

Specifications and Tolerances (S&T) Committee Agenda Items:

Executive Summary



In preparation for the 2025 Annual Meeting of the National Council on Weights and Measures (NCWM) on July 13 – 17, 2025

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Executive Summaries from the NIST OWM Analysis of the 2025 NCWM Specifications and Tolerances (S&T) Annual Meeting Agenda

The NIST OWM Executive Summary is extracted from the NIST OWM Analysis. This provides the NIST OWM community with high level points that summarize the technical aspects and recommendations for the Item Under Consideration. The full NIST OWM Analysis can be viewed at **<https://www.nist.gov/pml/owm/publications/owm-technical-analysis>**. NIST OWM offers these comments and recommendations based upon information and input available as of the date of this report.

Language shown in bold face print by ~~striking out~~ information to be deleted and underlining information to be added. Requirements that are proposed to be nonretroactive are printed in ***bold faced italics***.

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Subject Series List for the Specifications and Tolerances Committee

Handbook 44 – General Code	GEN Series
Scales	SCL Series
Belt-Conveyor Scale Systems	BCS Series
Automatic Bulk Weighing Systems	ABW Series
Weights	WTS Series
Automatic Weighing Systems	AWS Series
Weigh-In-Motion Systems used for Vehicle Enforcement Screening	WIM Series
Liquid-Measuring Devices	LMD Series
Vehicle-Tank Meters	VTM Series
Liquefied Petroleum Gas and Anhydrous Ammonia Liquid-Measuring Devices	LPG Series
Hydrocarbon Gas Vapor-Measuring Devices	HGV Series
Cryogenic Liquid-Measuring Devices	CLM Series
Milk Meters	MLK Series
Water Meters	WTR Series
Mass Flow Meters.....	MFM Series
Carbon Dioxide Liquid-Measuring Devices.....	CDL Series
Hydrogen Gas-Metering Devices	HGM Series
Electric Vehicle Refueling Systems.....	EVF Series
Vehicle Tanks Used as Measures	VTU Series
Liquid Measures	LQM Series
Farm Milk Tanks	FMT Series
Measure-Containers	MRC Series
Graduates.....	GDT Series
Dry Measures.....	DRY Series
Berry Baskets and Boxes.....	BBB Series
Fabric-Measuring Devices	FAB Series
Wire-and Cordage-Measuring Devices	WAC Series
Linear Measures	LIN Series
Odometers	ODO Series
Taximeters.....	TXI Series
Timing Devices.....	TIM Series
Grain Moisture Meters (a).....	GMA Series
Grain Moisture Meters (b).....	GMB Series
Near-Infrared Grain Analyzers	NIR Series
Multiple Dimension Measuring Devices.....	MDM Series
Electronic Livestock, Meat, and Poultry Evaluation Systems and/or Devices.....	LVS Series
Transportation Network Measuring Systems	TNS Series
Other Items	OTH Series

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*Details of NIST OWM Executive Summaries
(In order by Reference Key)*

GEN – General Code

GEN-25.1. V G-S.5.6. Recorded Representations
NIST OWM Recommendation: Withdraw • The current language in G-S.5.6. Recorded Representations was amended in 2023 with the intent that all forms of delivering electronic transaction data be allowed. Therefore, amendment of this requirement seems unnecessary. However, this item does raise some concerns with the current language regarding recorded representations: ○ The intent of G-S.5.6. is to ensure that the commercial transaction provides an accurate record of the transaction (receipt of purchase). ○ Neither the current language in NIST Handbook 44 nor the item under consideration provides assurance that the customer receives a permanent record to be held in their possession of all relevant transaction data. A QR code by itself is not a receipt. ○ Neither the current language in NIST Handbook 44 nor the item under consideration provides assurance that the customer has unrestricted access to the relevant transaction data. There are no safeguards to prevent limited access through a paid subscription or app, or the exchange of personal information. • NIST OWM does not support this item as written. Adding an example does not change the requirement itself, and it does not address the concerns raised by the Weights and Measures community with respect to the method, manner, and form in which the receipt is received by the customer. • Adding the terms “unique and dynamic quick response QR code” as an example does not limit the use of QR codes to those that are “unique and dynamic “ and does not achieve the stated purpose of the item. • OWM also recommends revising the current language in NIST Handbook 44 to include the necessary safeguards with respect to recorded representations.

SCL – Scales

SCL-22.2. A UR.3.1.X. Required Minimum for Cannabis Products
¹NIST OWM Recommendation: Assigned • OWM has multiple concerns with the proposed parts (b) and (c) of UR.3.1.X. ○ Part (b) would require a minimum load as specified in Table 8 when weighing cannabis and cannabis products. Part (c) requires a verification scale interval (e) of 0.01 g or less when 3 ounces or less of cannabis or cannabis products are weighed. 3 ounces is roughly 85 g. This effectively requires a load of 8500 e for weighments conducted at 3 oz (85 g) and greatly exceeds the minimum load of 20 e which Table 8 specifies for scales with an e of 0.01 g ○ Part (c) also requires a Class II scale that is traceable to a National Type Evaluation Program Certificate of Conformance (NTEP CC) when weighing <i>cannabis</i> and <i>cannabis</i> products. ▪ The requirement that a scale have an NTEP CC is addressed by each state’s weights and measures law and this conflicts with some states. • For all of the reasons above, OWM recommends this item remains assigned to the Task Group. OWM offers to assist the Cannabis Task Group in developing a technically sound proposal. ¹ In contrast to hemp, marijuana remains a Schedule I substance under the Controlled Substances Act. NIST does not have a policy role related to the legalization of the production, sale, distribution, or use of cannabis (including hemp and marijuana). NIST participates in the National Council of Weights and Measures (NCWM) as part of NIST’s statutory mission to promote uniformity in state laws, regulations, and testing procedures.

SCL-24.2. D Multiple Sections Regarding Tare
NIST OWM Recommendation: Developing • NIST OWM recognizes the issues raised by the submitter. The error introduced to the measurement under the current requirements can be as much as the acceptance tolerance for single interval scales, and a multiple of the acceptance tolerance for multi-interval scales. • NIST OWM believes that the proposed amendments may help solve these issues. However, as the submitter already indicated, the item is not yet fully developed. NIST OWM supports further development of the item. • Some of the points identified by NIST OWM that may add clarification to the item: ○ The proposal should emphasize that mathematical agreement can only be obtained in the case of a net calculation based on two independent weighing results (e.g., weigh-in-weigh-out systems). Mathematical agreement cannot be guaranteed with any tare operation without introducing an error in either the gross, tare, or net weight. ○ Omit the proposed requirement S.1.18 as it is confusing and has no added value. ○ To amend the current language in S.1.2.1 and include examples that illustrate the proper net weight determination when tare is determined in various ways.

SCL-24.2. D Multiple Sections Regarding Tare

- Review the terms used in S.1.16. and S.1.17. and consider whether they could be combined to apply to indications and recorded representations, as the information is repetitive (See the Detailed Analysis).

SCL-25.1. I S.5.2. Parameters for Accuracy Class, S.6. Marking Requirements and UR.3. User Requirements

NIST OWM Recommendation: Informational

- This item makes a distinction between the minimum capacity (a characteristic of the classification) and the minimum load (the actual load placed on the scale).
- It clarifies that the minimum capacity of the scale depends on the scale division.
- It ties the minimum capacity to the classification.
- It requires the minimum capacity to be marked on the scale, which makes it easier for the user and inspector to determine the scale's minimum capacity.
- This proposal brings the Scales Code in line with OIML R 76 regarding the markings of the minimum capacity and its relationship to the scale division.
- In the Justification, to be clear, part 4. should read “4. Amendment of UR.3.1. and **Removal of Table 8**”.

SCL-25.2. V Table S.6.3.a. Marking Requirements and Definitions

NIST OWM Recommendation: Voting

- When SCL-23.3 was adopted at the 2024 NCWM Annual Meeting, the term Verification Scale Division was amended to Verification Scale Interval throughout the Scale Code (2.20), but the term Verification Scale Division remains in the AWS Code (2.24).
- The reference to e_{min} in Table S.6.3.a. in the Scales Code and the definition of e_{min} in Appendix D were inadvertently left out of the group of items included in SCL-23.3.
- Because e_{min} is referenced in both the Scales Code and the AWS Code, there needs to be separate definitions for each section.
- Because it is “new”, the reference to the date associated with this definition is incorrect. It should reflect that this definition was added in 20XX, not added in 1997 and amended in 20XX. It should appear in the Item Under Consideration as shown below:

e_{min} (minimum verification scale interval). – The smallest verification scale interval for which a weighing element complies with the applicable requirements. [2.20]
(Added 20XX)

SCL-25.2. V Table S.6.3.a. Marking Requirements and Definitions

- OWM views this as a housekeeping item.

SCL-25.3. D UR.3.14. Zero-Balance Recorded Weight for Forklift Scales

NIST OWM Recommendation: Developing

NIST OWM recognizes the issues with reweighs in the transport sector. However, OWM has some concerns about the proposal.

- Forklift scales are not defined in NIST Handbook 44 (HB 44) and fall under the category of on-board weighing systems. This could be interpreted as extending the requirement to apply to all on-board weighing systems which may have unforeseen consequences.
- As written, the requirement deals with the design of the instrument, i.e., “the scale shall indicate and record a zero-balance condition”, which is a specification not a user requirement. As a specification, this requirement will have a significant impact on the certification of on-board weighing systems.
- Other types of scales don’t record the zero-balance condition. The justification does not explain why this is a problem specific to forklift scales used in the transport sector but not for other types of scales or applications. A better understanding may lead to alternative solutions to the submitter’s problem.
- The submitter should consider working with the NCWM Uniform Shipment Law Task Group to coordinate their efforts with this group.

SCL-25.4. V S.1.2.2.2. Class III, III L, and IIII Scales. and S.1.2.2.2.2. Weight Classifiers

NIST OWM Recommendation: Voting

- Per the submitters, who include representatives of NTEP, the SMA, and regulators, there are no weight classifiers with an accuracy class other than class III that have a verification scale interval (e) different from the scale divisions (d).
- Because weight classifiers round up to the next division, there is no advantage to have different values displayed for e and d.
- This would align NIST HB 44 with OIML R 76 requirements.

SCL-25.5. V T.N.2.4. Multi-Interval and Multiple Range (Variable Division-Value) Scales

NIST OWM Recommendation: Voting

- Item SCL-23.3 was adopted at the 2024 NCWM Annual Meeting. That item amended NIST Handbook 44 to correctly reference the verification scale interval in certain specification and tolerance paragraphs that incorrectly referenced the scale division.

SCL-25.5. V T.N.2.4. Multi-Interval and Multiple Range (Variable Division-Value) Scales

- This paragraph should have been included in that group of items as it references the scale division which is incorrect.
- Because S.5.3. requires multi-interval and multiple range scales to have an e equal to d, the application of tolerance will not change for these devices.

AWS – Automatic Weighing Systems Code

AWS-24.1. V N.1.5. Test Loads., N.1.5.1. Initial Verification., Table N.1.5.1. Initial Verification Test Loads, N.1.5.2. Subsequent Verification., N.2. Test Procedures - ~~Weigh-Labelers.~~, N.2.1. Non-Automatic Tests., N.2.1.3. Shift Test., N.2.2.1. Automatic Tests Non-Automatic for Weigh-Labelers., N.2.2.2. Automatic Tests for Automatic Checkweighers., ~~N.3. Test Procedures – Automatic Checkweigher.~~, ~~N.3.1. Tests Non-Automatic.~~, ~~N.3.2. Automatic Tests.~~, Table N.23.2.2. Number of Sample Weights per Test for Automatic Checkweighers

NIST OWM Recommendation: Voting

- OWM agrees with the submitter that the language in paragraph N.1.5. can be interpreted in different ways and needs clarification.
- Paragraph N.1.5. Test Loads and Table N.1.5. Test Loads apply to all Automatic Weighing Systems.
- The subsequent paragraphs, N.2. Test Procedures – Weigh-Labelers & N.3. Test Procedures – Automatic Checkweighers apply to Weigh-Labelers and Automatic Checkweighers, respectively.
- Paragraph N.1.5. currently specifies the amount and number of test loads to be applied to all devices covered by this code, but it conflicts with the tests specified in N.3. paragraphs which apply to Weigh-Labelers and requires additional tests when compared to tests specified in the N.2. paragraphs that apply to Checkweighers, specifically:
 - Paragraph N.1.5, which refers to Table N.1.5, specifies four different test loads, which conflicts with paragraph N.3.2. Automatic Tests, which specifies “Test runs shall be conducted using two test loads.”
 - There is also a potential for misinterpretation with paragraph N.2.2.2. Automatic Tests, which specifies, “Test runs should be conducted using at least two test loads.”
- There were other gaps in the language proposed in this item and the language currently in NIST Handbook 44.
- This proposal reorganizes the notes section:
 - The N.1. paragraphs will now specify the amount and number of test loads, separated by tests for initial verification and tests for subsequent verification.
 - The N.2. paragraphs will now specify test procedures.

AWS-24.1. V N.1.5. Test Loads., <u>N.1.5.1. Initial Verification</u>, Table N.1.5.1. Initial Verification Test Loads, <u>N.1.5.2. Subsequent Verification</u>, N.2. Test Procedures - Weigh-Labelers, N.2.1. Non-Automatic Tests., N.2.1.3. Shift Test., N.2.2.1. <u>Automatic Tests Non-Automatic for Weigh-Labelers</u>, N.2.2.2. Automatic Tests for Automatic Checkweighers., N.3. Test Procedures - Automatic Checkweigher., N.3.1. Tests Non-Automatic., N.3.2. Automatic Tests., Table N.23.2.2. Number of Sample Weights per Test for Automatic Checkweighers
▪ N.2.1. specifies procedures for devices designed to operate non-automatically. ▪ N.2.2. specifies procedures for devices that only operate automatically. • The reorganization of the N.2 paragraphs incorporated procedures that were specified in the N.3. paragraphs allowing for the elimination of N.3. and its sub-paragraphs

LMD – Liquid-Measuring Devices

LMD-24.2. I N.4.1. Normal Tests
NIST OWM Recommendation: Voting • If the weights and measures community agrees that paragraph N.4.1, as written, is unclear in its application, OWM supports amending it to provide further clarity. • OWM supports: ○ the updated language in the item under consideration, which clarifies that the maximum flow rate used to calculate the range of flow rates to which the Normal Test is applied is the flow rate the device is capable of, as installed ○ the use of terms, which replace the acronyms currently included in the formula ○ the additional clarifying language added after the formula

VTM – Vehicle Tank Meters

VTM-25.1. W UR.2.2. Recording Element
NIST OWM Recommendation: (Item Withdrawn)

HGV – Hydrocarbon Gas Vapor-Measuring Devices

HGV-25.1. D S.1.1.4. Advancement of Indicating and Recording Elements, S.1.1.5. Proving Indicator, S.2.2. Provision for Sealing, Table S.2.2. Categories of Device and Methods of Sealing, S.4.3. Temperature Compensation, S.4.4. Badge, N.3. Test Drafts, N.4.1. Normal Tests, and Appendix D. Definitions – register

NIST OWM Recommendation: OWM recommends a Developing status to allow further vetting of the newer technologies to fully develop comprehensive design and user requirements for the next generation of metering equipment used in this application.

- Fully vet to ensure handbook requirements address: (1) the mechanisms in use for metrological features in these next generation measuring devices; and (2) the electronic options for all device applications that can be used to provide information such as audit trail security records and the measured quantity readings through remote indications.
- The “intended” design of a device although envisioned as fully compliant may not meet the full intent of basic weights and measures principles and OWM therefore recommends including a qualifier for how the advancement of indication must operate. Proper design and functioning of the more complex alternative newer digital electronic technologies should include all the elements that make it possible for these devices to meet performance requirements under all operating conditions.
- Recognize the use of these newer technologies in two ways:
 - (1) Consider adding references to G-S.2. Facilitation of Fraud and G-S.3. Permanence to the end paragraph S.1.1.4. Advancement of Indicating and Recording Elements to read:

S.1.1.4. Advancement of Indicating and Recording Elements. – Primary indicating and recording elements ~~shall advance digitally or continuously and be susceptible to advancement only by mechanical operation of the device~~**shall advance only by the designed operation of the device, as intended by the manufacturer. (See also G-S.2. Facilitation of Fraud and G-S.3. Permanence)**
 - (2) Initially address the electronic meter designs in a new general design requirement which specifies the meter measurement technology shall adjust and correct for any design element or other factors that adversely affect measurements as stated in a new paragraph S.2.5. as shown below:

S.2.5. Adjustments and Corrections for Measuring Elements and Measuring Systems. – **A device shall be equipped with automatic means to determine and correct for changes in the product’s properties or variations in other parameters having a significant metrological effect that results in a measured quantity in excess of allowable error limits when compared with the delivered quantity. The device shall provide a means to identify when these features are not operating properly.**
- Retitle and reorganize paragraph S.4.4. ~~Badge~~**Marking Requirements** to specify:
 - (1) General requirements for the marking information’s permanence and prominent location on the front of the device and also specify it be either “clear” or preferably “legible”;
 - (2) Method for Affixing Information i.e., the option for a Badge or if permissible external label, imprinting, stamping, etc. into the body of the device,

HGV-25.1. D S.1.1.4. Advancement of Indicating and Recording Elements, S.1.1.5. Proving Indicator, S.2.2. Provision for Sealing, Table S.2.2. Categories of Device and Methods of Sealing, S.4.3. Temperature Compensation, S.4.4. Badge, N.3. Test Drafts, N.4.1. Normal Tests, and Appendix D. Definitions – register
(3) the list of the required information; and (4) the relationship of this information to G-S.1. marking information. In addition, the use of the word “badge” appears in other code paragraphs as the prescribed location for meter operating conditions that should be operational during the meter test. For meters in operation where the primary indications are not reasonably viewable in the typical manner utility type meters are accessible to the customer, further modify Section 3.33 to include two new nonretroactive user requirements such as those shown in the NIST OWM Detailed Technical Analysis that provide for meter reading information displayable to the customer in real time indications that clearly identify which customer’s premise is the source for billable information.

HGM – Hydrogen Gas-Measuring Devices

HGM-23.1 W UR.3.8. Safety Requirement
NIST OWM Recommendation: (Item Withdrawn)

FMT – Farm Milk Tanks

FMT-25.1. D UR.1. Installation
NIST OWM Recommendation: Developing - The item under consideration was revised after the 2025 Interim meeting and includes this new language: “The means used shall be constructed of impervious material, maintained free of breaks, depressions, and surface peelings.” - OWM is unsure what this addition would require and is concerned it may introduce the opportunity for misinterpretation and reintroduces prescriptive means to achieve the stated purpose.

MDM – Multiple Dimension Measuring Devices

MDM-25.1. V Multiple Sections Regarding Adding Volumetric Measuring Devices to Section 5.58.

NIST OWM Recommendation: Informational

- NIST OWM believed that the proposed amendments in the original items MDM-25.1, MDM-25.2, and MDM-25.3 were insufficient to extend the scope of Section 5.58 to include volumetric measuring devices. Therefore, our office has worked with the submitters to develop a proposal for revision of the entire code in Section 5.58 so that it will accommodate the certification of volumetric measuring devices.
- Although the new proposal was vigorously discussed with the submitters prior to this new language being submitted to the S&T Committee, there is at least one area that needs further amendment. New paragraph S.1.6.3. should only apply to Volumetric Measuring Devices (VMD), but as written, would apply to both VMD and Multiple Dimension Measuring Devices (MDMD). To correct this, OWM suggests one of the following options:
 - Add the terms “Volumetric Measuring Devices” to the title of S.1.6.3. after “Recorded Representations, which would then read “S.1.6.3. Recorded Representation, Volumetric Measuring Devices” or
 - Renumber S.1.6.3. to S.1.6.2.1. so it is subordinate to S.1.6.2. which only applies to VMD
- NIST OWM believes that the number of changes are significant, it has not yet been vetted, and that not all stakeholders may have had the opportunity to examine it thoroughly.
- Therefore, NIST OWM suggests that the weights and measures community consider whether this item should be downgraded to an informational status.

MDM-25.2. W N.1 Test Procedures

NIST OWM Recommendation: See MDM-25.1

- This item was merged with MDM-25.1.

MDM-25.3. W T.3. Tolerance Values

NIST OWM Recommendation: See MDM-25.1

- This item was merged with MDM-25.1.

OTH – Other Items

OTH-25.1. V 2.26. Weigh-in-Motion Systems Used for Vehicle Direct Enforcement

NIST OWM Recommendation: Voting

- The submitters have demonstrated the need for direct and permanent enforcement, and that WIM installations are suitable and extremely effective.
- Regarding the installation in New York State:
 - The number of violations has dropped by 60% during its first year of operation.
 - As of 4/4/2025, there had been no legal challenges regarding the accuracy of the WIM system.
 - The WIM installation has proven that WIM systems can be stable over a longer period, depending on the type of pavement.
 - The certification and inspections of the WIM have become part of the regular W&M program of the NYS Department of Agriculture and Markets. Many of these resources are provided by the owner of the WIM system, lifting the burden on the Bureau of Weights and Measures.
- The installation in New York is the first WIM in the US that is used in direct enforcement of weight limit on public roads. NIST OWM expects that, given the success of the pilot in NYC, these systems will also be installed in other places. This creates a need for a national standard to ensure a harmonized approach.
- The submitters have addressed the concerns expressed during meetings of the Council with respect to the failed item WIM-23.1 by:
 - Reducing the number of test runs during subsequent verifications, and
 - Introducing a class with tighter tolerances, which gives states more flexibility to implement WIM systems as they see fit.
- The proposed classification and tolerances are comparable with the WIM standards from ASTM and OIML.
- NIST OWM is of the opinion that item OTH-25.1 is fully vetted and supports a voting status.

ITEM BLOCK 1 (B1) TRANSPORTATION-FOR-HIRE SYSTEMS

B1-TNS-25.1. I 5.60. Transportation Network Measurement Systems – Tentative Code

NIST OWM Recommendation: Informational

- OWM recognizes this is a new agenda item whereby two codes have substantial changes. The submitter is recommending the removal of the tentative status of the Transportation Network Measurement Systems (TNS) -Tentative Code (5.60) from NIST Handbook 44 and incorporating this code (TNS) into the Taximeters Code (5.54). The Taximeters Code will then be renamed Section 5.54. Transportation for Hire Systems Code deleting Section 5.60 from NIST Handbook 44.
- The goal is to provide a unified code that will be applied to all transportation systems, including taximeters and ride-sharing app-based companies.
- An updated 10/15/24 document has been supplied to the NCWM for publication into Pub 15. This update provides editorial and housekeeping changes.

B1-TXI-25.1. I 5.54 ~~Taximeters~~ Transportation-For-Hire Systems

NIST OWM Recommendation: Informational

- OWM recognizes this is a new agenda item whereby two codes have substantial changes. The submitter is recommending the removal of the tentative status of the Transportation Network Measurement Systems (TNS) -Tentative Code (5.60) from NIST Handbook 44 and incorporating this code (TNS) into the Taximeters Code (5.54). The Taximeters Code will then be renamed Section 5.54. Transportation for Hire Systems Code deleting Section 5.60 from NIST Handbook 44.
- The goal is to provide a unified code that will be applied to all transportation systems, including taximeters and ride-sharing app-based companies.
- An updated 10/15/24 document has been supplied to the NCWM for publication into Pub 15. This update provides editorial and housekeeping changes.

ITEM BLOCK 3 (B3) MILK METER TOLERANCES

B3-VTM-20.2. V Table T.2. Tolerances for Vehicle Mounted Milk Meters

NIST OWM Recommendation: NIST OWM has no recommendation.

- The proposed tolerances are those currently used in OIML standards and seem to be a good starting point for changes to the tolerances.

B3-VTM-20.2. V Table T.2. Tolerances for Vehicle Mounted Milk Meters
• Generally, we support, wherever possible, efforts to harmonize with OIML standards, but care should be taken to examine the increased tolerance and to consider any adverse effects that may arise. • In 2020, several milk industry representatives sent letters of opposition to the original POUL TARP proposal, which specified wider tolerances than those now proposed. • The opposition to the original proposal included the following: • increasing the tolerance allows more inaccurate results during the milk metering process, introducing more uncertainty into the transaction between buyer and seller, • tolerance should be set according to the needs of industry and not to accommodate one specific measuring system. • The current milk meter tolerances in the Vehicle Tank Meters Code and the Milk Meters Code reduce the applicable percentage tolerance as the delivered volume increases. • OIML tolerances permit a 0.5% percent tolerance for a system and 0.3% percent tolerance for the meter only.

B3-MLK-23.2. V Table T.1. Tolerances for Milk Meters
NIST OWM Recommendation: NIST OWM has no recommendation. • The proposed tolerances are those currently applied in OIML standards and seem to be a good starting point for discussion. • Generally, we support, wherever possible, efforts to harmonize with OIML standards, but care should be taken to examine the increased tolerance and to consider any adverse effects that may arise.