAS070 wash up submissions have been made to the Allocation Agent, until the report is changed to select invoices based on invoice date.	
What steps have been taken to prevent recurrence?		

MEGATEL

GAS070 reports are generated by Nova Energy, using invoice information calculated by Orion.

All MegaTEL ICPs are billed up to the last day of the calendar month, and a file of the billing information produced by Orion is provided to MegaTEL. MegaTEL issues the invoices the month following the consumption period.

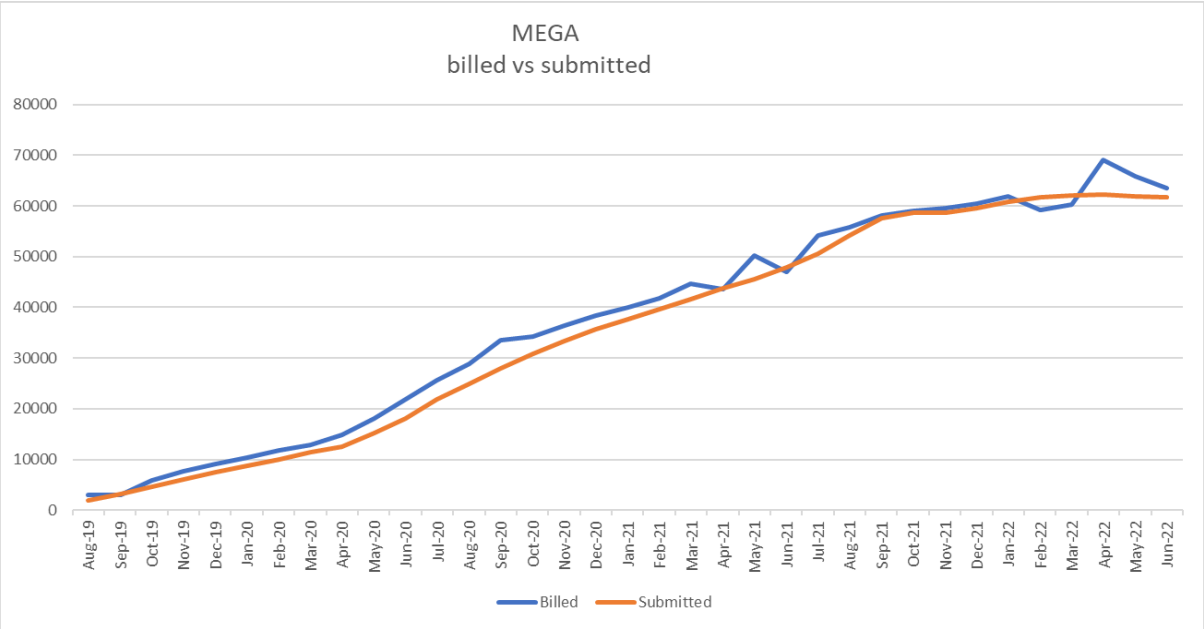
Invoice data is included in the GAS070 if the billing period end date occurs within the period being reported. Because MegaTEL dates invoices in the month following the bill period, the GAS070 data does not reflect what was invoiced during the submission month.

The content of the GAS070 files was proved by selecting some gas gates and checking the invoice data for all ICPs connected to the gas gate against the GAS070 file for June 2022. This confirmed the accuracy of the data, and all the invoices included had invoice dates within June 2022.

The chart below shows a comparison between rolling annual quantities billed and rolling annual consumption information submitted to the allocation agent for a 35-month period from the GAR080 (Report billed versus consumption comparison) report. Although the figures cannot be directly

compared, as the submitted data is normalised, they can provide a useful indicator of whether under or over reporting of consumption is occurring.

Comparison between Rolling Annual Submitted Volumes and Gas Supplied



Year ending	Annual Billed GJ	Annual Consumption GJ	GJ difference	Percentage Difference
Jan-2022	61,965.76	60,763.36	1,202.40	1.98%
Feb-2022	59,135.46	61,751.07	-2,615.61	-4.24%
Mar-2022	60,239.79	62,074.28	-1,834.49	-2.96%
Apr-2022	69,102.76	62,301.48	6,801.29	10.92%
May-2022	65,819.77	61,855.56	3,964.21	6.41%
Jun-2022	63,471.45	61,727.67	1,743.78	2.82%

A spike in as billed volume was observed for April 2022. Nova Energy have investigated this on behalf of MegaTEL and the cause was identified as an incorrect prior period negative consumption invoice which was reversed, and the reversal was assigned to the prior period. The rebill was applied to the current billing period which caused the spike in as billed volume.

Auditor comment			
Non-compliance	Description		
Report section: 5.7 Rule: 52.2.1 From: 1 October 2020 To: 31 October 2023	Audit history: Yes Controls: Acceptable Impact: Insignificant	The GAS070 report should reflect the quantities in GJ billed in the previous invoice month. Invoices are selected for inclusion based on the billing period, not the invoice date.	
Remedial action rating	Remedial timeframe	Remedial comment	
In progress	Ongoing	Megatel uses the same reporting system as Nova. Megatel is also not compliant where Nova is not compliant. Any changes made by Nova to the system will also apply to Megatel.	
Audited party comment			
The circumstances of the matters outlined in the breach notice.	The spike in billed consumption in the GAS070 report for Megatel for April 2022 is that from the ICP - 0000809231QT878. The negative consumption of 3909.523 GJ's in the March22 billing was reversed with 4065.447 GJ's in May22 billing (one month offset for April22).		
Whether or not the participant admits or disputes that it is in breach.	Breach admitted		
Estimate of the impact of the breaches (where admitted).	Insignificant		
What steps or processes were in place to prevent the breaches?			
What steps have been taken to prevent recurrence?			

5.8 Gas Trading Notifications (Rule 39)

A retailer must give notice to the Allocation Agent where they commence or cease to supply gas under a supplementary agreement to a transmission services agreement, or amend information required to be provided under the supplementary agreement under rule 39.2.

Nova Energy confirmed that processes exist to ensure that the trading team informs the reconciliation team where there are changes to supplementary agreements for allocated gas gates. There are currently no supplementary agreements in place for any allocated gas gates.

6. Recommendations

Nova Energy

24 recommendations were made during this audit, as follows:

- As part of the meter set up correction process ensure there is a feedback loop to the original user who made the error to ensure users are aware of the need to check that the meter attributes are correctly applied in the initial meter set up. This will reduce the ongoing volume of required remedial meter set up corrections.
- Work with field service agents to ensure that in all cases where the as found meter pressure does not match the registry meter pressure that these scenarios are escalated so that Nova Energy can investigate and apply any required corrections for the prior periods.
- Ensure the meter serial number report is actively monitored and exceptions actioned in a timely manner to ensure the billing, switching and submission processes are not impacted.
- Implement process to regularly compare meter equipment owner records of the corrector function to Orion's register content code for the ICP to ensure alignment and correct application of gas factors.
- Review meter set up process and exception monitoring for Orion to ensure the correct network pressure is applied for all new meter set ups.
- To reduce the impact of incorrect Joule-Thomson effect calculations on industry UFG investigate the effort to implement network pressure corrections in the Orion system for all Allocation Group 4 ICPs.
- Review all current exception reporting to ensure any non TOU ICPs classified as Industrial are included in all exception reporting.
- Working with the meter owner for ICP 0000026443GNCC4, determine whether the current GMS configuration operating at network pressure (210kPa) meets NZS5259:2015 maximum permissible errors requirements.
- Review read attainment process for allocation group 4 ICPs to ensure any meter read attainment issues are escalated and resolved as soon as possible.
- Review outstanding allocation group 4 forward estimate volumes for interim revisions as a measure of the reading performance for allocation group 4 ICPs and ensure the read issues impacting these ICPs are resolved prior to final revisions.
- Ensure all reported gas meter condition codes are investigated in a timely manner to support the read attainment processes.
- Include Allocation group and customer type fields to the 'All Active Gas Meters with No Consumption' report to enable potential higher volume ICPs to be prioritised for investigation.
- Prioritise business ICPs for monitoring and investigation of potential gas stopped meters.
- Work with the TOU data collectors to implement a notification process for time corrections greater than ± 300 seconds enable Nova Energy to review the TOU data and determine if a data correction is also required.
- Implement process to confirm missing periods of TOU data with the data collectors to ensure all available data is provided to Nova Energy.

- Once a TOU data gap has been confirmed obtain corrected / uncorrected register reads either side of the data gap from the data collector to enable an accurate calculation of the volume of gas consumed during the affected period.
- Review current process of identifying ICP level exceptions identified during the initial GAS040 submission checks to include a mechanism to confirm all exceptions are resolved prior to the interim submission or the following months initial submission.
- Investigate implementing an additional check for overlapping consumption records in the ICP level GAS040 consumption information.
- Investigate implementing an additional check for gaps in consumption records compared to the Registry Retailer, Status and Metering events in the ICP level GAS040 consumption information.
- Include review of the daily TOU data whenever an ICP is identified in the submission checks as being outside the expected volume thresholds compared to historical consumption patterns or previous submissions.
- Investigate validating daily consumption volumes against contracted MDQ values as part of submission checks to identify daily TOU data outliers for investigation prior to submission.
- Investigate implementing post submission UFG monitoring of TOU gas gates to ensure any potential TOU data corruption is identified and resolved in a timely manner.
- Work with the TOU gas meter owners to implement a validation check of TOU meters design maximum flow rate (Q_{max}) to the measured hourly flow rate to identify meters that may be close to or are exceeding the meter design maximum flow rate.
- Investigate the use of permanent estimates in the read attainment process to ensure all consumption volumes are included in the submission process once a read is finally obtained for ICP with read attainment issues.

MEGATEL

Three recommendations were made during this audit, as follows:

- As part of the meter set up correction process ensure there is a feedback loop to the original user who made the error to ensure users are aware of the need to check that the meter attributes are correctly applied in the initial meter set up. This will reduce the ongoing volume of required remedial meter set up corrections.
- To reduce the impact of incorrect Joule-Thomson effect calculations on industry UFG investigate the effort to implement network pressure corrections in the Orion system for all Allocation Group 4 ICPs.
- Recommend that MegaTEL review their no access escalation process to also include email and letters to ensure multiple forms of communication are used in addition to calling and texting the same contact number without success.

Appendix 1 – Control Rating Definitions

Rating	Definition
Ineffective	The design of controls overall is ineffective in addressing key causes and/or consequences. Documentation and/or communication of the controls does not exist (e.g. policies, procedures, etc.). The controls are not in operation or have not yet been implemented.
Needs improvement	The design of controls only partially addresses key causes and/or consequences. Documentation and/or communication of the controls (e.g. policies, procedures, etc.) are incomplete, unclear, or inconsistent. The controls are not operating consistently and/or effectively and have not been implemented in full.
Acceptable	The design of controls is largely adequate and effective in addressing key causes and/or consequences. The controls (e.g. policies, procedures, etc.) have been formally documented but not proactively communicated to relevant stakeholders. The controls are largely operating in a satisfactory manner and are providing some level of assurance.
Effective	The design of controls is adequate and effective in addressing the key causes and/or consequences. The controls (e.g. policies, procedures, etc.) have been formally documented and proactively communicated to relevant stakeholders. The controls overall, are operating effectively so as to manage the risk.

Appendix 2 – Impact Rating Definitions [1]

Rating	Definition
Insignificant	• A small number of issues with registry file timeliness and/or accuracy. Negligible impact on other participants or consumers. Did not prevent the process completing. • A small number of issues with the accuracy and/or timeliness of files to the Allocation Agent. Corrections were made by the interim allocation. A small number of issues not related to registry or allocation information.
Minor	• Some issues with registry file timeliness and/or accuracy. Minor impact on other participants or consumers. Did not prevent the process completing. • Some issues with the accuracy and/or timeliness of files to the Allocation Agent. Corrections were made by the interim allocation. A small number of issues not related to registry or allocation information.
Moderate	• A moderate number of issues with registry file timeliness and/or accuracy. Moderate impact on other participants or consumers. Did prevent some processes completing. • A moderate number of issues with the accuracy and/or timeliness of files to the Allocation Agent. Corrections were not made by the interim allocation. A moderate number of issues not related to registry or allocation information.
Major	• A significant number of issues with registry file timeliness and/or accuracy. Major impact on other participants or consumers. Did prevent some processes completing. • A significant number of issues with the accuracy and/or timeliness of files to the Allocation Agent. Corrections were not made by the interim allocation. A significant number of issues not related to registry or allocation information.

[1] These ratings are indicative and will be used as a guide only, to aid the Market Administrator's assessment of alleged breaches.

Appendix 3 – Remedial Rating Definitions

Rating	Definition
Completed	The alleged breach and impact have been resolved. Systems and processes are now compliant.
In progress	Steps are being taken to resolve the alleged breach and impact and ensure systems and processes are compliant.
No action	Participant undertakes no action to resolve or address auditor controls or impact assessments for commercial reasons.

Appendix 4 – Nova Energy Comments