

Post Implementation Review

Updating Volume Validation Tolerance (CPW128)

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| Meeting Name | Code Change Committee |
| Paper Number | CCC35_06 |
| Meeting Date | 16 January 2025 |
| Purpose of Paper | Information |
| Classification | Public |
| Synopsis | This paper sets out the Post Implementation Review findings for CPW128. |

- RECOMMENDATION** The Code Change Committee is invited to:
- **NOTE** the findings outlined in this document and
 - **AGREE** to re-review the tolerances in three years.
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Paper Author: Rasika Joshi, MOSL

1 Change Overview

'Updating Volume Validations Tolerance' (CPW128) was approved by Ofwat on 17 November 2022. The change was implemented on 12 May 2023.

This change widened the upper and lower meter read validation volume thresholds in CMOS. It also increased the number of previous reads against which readings are compared (Prior Estimate Daily Volume (PEDV) calculation) to give a more accurate picture of variations in customers' water consumption levels (e.g. due to seasonal factors). It also addressed an anomaly in CMOS that did not allow vacant properties to have zero consumption.

2 Post Implementation Review

2.1 Approach

The '[Final Recommendation Draft](#)' (CPW128) that was submitted to Ofwat, included MOSL's intention to complete a Post Implementation Review (PIR) 12 months following the implementation of CPW128. The purpose of this review is to consider whether the benefits stated in CPW128 have been delivered and if any further changes are required.

During the development of '[Wholesaler Smart Meter Reads](#)' (CPW142), the Metering Committee recommended that this PIR also analyses the validation rules for smart reads submitted into CMOS. Reads from smart meters are sent directly from the meter and are therefore less prone to errors that occur when a meter is visually read. The number of re-reads, rejected reads, and auto resubmissions were analysed as a part of this review for both traditional 'dumb' and 'smart' meters.

When a meter read is submitted, CMOS compares the recent consumption implied by the read against historical consumption. CMOS will automatically reject a read if consumption has deviated outside meter read validation thresholds. When a meter read is rejected by CMOS, a notification is sent to the submitting party with the reason for the rejection. If the submitting party considers the read was incorrectly rejected (in the example of this change for consumption deviating outside meter read validation thresholds), the read can be re-submitted into CMOS with the reason for the failure overridden. This re-submission of a rejected read is called a 're-read'. If a re-read is resubmitted automatically by a trading party's system (rather than being manually checked first) it is called an 'auto-resubmission'.

The analysis below compares data one year before and one year after implementation.

2.2 Areas of Review

| Ref | Deliverables | Monitoring objective | Assessment method |
|-----|--|--|--|
| 1 | Number of re-reads | Should have decreased | Use data in CMOS to calculate total re-read percentages submitted by the retailers |
| 2 | Number of auto re-submissions (including instant resubmissions ³) | Should have decreased | Use the data in CMOS to compare pre and post implementation |
| 3 | Number of rejections due to lower/upper volume threshold | Should have decreased | Comparing the data in CMOS for percentage reduction pre and post implementation |
| 4 | Seek feedback from Trading Parties for the implemented change regarding issues or benefits | Positive feedback on the change implementation | Meetings with Retailers which have the highest percentage of re-reads and auto-resubmissions before and after the change was implemented |

2.3 Findings

2.3.1 Rejections

The change amended the following:

- Increased the upper volume threshold from 200% to 300%.
- Reduced the lower volume threshold from 20% to 1%.
- Increased the number of readings used in the PEDV calculation.

These validation changes were expected to reduce the number of reductions and Figure 1 confirms overall rejections were reduced by approximately 12-13%.

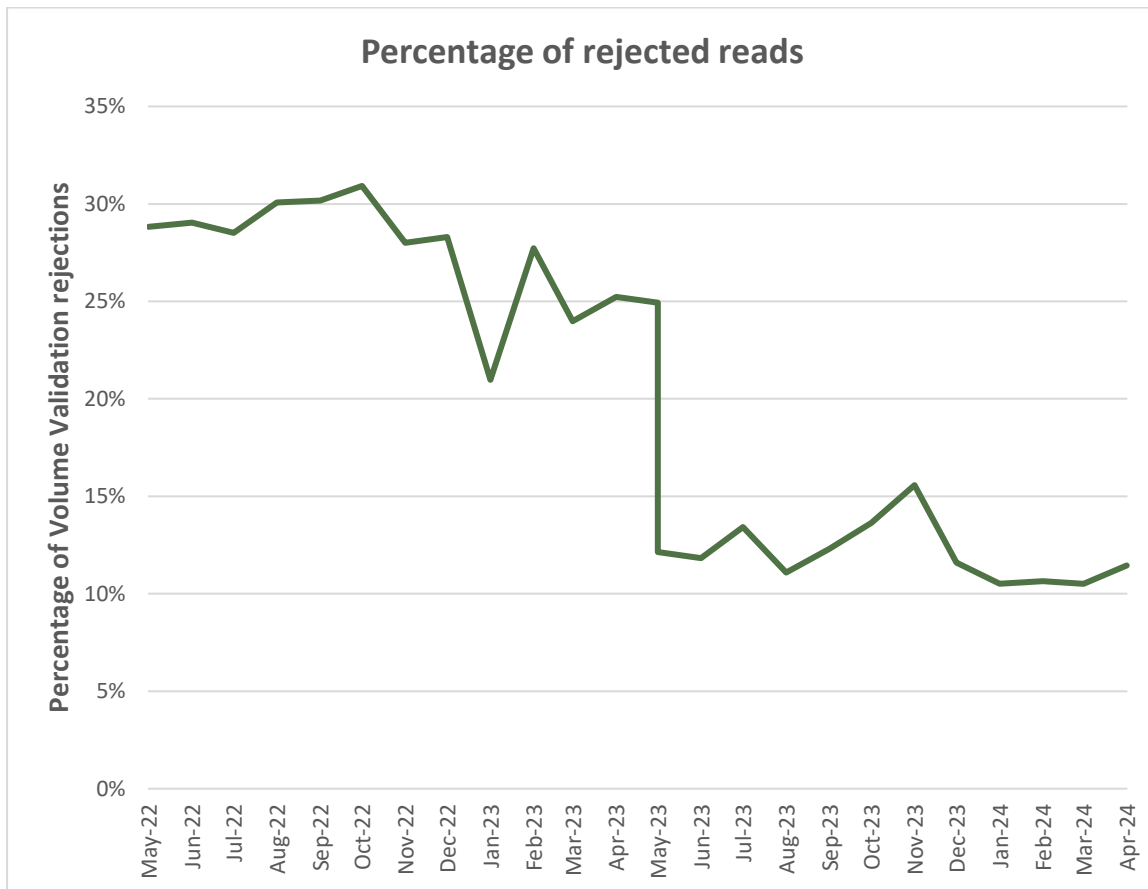


Figure 1 Percentage Rejections

2.3.2 Re-Reads

A read can be rejected by CMOS due to various reasons. Volume validation was observed to be the main reason why reads were rejected in 2019-2020. By amending the validation tolerances, CPW128 sought to reduce the number of rejections and in turn reduce the number of re-reads that needed to be submitted. Trading parties would then be able to focus on why the remaining reads had been rejected.

Figure 1 compares the pre and post implementation average percentages of re-reads for all meter types¹. There has been approximately a 7% reduction in re-reads submitted into CMOS compared to the 12-13% reduction in rejected reads.

¹ Measured as the percentage of meter reads re-submitted with no change in the read value.

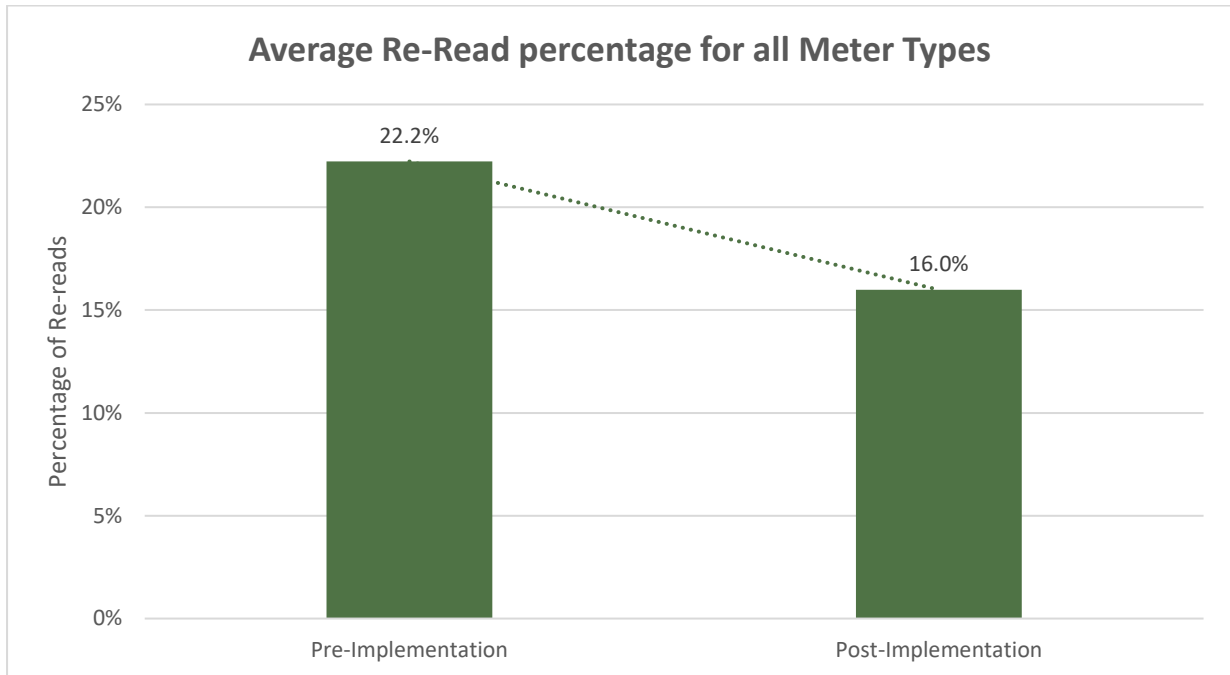


Figure 2 Average re-reads percentage for all meter types

Figure 3 shows re-reads for SMARTAMI meters pre and post implementation. SMARTAMI meters had proportionally fewer re-reads pre-implementation but significantly less (3.5%) reduction in re-reads post-implementation implying greater confidence in their accuracy.

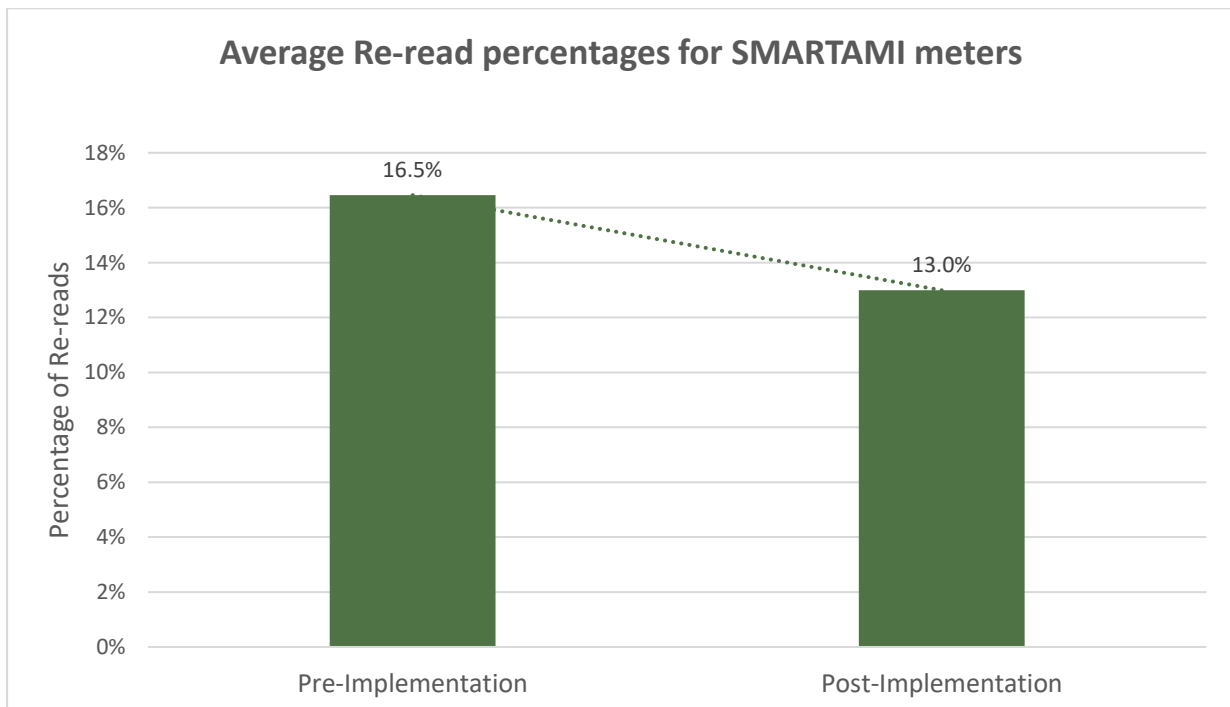


Figure 3 Average Re-read percentages for SMARTAMI meters

2.3.3 Manual Versus Automated Resubmission

If a rejected read is deemed valid by a retailer, then the read may be resubmitted into CMOS either manually or automatically. The market codes state that if a reading gets rejected then the submitting trading party should verify the reason for the rejection. However, due to the large number of rejections, ‘resubmissions’ are often automated.

As fewer meter reads would be rejected due to the new tolerances, retailers could focus more on investigating the cause of the residual rejections and therefore have less automated resubmissions. Therefore, this change expected a trend away from automated towards manual resubmissions. This trend was not observed.

Figure 4 shows broadly similar proportions of automated² and manual reads and if anything, more instant³ resubmissions.

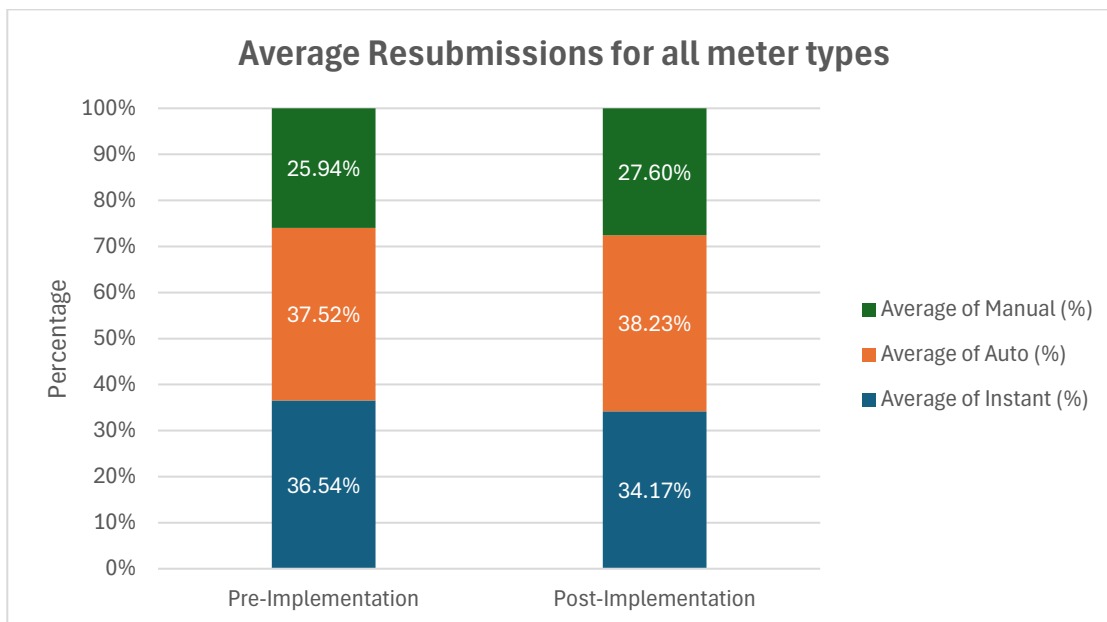


Figure 4 Percentage of Auto and instant re-submission for all meter types

Figure 5 shows a more marked trend away towards manual from automated resubmission for SMARTAMI meters implying less confidence in their accuracy.

² An auto resubmission is a read which is submitted by means of system automation within 24 hours of its prior read.

³ An instant resubmission is an automated resubmission which is a read submitted within an hour of its prior read.

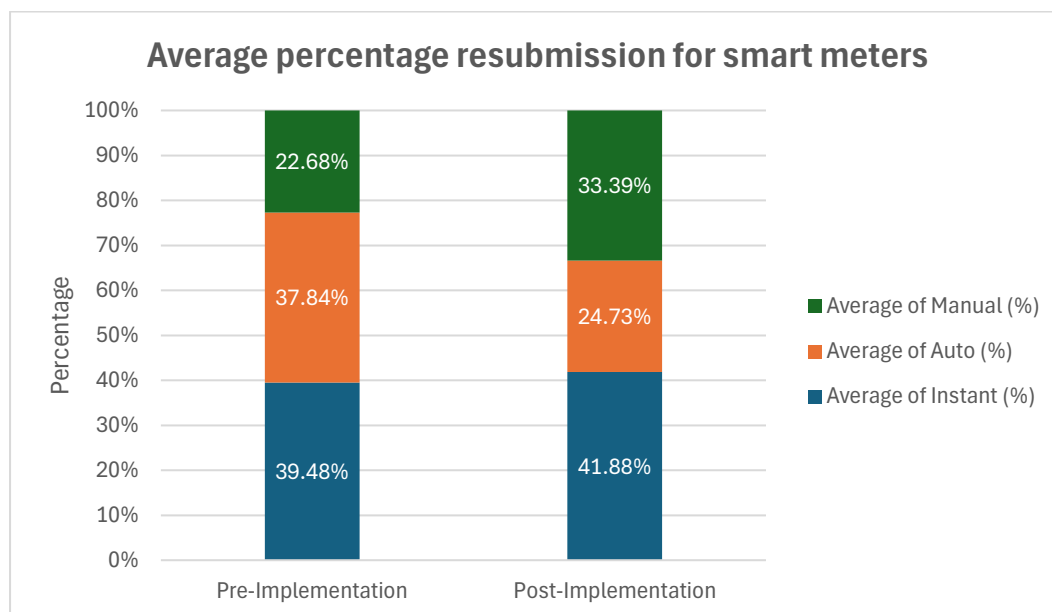


Figure 5 Percentage of Auto and instant re-submission for SMARTAMI meters

2.3.4 Retailer Auto re-reads

Table 1 and Table 2 and Figure 6 show the top five trading parties for re-submissions pre and post implementation. Overall, rejections have reduced, resulting in fewer resubmissions.

Table 1 Majority contributor Trading Parties Pre-Implementation

| Row Labels | Total Resubmissions | Total Instant Resubmissions | Total Instant Percentage | Total Auto Resubmissions | Total Auto Percent |
|---------------------------|---------------------|-----------------------------|--------------------------|--------------------------|--------------------|
| Pre-Implementation | 868256 | 289462 | 33.34% | 627053 | 72.22% |
| WAVE-R | 178109 | 162608 | 91.30% | 169940 | 95.41% |
| WATER2BUS-R | 81531 | 39204 | 48.08% | 72299 | 88.68% |
| SEVERN-R | 299434 | 12247 | 4.09% | 192182 | 64.18% |
| CASTLE-R | 232392 | 54791 | 23.58% | 150518 | 64.77% |
| BSTREAM-R | 76790 | 20612 | 26.84% | 42114 | 54.84% |

Table 2 Majority contributor Trading Parties Post-Implementation

| Row Labels | Total Resubmissions | Total Instant Resubmissions | Total Instant Percentage | Total Auto Resubmissions | Sum of Auto Percent |
|----------------------------|---------------------|-----------------------------|--------------------------|--------------------------|---------------------|
| Post-Implementation | 629611 | 201983 | 32.08% | 446619 | 70.94% |
| WAVE-R | 151074 | 121459 | 80.40% | 131984 | 87.36% |
| WATER2BUS-R | 58307 | 49025 | 84.08% | 56015 | 96.07% |
| SEVERN-R | 178843 | 6691 | 3.74% | 127258 | 71.16% |
| CASTLE-R | 162171 | 21038 | 12.97% | 95742 | 59.04% |

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|-----------|-------|------|-------|-------|--------|
| BSTREAM-R | 79216 | 3770 | 4.76% | 35620 | 44.97% |
|-----------|-------|------|-------|-------|--------|

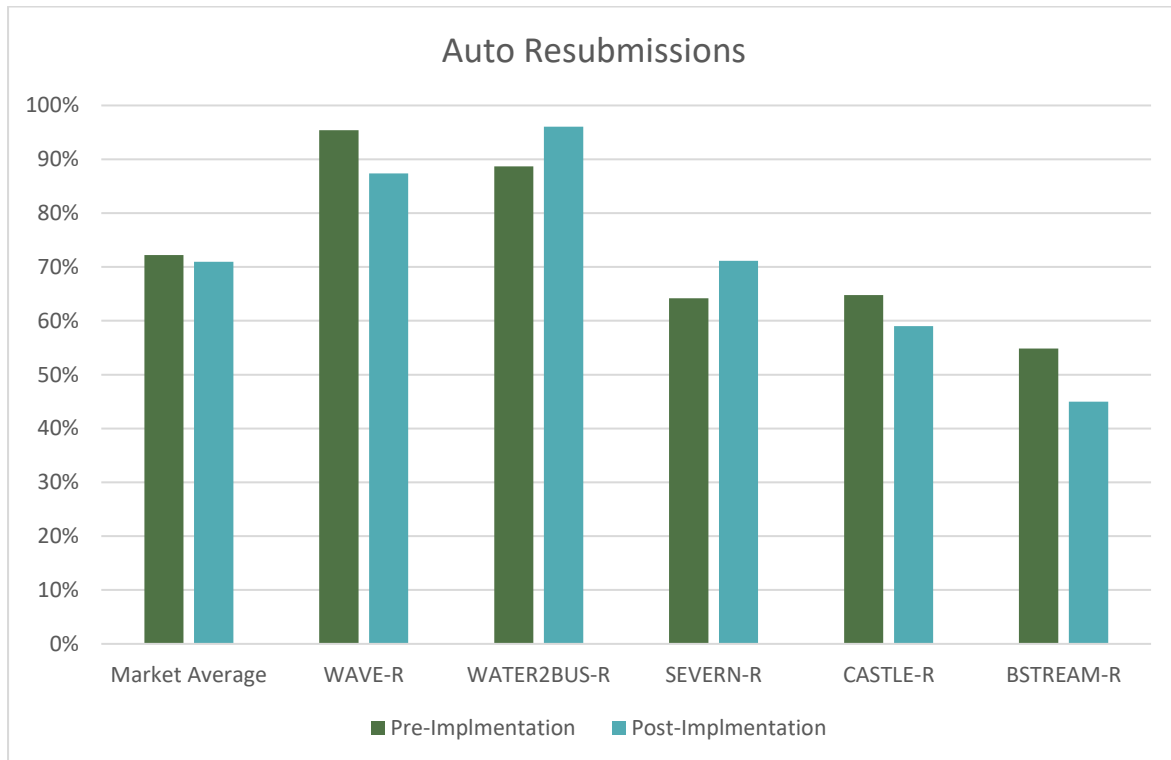


Figure 6 Trading party-wise resubmission percentage.

Wave, who had the highest number of automatic re-submissions, had an approximate 11% reduction in percentage after this change was implemented. A similar trend was seen by Castle, and Business Stream.

2.3.5 Feedback from Trading Party Discussions

All interviewed trading parties mentioned they validate reads before they are initially submitted into CMOS, therefore if a read has been rejected due to the tolerance it can be automatically resubmitted as it has already been validated.

- Business Stream, bulk approve re-reads in their new system following this change, excluding G-reads. However, when bulk approving, the process captures manual errors, data errors or any kind of misalignment. To avoid these issues, they review these bulk submissions which helps them to identify whether a read needs any further investigation or not.
- Castle Water advised that they had changed their internal assessment by mirroring the new validation system according to CPW128. They also informed that around 85% of their acquired meters were SMARTAMI and their process for these is the same as for traditional 'dumb' meters.

- Water2Business did not provide an exact reason for the increase in auto re-submissions however, they considered it may be due to the recent large acquisition of customers. They also mentioned that they currently face issues with smart meters failing to record accurate reads, which is a problem they experience less of with ‘traditional’ dumb meters. Drift was observed between the physical and electronically transmitted reads from ‘Smart’ meters. This meant they still had to periodically physically read the meter. This was also an issue raised in other trading party’s interviews. Water2Business also suggested that tolerance validation should be introduced for meter readings from trade effluent meters.
- Wave advised that, they are now able to focus more on manually verifying reads and having an accurate billing system. Aligning their internal validation process with the new rules had proved useful to monitor bills based on consumption levels. This has meant they get less rejected reads at vacant properties.
- There was unanimous agreement that the review period was too short, and it should look at 3-5 years of data. This is because over a one-year period there would only be a maximum of two meter reads for bi-annual meters. The number of rejected reads has reduced as the reads on vacant meters are now allowed. As part of the Strategic Panel’s ‘flourishing market’ and the ramping up smart meters in the market, it would be beneficial to have a different validation system for these meters. Although there is no evidence currently proving the need to have a new system in place, this might need to be considered in the future after observing a larger dataset for a longer timeframe.

3 Conclusions

- CPW128 provided benefits to trading parties by decreasing the number of rejections that were caused due to volume validation. However, the data for automated resubmissions does not show any significant reduction. In the post implementation discussion with the trading parties, it was observed to be common practice to pre-validate meter readings before submitting to CMOS. Therefore, if they are rejected by CMOS due to the tolerance they are auto re-submitted as the trading party system has already pre-checked them.
- The time frame observed for this post implementation review seems inadequate, especially for biannually read meters, as they may only have had one or two reads submitted.
- All the retailers interviewed have their own automation process, which evaluates and verifies the rejections, which were updated after the change was implemented. However, this does not mean all trading parties have this in place.

- Trading party behaviours have not completely aligned with expectations especially for automatic and instantaneous resubmissions.
- Observations of SMARTAMI meters have not found evidence that different tolerances are required for smart meters compared to traditional ‘dumb’ meters.

In conclusion, CPW128 has reduced the number of rejections due to volume thresholds. However, it has failed to proportionately reduce the number of auto resubmissions. In addition, it was suggested by trading parties to extend the time frame for data collection to include a larger number of reads.

4 Metering Committee View

These findings were presented to the Metering Committee on 17 December 2024. The committee acknowledged that the change was successful in reducing the percentage of rejected reads caused due to volume validation and by allowing zero consumption property reads.

They agreed that there was not sufficient data, and a further review should be completed in two years, especially for bi-annually read meters. This review should provide sufficient data for a more complete review of the amended read tolerances.

The committee suggested it would be of benefit to analyse the correlation with deleted reads. This would look at reads that had been accepted as re-reads and then subsequently deleted by the trading party. The committee also agreed they should look at gathering more evidence for observing drift between electronic and physical reads to understand the scale of the issue.

While observing the smart meter trends, the findings highlighted that smart and regular meter followed a similar trend. Therefore, the committee agreed this should also be reviewed again in two years.

5 Proposer’s view

The proposer being the member of the Metering Committee whose view are mentioned in section 4 are considered due to lack of specific feedback received from them.

6 Recommendation

The Code Change Committee is invited to:

- **NOTE** the findings outlined in this paper
- **AGREE** to re-review the tolerances in three years.