

OWM’s Analysis of the 2019 NCWM Annual Meeting S&T Agenda Items

OWM’s comments are intended to offer technical information to the NCWM for its consideration in its deliberations before the Conference.

GEN – GENERAL CODE

- **GEN-1 I G-A.1. Commercial and Law-Enforcement Equipment. and G-S.2. Facilitation of Fraud.**

Organization (* not submitted)	Gen 1 – General Code (1 Items), Initial Status – A 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM					✓		
WWMA Annual (Fall)				✓			
SWMA Annual (Fall)				✓			
CWMA Interim (Fall)				✓			
CWMA Annual (Spring)					✓		
NEWMA Interim (Fall)				✓			
NEWMA Annual (Spring)					✓		
SMA (Industry)			✓				
NCWM S&T Committee Interim					✓		

NIST OWM: - OWM reiterates some of our comments made for our analysis of the 2018 S&T agenda items as provided to the Committee prior to the 2018 NCWM Interim Meeting.

While we recognize the seriousness of consumers being deceived by criminals able to extract their financial information using credit- and/or debit-card “skimmers,” hidden cameras, etc., and then using this information for personal gain, we do not view this as a primary focus of weights and measures authority since the devices (skimmers) don’t affect the measurement transaction. It is also not clear if weights and measures jurisdictions would have the authority to take action on these devices. It seems that the installation of illegal card readers attached to a payment terminal — like a gas pump — that grabs data off a credit or debit card’s magnetic stripe without the consumer’s knowledge is more of a concern for the manufacturers of commercial weighing and measuring equipment and the regulatory agencies that already have the authority to take action on these illegal acts (i.e., the FBI and the FTC). We note that in most instances it is a third-party thief installing these illegal devices to obtain a customer’s financial information for benefit and not the owner/operator of a piece of commercial equipment simply trying to manipulate the equipment for a little extra profit. Care needs to be taken not to impose requirements on the device owner that would appear to be burdensome or punitive since the device owner may have limited control over these situations.

We do agree that Weights and Measures should continue to play a cooperative role (as many are doing today) in helping to reduce and eliminate these illegal acts by immediately reporting these illegal devices, when found, to the proper authorities. It is unreasonable and beyond the scope of weights and measures authority to require manufacturers of commercial weights and measures equipment to design equipment to be completely tamper proof when it doesn’t affect the measurement transaction.

OWM recognizes that this item has been given an Information status and looks forward to any further information available regarding the development of this item.

WWMA: - 2018 Fall Annual Meeting. During the open hearings, Mr. Lou Straub (Fairbanks Scales), speaking on behalf of SMA, commented that SMA opposes this item and recommends it be withdrawn. Speaking on behalf of Fairbanks, he noted that Fairbanks understands the problem and the desire for weights and measures officials to get involved but is not sure Handbook 44 is the right place to address this.

WWMA also heard comments from Mr. Brent Price (Gilbarco, Inc.) who expressed concerns about proposed paragraph G-S.2.(b). There are references to the use of “universal key, master key, etc.”; however, it is not clear to what these terms refer. NCWM Chairman, Mr. Brett Gurney (UT) stated the Task Group assigned to the development of this item is working on this issue and will continue to develop the item prior to bringing back recommendations for the community to consider.

WWMA reviewed the proposed language in the Item Under Consideration during the fall 2018 meeting’s work session and offered the following suggestions for the Task Group to consider as it further develops this item:

- WWMA is concerned that the new language proposed for inclusion in G-S.2. Facilitation of Fraud may dilute the core paragraph. They suggest that, should the Task Group proceed with recommending this language for inclusion in Handbook 44, the TG should consider an alternative, possibly moving the new language into a separate paragraph, perhaps in a new sub-paragraph G-S.2.1. or a separate paragraph altogether.
- WWMA also believes the additional language proposed under G-A.1. Commercial and Law-Enforcement Equipment part (b) should be moved into a separate subsection of G-A.1., perhaps a G-A.1.(d).

WWMA recommends the item be maintained on the NCWM S&T Committee agenda as an “Assigned” item to allow the Task Group to further develop it.

NEWMA: - 2018 Fall Interim Meeting. During its open hearing, NEWMA heard from Mr. Mike Sikula (New York) commenting that he supports weights and measures field officials looking for, and then informing law enforcement on the presence of skimmers as part of their normal routine inspections. However, he does not believe this item belongs in HB44. He also stated that without a complete technical understanding of the ever-changing methods used in skimming, we may inadvertently make changes that could actually facilitate fraud. Mr. Walt Remmert (Pennsylvania) supported Mr. Sikula’s comments and believes the responsibility for detection and mitigation of this illegal practice should fall on the device owner.

Mr. Jimmy Cassidy (Massachusetts) Stated that he acknowledges that the skimmer problem is significant across the country. Mr. Cassidy noted that this item is currently assigned to the task group that is working together with industry and recommends that this item remain an assigned item. Mr. Eric Golden Scale Manufacturers Association (SMA) Stated that their position is on record as being opposed to this item and recommends the proposal’s withdrawal. NEWMA believes it would be remiss to withdraw this item while the task group is working on it and recommends this Item remain with an Assigned status on the NCWM S&T Committee agenda.

During the NEWMA 2019 Spring Annual Meeting, the following comments were heard. Mr. Mike Sikula (NY) echoed background discussion from the NCWM 2019 Interim Meeting Report and stated he does not believe this item belongs in HB44. Mr. Russ Vires (representing the SMA) commented that the SMA opposes the item and does not believe it is within the scope of weights and measures and that the SMA recommends this item be withdrawn. NEWMA recommends this item remain as “Information” on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from the Scale Manufacturers Association (SMA) they had previously opposed the item before it was an assigned item. Mettler Toledo commented they were encouraged to see it designated as Assigned. A representative of Arkansas asked for an update from the working group. A representative of Florida and leader of the workgroup commented that the group had been divided and that the latest work was to look at three options: continue to develop the item; continue education; or Withdraw the item.

SWMA agrees with maintaining the “Assigned” status of the item and is looking forward to recommendations from the Task Group.

CWMA: - 2018 Fall Interim Meeting. During the open hearings, Mr. Craig Van Buren, a member of the task group, provided an update and asked for input. Several comments were heard that this item may be more appropriate as a User Requirement and should possibly be moved to the LMD code. Concerns were raised that this is not a Weights & Measures issue. CWMA agrees with maintaining the “Assigned” status and looks forward to the Task Group’s continued work on this item.

During the 2019 Spring Annual Meeting, the CWMA heard the following comments. Mr. Russ Vires, representing SMA, stated opposition to this item and recommends it be withdrawn. The rationale being that it is not a Weights & Measures issue. Ms. Diane Lee (NIST OWM) recommends that the states review their own statutes.

SMA: - The SMA is opposed to this item and recommends it be withdrawn. The SMA shares the concerns of the Conference regarding this issue however, we believe this topic is not within the scope of Weights and Measures.

- **GEN-3 A G-T.5. Tolerances on Tests When Transfer Standards are Used., Appendix D – Definitions: standards, field, and standard, transfer.**

This item has been incorporated into Block 1 for the 2019 NCWM Annual Meeting, see comments listed under “NEW Block 1” for details.

SCL – SCALES

- **SCL-1 V S.1.1.1. Digital Indicating Elements. and UR.2.10. Primary Indicating Elements Provided by the User.**

Organization (* not submitted)	SCL - 1 – Scales (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓(w/chgs)						
WWMA		✓					
SWMA	✓						
CWMA Interim (Fall)		✓					
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
SMA (Industry)							✓ w/chgs.
NCWM S&T Committee Interim	✓						

NIST OWM: - OWM believes that the recommended changes to this proposal offered by SMA has improved the item’s clarity however, OWM also believes there are areas that need additional work. OWM has noted that the proposed new user requirement; *UR.2.10. “Primary Indicating Elements Provided by the User”* is presented in italicized font although there is no effective date provided (if it is intended to be a nonretroactive requirement). Additionally, the recommended changes that have been incorporated now into the item under consideration under S.1.1.1.(c) impose requirements expressly on ECRs. OWM believes unless an ECR also serves as a primary display for a POS system, it would be inappropriate to apply this new HB 44 requirement to an ECR in a POS system that uses other hardware (e.g., a video display monitor) for a primary display. We therefore recommend deleting the reference to “electronic cash registers (ECRs)” in the proposed new subparagraph S.1.1.1.(c).

OWM also believes the addition of new requirements is most appropriately accomplished by using established terminology and formatting that is consistent with other language used in HB 44 and therefore recommends making the editorial change to the proposed UR.2.10. as shown below:

UR.2.10. Primary Indicating Elements Provided by the User. — Electronic cash registers (ECRs) and point of sales systems (POS systems) where the primary indicating elements are not the same as the primary indicating elements provided by the original equipment manufacturer (e.g. video display monitors) shall comply with the following:

(a) On digital devices that display measurement units during direct sales to the customer, the numerical figures displayed to the customer shall be a minimum of 9.5 mm (0.4 in) in height.

UR.2.10. Primary Indicating Elements Provided by the User. - Video display terminals and other user provided indicating elements on scales interfaced with a cash register in a POS system shall comply with the minimum height requirements specified in part (c) of paragraph S.1.1.1. Digital Indicating Elements.

[Nonretroactive as of January 1, 20XX]

OWM's interpretation for the intent of the proposal is that *all primary indications* are to comply with minimum size requirements, and if this is the intent, OWM would recommend that the requirement be clearly and concisely stated as such.

A final concern identified is that specific HB44 device code requirements supersede General code requirements. OWM therefore believes there is a potential risk that owners/users of weighing equipment used in direct sale applications may try to use this new requirement for minimum size of displayed indications to support a claim that indicating elements no longer have to comply with paragraph G-UR.3.3. Position of Equipment. We believe there is a need to clarify that the proposed minimum height of 9.5 mm is not intended to affect the application of G-UR.3.3. and that both requirements need to be met.

Additional comments from OWM can be found in the 2019 NCWM Interim Meeting Report.

WWMA: - 2018 Fall Annual Meeting. The WWMA heard no comments on this item during its open hearings. In its work sessions, a few points were identified for the submitter to consider as the item is further developed:

- Terms such as "NON SCALABLE" need additional clarification.
- In determining an appropriate retroactive date, the importance was recognized for fully vetting this item and ensuring that those affected by the proposal have adequate time to modify their equipment.
- The submitter may want to consider making this a nonretroactive requirement, noting that systems already in use must comply with general requirements for clarity and visibility.
- Discussions during the work session indicate that some in the audience misread the proposal as a "nonretroactive" proposal because of the italicized type.

The WWMA understands the submitter is continuing to develop this item. The WWMA agrees the item has merit and recommends this be included as a Developing Item on the NCWM S&T Committee's agenda.

NEWMA: - 2018 Fall Interim Meeting. During its open hearing, Mr. Jimmy Cassidy (Massachusetts, Submitter) stated the changes proposed are intended to require a scale's displayed indications to comply with an "absolute" font size, even when the display area dimensions are decreased. This would translate that the displayed weight indications would maintain a minimum size regardless of the dimension of the display area on the indicator. NEWMA members from Massachusetts, New York, and New Jersey voiced their support for this item.

Eric Golden (Cardinal Scales) stated that if this is intended to be a retroactive proposal, some older devices may not be able to comply. Mr. Cassidy stated that he feels a software update will allow devices to conform.

NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 NEWMA Annual Meeting: Mr. John Barton (NIST) raised a question regarding the submitter's intent for the new user's requirement proposed in this item and the lack of any effective date for that requirement. There is a question whether the submitter intended the user requirement have a nonretroactive effective date listed under the requirement since that language is shown in italicized font. The NEWMA recommends this item remain with voting status on the NCWM S&T Committee agenda and recommends a review of the retroactive/nonretroactive status of the proposed new user requirement and desired effective dates. NEWMA also recommends appropriate (editorial) changes by the NCWM S&T Committee to address these issues as necessary.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from Arkansas and Florida that they supported the item. NIST commented that they had not had an opportunity to fully review the item but that the User Requirement mentions non-OEM and it was not clear how it would apply to not built-for-purpose devices (i.e., a generic monitor or video screen). The SMA has not reviewed the item. Fairbanks scale questioned the definition of non-scalable used in the item. A representative of NCR responded and explained that this is related to the proportions of font size and display area and that in some instances, font size can not be adjusted in response to any change in the display area.

The SWMA agrees with the item and recommends it as a voting item.

CWMA: - 2018 Fall Interim Meeting. CWMA members were not sure what was meant by “direct sale digital devices” and that there may be a potential conflict between (c) and (d), and requiring indications to be non-scalable may create unforeseen issues. The CWMA believes the language needs further clarification, and this item should be developing. At the CWMA 2019 Spring Annual Meeting, Mr. Russ Vires (SMA) voiced support for this item and stated the SMA appreciates the language changes incorporated by the NCWM S&T Committee.

SMA: - The SMA supports the concept of a minimum size specification for the measurement units on electronic cash registers (ECRs) and point of sale (POS systems), but recommends the following changes:

~~(c) Except for electronic cash registers (ECRs) and point of sale systems (POS systems) on direct sale digital devices that display primary indications, the numerical figures of the primary indications on the customer side must be at least 9.5 mm(0.4in.) in height. These indications must be NON-SCALABLE in font size.~~

~~[retroactive as of January 1, 20XX]~~

~~(d) (c) For electronic cash registers (ECRs) and point of sale systems (POS systems) the display of measurement units must be at least a minimum of 9.5 mm (0.4in.) in height. These indications must be NON-SCALABLE in font size.~~

~~[Nonretroactive as of January 1, 20XX]~~

UR.2.10. Primary Indicating Elements Provided by the User. – *Electronic cash registers (ECRs) and point of sales systems (POS systems) where the primary indicating elements that are not the same as the primary indicating elements provided by the original equipment manufacturer (e.g. video display monitors) shall comply with the following:*

(a) On digital devices that display measurement units primary indications during direct sales to the customer, the numerical figures displayed to the customer shall be at least 9.5 mm (0.4 in) high.

The SMA wanted to clarify what devices were impacted by the proposal. The SMA felt the “non-scalable” provision was covered by the minimum size requirement and would have restricted the indication size from being made larger. We also felt the “retroactive” requirement would place an undue burden on device manufacturers and retailers.

SMA’s 2019 Annual Meeting: The SMA supports this item. The SMA appreciates that the language changes we previously recommended were incorporated into this item by the S&T Committee.

• **SCL-2 A S.1.8.5. Recorded Representations, Point of Sale Systems**

Organization (* not submitted)	SCL - 2 – Scales (1 Items), Initial Status – A 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM				✓			
WWMA				✓			
SWMA				✓			
CWMA Interim (Fall)				✓			
CWMA Annual (Spring)				✓			
NEWMA Interim (Fall)				✓			
NEWMA Annual (Spring)				✓			
SMA (Industry)						✓	
NCWM S&T Committee Interim				✓			

NIST OWM: - OWM recognizes this proposal as being an “Assigned” item and that it is being developed further by a NCWM Task Group. The Task Group includes a member of OWM Legal Metrology Devices Group as an active member. OWM looks forward to updates on the work of the Task Group.

When the Specifications and Tolerances Committee first reported its view of weights and measures enforcement considerations concerning POS systems and its incumbent technology in supermarkets in 1973, the following was part of the reporting:

When commodities are weighed at the checkout stand with this type equipment, as is the case with use of existing equipment, it is a direct sale situation. All of the requirements of the Model State Weights and Measures Law and Handbook 44 directed to computing scales for over-the-counter sales, as in the delicatessen section, for example, are applicable.

G-S.5.1. General. – All weighing and measuring devices shall be provided with indicating or recording elements appropriate in design and adequate in amount. Primary indications and recorded representations shall be clear, definite, accurate, and easily read under any conditions of normal operation of the device.

NIST Handbook 44 Paragraph G-S.5.1. (1973 and remaining unchanged through 2019)

The 1973 S&T Committee also provided its philosophy regarding the application of paragraph G-S.5.1. General (shown in the text box above) to these systems as follows:

The philosophy expressed in this requirement is that the indications of weighing and measuring devices are readily and easily understood by all those affected. The key words in this paragraph are “clear,” “definite,” and “easily read.” Consequently, the equipment must be so designed that the indications and printed representations must meet these criteria for the owner or operator of the equipment and the customer. The decision regarding the amount of time necessary for weight values to be displayed to the customer is based on this requirement. That is, the values displayed must be clear, definite, and easily read. They must be displayed long enough for the information to be fully comprehended by the customer. Paragraph G-S.5.1. requires primary indications and recorded representations to be clear, definite, accurate, and easily read under any conditions of normal operation of the device.

We can say with utmost confidence that weighing transactions occur so rapidly on many of today’s POS systems, the information being displayed is not displayed long enough for it to be meaningful to the customer. We know this to be true based on our own experiences as customers purchasing products weighed and priced at today’s retail outlets. Thus, paragraph G-S.5.1. is not being met today based on the 1973 S&T Committee’s interpretation of it.

Not only does the rapid speed of a weighing transaction contribute to a customer’s inability to interpret the information in a meaningful way, nowhere is there marking on most POS display equipment to indicate the weight values being displayed are “gross” or “net” values. Scales interfaced with cash registers provide a display of the live gross weight, but nowhere on the display is that indicated. Nor is there any indication to a customer that a tare has been deducted once a price look-up code has been entered for many of these systems. Therefore, it is not reasonable to state that the weight information displayed to a customer at the time a product is weighed is meaningful if it is not the weight value by which the transaction will be based.

The POS Tare Task Group considered whether the additional tare weight information might be made available from a display rather than requiring it to be recorded on the printed receipt. Members of the TG concluded the information needed to be printed on the receipt for the same reasons we’ve made evident to show paragraph G-S.5.1. is not being met today. That is the TG agreed weighing transactions are completed so quickly on today’s systems that a customer doesn’t have sufficient time to understand the display information being provided. As a result, the TG concluded it should not be an option for this information to only be displayed. It needs to be printed on the receipt.

OWM views the current proposal as an opportunity to update the Scales Code to better harmonize the tare requirements for scales interfaced with cash registers in a POS System with retail computing scales also used in the same application (i.e., direct sale). There has always existed a difference in how requirements pertaining to the operation of tare are applied between scales interfaced with cash registers in a POS system versus retail-computing scales. Retail-Computing sales are required to provide an indication that tare has been taken and this is most often (but not always) satisfied by the scale providing indication to the customer and operator that the mode of operation has changed from gross to net once a tare has been entered or recalled. This requirement doesn’t apply to scales interfaced with cash registers because the technology didn’t exist to be able to provide this information cost efficiently when these systems were first introduced into the marketplace. Alternatively, it was agreed these systems would be required to print the net weight of each item weighed along with other sales information currently required. As a result, the only way a

customer can tell if a tare has been taken for items weighed at the checkout is to remember the gross weight value indicated for each item as it is weighed and then compare those gross weight values to the net weight values printed on the receipt for those same items. This is a feat we, ourselves as shoppers, have not been able to master, particularly when purchasing multiple items that are sold by weight. Few customers would know to do this because most customers have little or no knowledge of such operational intricacies of these systems to know they function as described.

Some have commented in opposition to this item that the cost of implementation of the proposal would outweigh any benefit because 1) proper tare values need to be verified by inspectors and 2) consumers aren't interested in the tare weight information. With respect to the first comment noted, OWM agrees that proper tare, whether programmed or input at time of weighing, needs to be verified by weights and measures inspectors; but this is different than making evident to customers and operators that a tare was taken when products are weighed at checkout. Paragraph G-S.5.1. provides customers and scale operators the opportunity to be able to clearly observe all parts of the weighing transaction on items weighed in their presence (i.e., direct sale application). Declarations of net weight, identify, unit price and other information required on packages put up in advance of sale are not required for items weighed in a direct sale. This is because the customer is present to witness the weighing and all parts of the weighing transaction to include: scale is on zero before the load is applied, proper tare is taken, the correct unit price has been entered, scale operator hasn't manipulated the scale in any way, etc. Thus, weighed items sold in a direct sale are not regulated at the same level as packages put up in advance of sale, which are routinely inspected by weights and measures. We view the comment that customers aren't interested in viewing the tare weight information as being a little shortsighted; that is, being the opinion of some rather than an accurate representation of a collective view of all consumers. We too are consumers and wish to continue to be able to observe all parts of the weighing transaction when items are weighed and priced in our presence.

Given that many of the newer POS systems in use today are capable of providing not only a display of the tare value and net weight value of items weighed at checkout; but also print those values on the receipt, it is only reasonable to work towards requiring the tare weight information be printed on the receipt. OWM does not have a preference as to whether the addition of the tare weight information on the receipt be made nonretroactive or retroactive with a sunset date. We do encourage the Committee to keep this item active for the reasons provided herein.

OWM recognizes this proposal as being an "Assigned" item and that it is being developed further by an NCWM Task Group. OWM looks forward to updates on the work of the Task Group.

WWMA: - 2018 Fall Annual Meeting. An update was provided by NCWM Chairman Mr. Brett Gurney who reported the NCWM has established a Task Group, chaired by Mr. Loren Minnich (KS), to address this item. In its open hearings, WWMA heard from Mr. Lou Straub (Fairbanks), speaking on behalf of the Scale Manufacturers Association (SMA), who stated the SMA opposes this item since regulators verify the tare values in POS systems are accurate, the SMA feels the proposal would provide little or no benefit to the consumer. The SMA will review the item at its November meeting and will reevaluate its position after the work group makes its recommendations. The WWMA recommends the item be maintained on the NCWM S&T Committee agenda as an Assigned item to allow the Task Group to further develop it.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, NEWMA heard from Mr. Mike Sikula (New York) in opposition of this item. Mr. Sikula stated that he does not see any benefit and believes that just because there is a tare on the receipt, it doesn't mean that the tare is correct. He also stated that he feels it will lead to consumer confusion. Mr. John McGuire (New Jersey) also stated that he opposes this item.

NEWMA believes it would be remiss to withdraw this item while the task group is working on it and recommends this Item remain with an Assigned status on the NCWM S&T Committee agenda.

During NEWMA's 2019 Spring Annual Meeting, Mr. Mike Sikula (NY) stated that NY opposes this item. He believes this will place an all-around burden on inspectors with no benefit. Mr. Russ Vires (representing the SMA) commented that the SMA opposes this item and believes inspectors are already sufficiently regulating tare. The NEWMA recommends this item continue to be developed as an Assigned item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from Kansas that this was an assigned item. The NCWM Chairman remarked that the task group just recently started meeting to discuss this item. The Scale Manufacturers Association opposes the item at this time.

SWMA concurs with the Assigned status on this item and looks forward to future proposals from the task group.

CWMA: - 2018 Fall Interim Meeting. CWMA heard from Kansas that this was an assigned item. The NCWM Chairman remarked that the task group just recently started meeting to discuss this item. The Scale Manufacturers Association opposes the item at this time. CWMA looks forward to future proposals from the task group.

At the 2019 Spring CWMA Annual Meeting, Mr. Loren Minnich, Chair of the NCWM POS task group, recommends the item remain as “assigned” and indicated that the TG will give an update at the Annual NCWM Meeting in July 2019.

Mr. Doug Musick (Kansas Weights & Measures) commented about scale operators using these devices by sliding items across the scale at a speed that does not allow the weight to display long enough for consumers to fully observe the weighing operation. Mr. Russ Vires (SMA) opposes the item because tare is routinely verified by regulators.

SMA: - 2018 Fall Meeting. The SMA opposes this item. Since regulators verify that the tare values in POS systems are accurate, the SMA feels that the proposal would provide little or no benefit to the consumer.

• **SCL-3 A Sections Throughout the Code to Include Provisions for Commercial Weigh-in-Motion Vehicle Scale Systems**

Organization (* not submitted)	SCL - 3 – Scales (1 Items), Initial Status – A 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM		✓					
WWMA				✓			
SWMA				✓			
CWMA Interim (Fall)				✓			
CWMA Annual (Spring)				✓			
NEWMA Interim (Fall)				✓			
NEWMA Annual (Spring)				✓			
SMA (Industry)						✓	
NCWM S&T Committee Interim				✓			

NIST OWM: - OWM recognizes that a Task Group has been formed and that the Committee has assigned the Task Group to further develop this item. OWM is an active participant on that Task Group.

OWM was of the understanding that the submitter would have test data regarding the performance of their WIM system to provide the Committee by the 2018 NCWM Interim Meeting. To date, data confirming the submitter’s claims regarding performance capabilities of these systems is not available. OWM also recognizes that the TG has seen no activity since the 2018 NCWM Annual Meeting and it is OWM’s understanding that the continued efforts of the TG are dependent on the availability of the data collected. In view of these current circumstances, OWM would recommend that the assigned status of this item be changed to developing and returned to the submitter.

OWM would reiterated its understanding that the submitter, Rinstrum has stated that they will make the necessary arrangements enabling the collection of data related to the performance capabilities of Rinstrum’s Weigh-In-Motion (WIM) device. The assigned Task Group has concluded that this collection of data is a necessary step to provide evidence that the submitter’s claims regarding the accuracy of its device is attainable. OWM agrees with this conclusion and has provided recommendations to Rinstrum for test procedures believed necessary for this data collection. OWM looks forward to participating in this data collection process and is anticipating the opportunity to work with Rinstrum and to witness testing for data collection along with other members of the TG (and possibly others).

OWM has also noted that there is a difference in opinion among members of the Task Group regarding the establishment of appropriate test procedures for the official certification of these devices. OWM believes that all test procedures developed for inclusion in NIST Handbook 44 must be: based on sound principles; provide confirmation of the declared performance capabilities; and verify the device’s compliance with Accuracy Class III L tolerances (and other performance requirements) as stated in the Task Group’s draft proposal.

One additional concern noted by OWM is that the proposed new requirement S.1.8.6. “Values to be Recorded, Weigh-In-Motion Vehicle Scales” is shown as being located under the parent paragraph of S.1.8. “Computing Scales.” Since the focus of this proposal, WIM vehicle scales are not what would likely be considered “computing scales,” this paragraph would seem to be more appropriately located elsewhere (e.g., a new S.1.14.).

WWMA: - 2018 Fall Annual Meeting. During open hearings, WWMA heard multiple comments indicating that test data is needed to demonstrate the capability of these systems before any further development of this proposal is done. Mr. Lou Straub (Fairbanks), speaking on behalf of the Scale Manufacturers Association (SMA) stated the SMA opposes this item as currently presented and noted an area of concern is the lack of test procedures. An SMA member provided suggested test procedures to consider as did NIST OWM. All WIM Task Group (TG) members have acknowledged the need for clear test procedures.

Speaking on behalf of Fairbanks, Mr. Straub commented that Fairbanks supports the changes to the proposal relative to the application of Class III L tolerances to these types of devices. He encouraged the Task Group to include a 3rd party (such as a regulator) as part of the gathering of any test data to help validate it. Ms. Tina Butcher (NIST OWM) noted the need for test data to support the proposal’s validity and noted that OWM forwarded recommended test procedures and criteria for collecting the test data to the Task Group for its consideration. OWM also noted the proposed changes are going into a permanent code for commercial applications, underscoring the need for test data confirming performance capabilities of these systems.

WWMA heard from Mr. Dick Suiter (Richard Suiter Consulting), speaking on behalf of Rinstrum, Inc. (a manufacturer of WIM devices) who noted Rinstrum is actively working to install a system for the purposes of collecting test data. Mr. Suiter also stated that Mr. Brad Fryburger (Rinstrum) has arranged for 10 different types of vehicles, (including one with 8 axles) to be used in the data collection. These various vehicles would represent the range of vehicle configurations that will be weighed on these systems. Mr. Fryburger has considered the input from OWM and a manufacturer on the Task Group in laying out the installation of a WIM system and selecting vehicles for the collection of data. WWMA recommends the item be maintained on the NCWM S&T Committee agenda as an “Assigned” item to allow the Task Group to further develop it.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, NEWMA heard from Mr. Walt R Emmert (Pennsylvania) in opposition of this item who stated that he has tested a weigh in motion system before with less than favorable results. Mr. Mike Sikula (New York) also stated that he opposes this item.

Mr. Eric Golden (Cardinal Scale) commented that the NCWM has asked to see data from an actual test with positive supporting data indicating these types of WIM systems are capable of the performance claimed by manufacturers. NEWMA was told that Rinstrum (WIM manufacturer) is building a static vehicle scale on site for side by side comparison testing to generate data. They are testing this fall and are planning to present their report to NCWM in January 2019.

Mr. R Emmert also stated that this testing will need to be witnessed in order to ensure compliance with testing parameters. Mr. John McGuire (New Jersey) recommends this item be assigned to the task group for follow up in January. NEWMA recommends this Item remain with an Assigned status on the NCWM S&T Committee agenda.

At the NEWMA 2019 Spring Annual Meeting, Mr. Russ Vires (representing the SMA) commented that the SMA opposes this item as written. The SMA believes there is a lack of data from the submitter on the actual performance capabilities of these systems and developments as discussed within the Task Group. Mr. Russ Vires (on behalf of Mettler Toledo), supports the concept but needs more information and recommends Task Group continues the effort to move forward and develop the item further. The NEWMA recommends that development continues as an Assigned item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. SWMA was informed that SMA opposes this item but does recognize it has been given an Assigned status. A representative from Arkansas and a Co-Chair of the work group remarked that the Task Group has not met since the 2018 NCWM Annual Meeting. He did state it was his understanding that the submitter would be gathering data before the interim meeting. Mr. Richard Suiter stated that it was his understanding that this was a priority from the submitter and that 10 different types of vehicles had been secured for testing. NIST OWM commented they had provided recommendations of types of data and procedures recommended to be used to gather the data.

SWMA encourages the submitter to gather the data and present it to the National Committee as soon as possible.

CWMA: - 2018 Fall Interim Meeting. Mr. Brad Fryburger (Rinstrum) gave an update and said they will soon begin testing to gather data. CWMA agrees with the Assigned status and looks forward to future updates.

2019 Spring Annual Meeting: Mr. Russ Vires (SMA) opposes this item as written because there is insufficient data that would support the claims of the submitter regarding the ability of their system’s performance capabilities. There has been no response to suggested test procedures, nor has there been any further development by the WIM task group in over one year. However, Mr. Vires stated on behalf of Mettler Toledo support for this item. The CWMA heard additional opposition to this item and recommends if there is no data provided by the submitter, the CWMA recommends this item be withdrawn after the Annual NCWM. Ms. Diane Lee (NIST OWM) stated there are concerns in the differences in opinions of the task group about test procedures.

SMA: - The SMA opposes the item as written and looks forward to the continued development of this item. The SMA appreciates the work that the WIM Task Group has done thus far but believes that further work needs to be done regarding the testing methods to be used. Additional suggestions have been developed which should be considered.

• **SCL-6 D UR.3.11. Class II Scales**

Organization (* not submitted)	SCL - 6 – Scales (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM			✓				
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)			✓				
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)		✓					
NCWM S&T Committee Interim		✓					

NIST OWM: - OWM reiterates the comments regarding this item that were included in the 2019 NCWM Interim Meeting Report. OWM believes this item should be withdrawn noting that it is in direct conflict with the following points:

- the USDA Agricultural Marketing Service FGIS Grain Inspection Handbook (Book II), which specifies that the expanded resolution (“d”) should be used when weighing work portions or separation of grain. This information can be found in the aforementioned handbook, Chapter 1, Section 1.16 Laboratory Scales, paragraph “b;” and
- NCWM Publication 14 DES Section 37 (checklists for grain-test scales approved for use by GIPSA), which requires the “d” value of a grain-test scale to be less than or equal to 0.01 g when used to weigh separations from loads of 100 g or less. The checklist also allows use of an expanded resolution to weigh these small sample loads.

For these reasons we agree with the submitter and the intent of their comment made at the 2019 CWMA meeting stating they will probably withdraw this item.

Using the scale division providing the most resolution for the weighing operation will benefit both buyer and seller. This proposal would disallow the use the increment size of the scale in commercial transactions that would provide that greater resolution. In the example provided by the submitter of this item where a scale is being used in the calculation of a percentage for dockage in loads of grain, OWM believes that a more precise measurement will benefit both buyers and sellers.

Additional comments from OWM can be found in the NCWM’s 2019 Interim Meeting Report.

WWMA: - 2018 Fall Annual Meeting. WWMA heard comments from the submitter of the item, Mr. Loren Minnich (KS) reiterating the purpose of the proposal as outlined in the WWMA’s agenda. Mr. Minnich noted there was a lot

of confusion trying to clarify the appropriate use of “d” and “e.” He also noted the proposal mirrors requirements for dynamic monorail scales.

The WWMA recommends this be designated as a Voting item on the NCWM S&T Committee’s agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearing, NEWMA received no comments on this item. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

At the 2019 Spring NEWMA Annual Meeting, Mr. Russ Vires (representing the SMA) commented that the SMA opposes this item and believes it may conflict with other agencies such as USDA Grain Inspection Manual, paragraph 1.16 Laboratory Scales. NEWMA recommends that the submitter take comments in to consideration and that the item remains Developing on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from the submitter that this was submitted to clarify the intent of when “e” is to be used. A representative of Maryland rose in support of the item.

SWMA feels that the item is fully developed and they recommend it as a Voting item.

CWMA: - 2018 Fall Interim Meeting. Mr. Loren Minnich (KS submitter) spoke about clarification of the use of “e” and “d”. CWMA believes this is fully developed and recommends voting.

During the CWMA’s 2019 Spring Annual Meeting, Mr. Loren Minnich (Kansas) commented that he will probably withdraw the item due to conflicts with USDA requirements. Ms. Diane Lee (NIST OWM) expressed concerns about the consequences of using e rather than d. Mr. Russ Vires, SMA, stated opposition to the proposal because of conflicts with USDA requirements. CWMA recommends this item be Withdrawn.

SMA: - 2018 Fall Meeting. The SMA takes no position on this item.

- **SCL-7 V T.N.3.6. Coupled-In-Motion Railroad Weighing Systems., T.N.4.6. Time Dependence (Creep) for Load Cells during Type Evaluation., UR.5. Coupled-in-Motion Railroad Weighing Systems. and Appendix D – Definitions: point-based railroad weighing systems.**

Organization (* not submitted)	SCL - 7 – Scales (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM			✓				
WWMA	✓						
SWMA		✓					
CWMA Interim (Fall)		✓					
CWMA Annual (Spring)			✓				
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)			✓				
SMA (Industry)			✓				
NCWM S&T Committee Interim	✓						

NIST OWM: - The submitter of this proposal has stated that buyers and sellers of commodities transported in bulk by unit trains are willing to accept larger tolerances applied to the systems determining the weight of those commodities. OWM believes it is important to note that these larger tolerances will inevitably result in less accurate weight determination and potentially incorrect charges assessed. We believe it also important to recognize that the weight determinations are not only used to calculate the associated value/cost for the products being transported but also to calculate shipping charges which are likely to have a significant impact to buyers.

OWM concurs with comments from the 2019 CWMA and NEWMA Annual Meetings stating that an expansion of tolerances for coupled-in-motion (CIM) weighing of unit trains is not a reasonable course of action since weighing systems that have been in commercial service for many years are capable of meeting and do meet the existing tolerances in HB 44 Scales Code.

OWM believes this item is not ready to be put to a vote for the following reasons:

- For decades, coupled-in-motion scale owners/operators have been subjected to the cost and expended the effort to ensure that their devices meet current HB 44 Scales Code tolerances for those systems. Expanding the tolerances for in-motion weighing of unit trains at this time, will convey the message to those scale owners/operators that those costs and efforts were unnecessary.
- Statements made by the submitter have implied the point-based systems are not intended to be used for static weighing. This would require an alternative device to be acquired or made available to use as a reference scale for testing point-based systems. It is questionable whether appropriate reference scales will be readily available for use in testing point-based systems for all installations. If the intended location for the installation of a point-based systems does not already include an appropriate reference scale, it will be the responsibility of the regulatory official to provide the necessary criteria for a reference scale. It will also be the responsibility of the regulatory official to ensure that an appropriate reference scale is suitable for use *prior* to the point-based system being certified for use.
- Allowing “point-based” systems to be used only for commercial transactions involving the weighing of unit trains will place additional enforcement responsibilities on regulatory officials to ensure that single cars are not weighed on these systems and that these systems are not used in a static mode when they have not been approved to operate in that manner.
- The definitions found in HB 44 Appendix D apply to terms used in HB 44 that have special meaning and are used in a limited context relating to weights and measures and that only terms used in HB 44 will be defined in Appendix D. OWM does not agree with an addition of the definition for “point-based” weighing systems if that terminology is not used in the HB 44 Scales Code or any other HB 44 code.
- OWM also questions the need for the proposed new subparagraph UR.5.(b) noting that the criteria for reference cars used for in-motion testing is currently addressed in HB 44 Scales Code, paragraph N.3.2. as well as Section 1.9.1. in the Association of American Railroads (AAR) handbook.

Additional comments from OWM can be found in the 2019 NCWM Interim Meeting Report.

WWMA: - 2018 Fall Annual Meeting. During its open hearings, WWMA heard a presentation by Richard Suiter (Richard Suiter Consulting) on behalf of the submitter of the item. Mr. Suiter noted that Meridian Engineering submitted the load cells for testing with a 1-meter length of rail; however, the rail would not fit into the environmental chamber at the NIST Force Lab and the Ohio NTEP lab was unable to accommodate it also. Meridian Engineering is in the process of producing a shorter rail for use in the testing process and will be resubmitting this for evaluation.

Mr. Paul Jordan (Ventura County) questioned whether there is limit to the speed of the car to achieve accurate weighing. Mr. Suiter explained that the submitter has included a limiter to limit the speed of the system. Ms. Tina Butcher (NIST OWM) questioned if a specification needed to be added to automatically prevent weighing in a system in which speed can possibly result in inaccurate weighing. Ms. Butcher also noted that OWM had the opportunity to meet with Meridian Engineering to discuss the proposal a few weeks ago but has not yet had the opportunity to review the proposal as it was submitted. Mr. Steven Harrington (OR) commented that care needs to be taken whenever proposing expanded tolerances. Mr. Harrington noted that train length, speed, fully loaded vs. empty, direction, and grade are also issues that need to be considered in achieving accurate weighing. He also challenged the notion that commodities being weighed are low cost; although the price per pound may be low, the volume of the weighments results in the impact of the overall cost being significant.

WWMA recommends the item be designated as a Voting item on the NCWM S&T Committee’s agenda.

NEWMA: - 2018 Fall Interim Meeting. During its open hearing, the Committee received a comment from Walt Remmert (Pennsylvania) in support of this item. Dick Suiter (Consultant representing the submitter) submitted written comments stating that he believes the item to be fully developed and ready for a vote.

The NEWMA S&T Committee recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

During the NEWMA 2019 Spring Annual Meeting, Mr. Russ Vires (representing the SMA) commented that the SMA opposes this item. Mr. Russ Vires (on behalf of Mettler Toledo) stated opposition to the item as written due to same concerns as he expressed for the SMA. Mr. Dick Suiter (Richard Suiter Consulting, Representing the Submitter)

submitted written comments by email and requests that the proposed changes to T.N.4.6. be withdrawn and the remaining items be separated for individual votes. Mr. Ed Luthy (Schenck Process LLC) commented that accuracy should be the number one goal and that devices entering the marketplace need to meet current tolerances. Mr. Eric Golden (Cardinal Scale) echoed previous comments by the SMA and Mr. Ed Luthy and does not believe tolerances should be modified for new devices. Mr. Golden stated that devices are meeting tolerances currently and do not need tolerances to be expanded. He also stated that withdrawing T.N.4.6. does not resolve all of his concerns regarding the item. NEWMA does not believe the item has merit and recommends withdrawal from the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. SWMA was presented information regarding the system which an NTEP certificate but they were requesting expanded tolerances for maintenance purposes. The SMA will meet and review in their November meeting. Mettler Toledo commented that they were not in favor of relaxing the tolerances. Fairbanks Scale questioned the need for a relaxed tolerance. NIST commented that they had not completed a full analysis, but they did question the tolerance based on value of the product being weighed rather than performance and that the user requirement does have option to use the device as a reference scale which would involve static weightment when the device is used as a dynamic weighing device.

SWMA would like to see the results when it has finished the NTEP process.

CWMA: - 2018 Fall Interim Meeting. CWMA was given a presentation by Mr. Richard Suiter (representing Meridian Engineers). He answered questions about dynamic and static use, tolerance and accuracy. During open hearings, CWMA heard concerns related to the increase in tolerance from 0.2% to 0.5% for these devices.

CWMA recommends this item be a developing item to give the submitter more time to receive input regarding the suggested tolerance.

2019 CWMA Spring Annual Meeting: Mr. Russ Vires (SMA) expressed opposition to this item and recommends it be withdrawn because there are existing devices that comply with the current standards and meet with existing tolerances. Several people (NIST OWM, state and industry officials) spoke in opposition to expanding the tolerances. Mr. Dick Suiter, representing Meridian, requested the item move forward as a voting item without T.N.4.6. included and requested the other proposed changes be separated for the NCWM’s Annual Meeting agenda. In addition, Mr. Suiter read a letter in support of this item from Mr. Steve Lind of Covia Holdings Corporation (see NCWM website for the letter). Mr. Ed Luthy (Schenck Process LLC.) stated his company has a WIM scale that can meet HB44 requirements, including the current tolerances. The CWMA recommends this item be withdrawn based on comments received in opposition to this proposal.

SMA: - 2018 Fall Meeting. The SMA opposes this item and recommends it be withdrawn. The current standards have been in effect for years, there are devices that comply with the current standards, and the SMA does not feel lowering the standard is in the best interest of the weights and measures community.

BCS – BELT-CONVEYOR SCALE

- **BCS-1 V S.1.3. Value of the Scale Division., S.1.9. Zero-Ready Indicator., S.4.Accuracy Class., S.45. Marking Requirements., N.1. General., N.2. Conditions of Test., T.1. Tolerance Values., T.2. Tolerance Values. and UR.3. Maintenance Requirements – Scale and Conveyor Maintenance.**

Organization (* not submitted)	BCS - 1– Belt-Conveyor Scales (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						

Organization (* not submitted)	BCS - 1– Belt-Conveyor Scales (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
SMA (Industry)							✓
NCWM S&T Committee Interim	✓						

NIST OWM: - OWM recognizes that the changes in this proposal are largely focused on providing clear direction to inspectors in applying tolerance values when comparing results of material test runs that are performed under: 1) practically identical; and 2) variable conditions. The USNWG believes this proposal will establish uniform testing procedures and provide clear direction for field officials where it has been absent.

Prior to these changes, there was an inconsistency in the interpretation of how tolerances were to be applied. OWM recognizes that the USNWG is proposing changes that will clarify the correct application of tolerances.

The USNWG is also recommending additional changes to the Handbook 44 Belt-Conveyor Scale Systems Code that will establish two different accuracy classes for these devices. In addition to the current requirements for commercial systems, an accuracy class would be added that applies to a category of devices capable of performing within a higher accuracy level. Whereas the current tolerance in the code is 0.25 %, the added class of devices would be evaluated using a 0.1 % tolerance.

In response to questions regarding the access to reference scales suitable for use in testing belt-conveyor scale systems of the proposed Class 0.1, the USNWG has been presented information supporting the notion that there are suitable scales available for this purpose as well as documented official test procedures for verification of the reference scales. This includes procedures located on Measurement Canada’s website at the following URL address: <http://www.ic.gc.ca/eic/site/mc-mc.nsf/eng/lm04295.html>

The USNWG has also submitted amendments for two locations in this proposal adding statements to include the application of requirements to systems that are not marked with an accuracy class. Members of the USNWG recognized the omission of these statements and have petitioned the NCWM S&T Committee to amend the proposal prior to any voting. The addition of the wording “...not marked with an accuracy class...” to subparagraphs under N.2.3. “Minimum Test Load” and a Table under UR.3. “Maintenance Requirements – Scale and Conveyor Maintenance” were requested to align those requirements with others in this code that did include provisions for systems not marked with an accuracy class. These amendments are posted on the NCWM’s website under 2019 Annual Meeting – Publication 16.

OWM believes the item has been fully developed and vetted within the USNWG on Belt-Conveyor Scales. Additional comments from OWM can be found in the NCWM’s 2019 Interim Meeting Report.

WWMA: - 2018 Fall Annual Meeting. During its open hearings, WWMA heard comments from Ms. Tina Butcher (NIST OWM), noting the NIST US National Working Group on Belt-Conveyor Scale Systems has worked on this proposal for several years and OWM believes this proposal is ready for a vote.

WWMA heard comments in support of the item from Mr. Al Page (MT W&M, retired) and Mr. Peter Sirrico (Thayer Scale) who are both long-time members of the USNWG as well as Mr. Dave Frazer (MT).

Hearing comments in support of the proposal and no comments in opposition, WWMA recommends the item be designated as a Voting item on the NCWM S&T Committee’s agenda.

NEWMA: - 2018 Fall Interim Meeting. During its open hearing, NEWMA received no comments on this item. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting: Mr. John Barton (NIST: submitter of the item on behalf of the USNWG on Belt-Conveyor Scales) commented that references to these devices that are not marked with accuracy classes were unintentionally omitted in two locations in the proposal but the addition of the wording “not marked with accuracy class” in those locations will remedy this. Mr. Russ Vires (representing the SMA) commented that the SMA supports this item with the corrections stated but has concerns regarding the reference scales ability to weigh material to an accuracy of 0.035% as stated in the proposed paragraph N.3.2.1. Mr. Barton, in response to the SMA comments, cited

information from Measurement Canada and manufacturers of belt-conveyor scales pertaining to detailed procedures for reference scale tests. The committee recommends this as a voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from NIST OWM that this proposal was submitted by the USNWG on Belt Conveyor Scales. The changes being proposed in response to confusion amongst regulators and others on the correct application of the tolerances when repeatability and linearity were considered. This item was submitted to distinguish between the two terms and the appropriate application of tolerances, and to further add an accuracy class.

SWMA believes that the item is fully developed and recommends it be a Voting item.

CWMA: - 2018 Fall Interim Meeting. No comments were heard on this item. This item was developed by the Belt Conveyor USNWG and CWMA recommends this item be a voting item.

During the CWMA 2019 Spring Annual Meeting, Mr. Russ Vires (SMA) voiced support for this item. Mr. Vires (on behalf of Mettler Toledo) has discussed with NIST OWM the concerns about the need for a reference scale suitable to provide 0.035% accuracy and was provided with information supporting the notion that there are devices and test procedures that can be followed to verify reference scale’s accuracy needed for material tests on the newly proposed Class 0.1 systems. The CWMA recommends this item be given a voting status on the NCWM’s Annual Meeting agenda.

SMA: - The SMA supports this item, however we have concerns regarding the reference scale’s ability to weigh material to an accuracy of 0.035% as stated in the proposed paragraph N.3.2.1 (b), Accuracy of Material.

ABW – AUTOMATIC BULK WEIGHING SYSTEMS

- **ABW-3 D A. Application, S. Specifications, N. Notes, UR. User Requirements and Appendix D – Definitions: automatic bulk weighing system.**

Organization (* not submitted)	ABW - 3 – Automatic Bulk Weighing Systems (1 Items), Initial Status – D 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM			✓				
WWMA	✓						
SWMA		✓					
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)					✓		
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)		✓					
SMA (Industry)							
NCWM S&T Committee Interim		✓					

NIST OWM: - OWM concurs with the conclusions made at the 2019 CWMA and NEWMA Annual Meetings to not elevate this item to a voting status believing it has not been developed sufficiently. OWM also agrees with the December 20, 2018 comments (as found on NCWM’s website) provided from Compuweigh, a manufacturer of bulk-weighing systems stating its opposition to this proposal. OWM is of the understanding that the submitter is reported to state at the 2019 CWMA Annual meeting that they have no intent to develop the item any further.

OWM views the changes proposed to paragraph A.1. as expanding the scope of the current Automatic Bulk Weighing Systems Code (ABWS) to encompass types of systems not correctly identified as ABWSs. While OWM agrees with the concept of updating the current code to pave the way for its application to newer automated weighing systems. OWM believes the current proposal as drafted, is not sufficiently developed enough to be considered for adoption for the following reasons.

- Critical parts of the Handbook 44, Appendix D definition of “automatic bulk weighing system” and paragraph A.1. of the ABWS Code that are proposed for deletion/replacement provide the unique and distinguishing

operational features of these systems and are therefore, very significant in identifying ABWS and are imperative for determining the application of the correct HB 44 code. Examples of critical wording that is being proposed to be deleted from paragraph A.1. and the definition of ABWS are: “the weighing of a single commodity in predetermined amounts;” “recording of the no-load and loaded-weight values;” and “accumulating net-weight results.” These phrases describe unique features that inherently define ABWS and are used to distinguish these systems from other types of automated weighing systems. Thus, OWM believes it is inappropriate to eliminate the language providing these distinguishing attributes from the Application Section and relocate it in new specification requirements as is being proposed. OWM believes these proposed changes will likely cause unnecessary confusion in identifying these systems and make the application of the code excessively generic by removing these features from the Applications Section that clearly identify an ABWS.

- OWM also notes that “Loaded weight value” (paragraph S.1.8.), “weighing process” (paragraph S.10.), and “weighment” (paragraphs S.1.8., S.1.9., and S.1.10) in this proposal are ambiguous terms that need to be clearly defined.
- OWM believes the proposed new paragraph S.1.7. should be amended to address the following three issues.
 1. The issue of indication and recording of no-load reference values is already addressed by the existing paragraph S.1.1. “Zero Indication.”
 2. The function of motion detection at no load doesn’t need to be addressed because if a system were to record values when product was still flowing in or out of the load-receiving element, it would result in inaccurate net weight indications. Motion detection is verified as part of an official inspection and would detect such a violation.
 3. An automatic shutdown feature when the no-load reference value is outside user design parameters. OWM questions if it should also be necessary for an automatic shutdown feature to activate if the “gross-load reference values” were to fall outside of the user designed parameters. If so, the first two sentences in proposed new paragraph S.1.7. could be eliminated and the remaining two sentences amended to include “gross load reference values.” The title of this paragraph could then also be changed to “Automatic Shutdown Feature.” OWM also notes that requirements for automatic shutdown feature don’t address the accuracy of the weight determination once design parameters are exceeded requiring the system to shut down. This requirement only addresses the need for operator intervention to get the system started again.
- OWM believes the changes proposed to paragraph S.3.3.(a) and (b) are well intended, but need additional work. For example, we think it is important to specify in (a) that product flow to the load-receiving element must automatically stop rather than be stopped. Also, the terminology “other equipment” needs better clarification in the first sentence proposed for sub-paragraph (b). Additional language is needed to clarify the proper application of these two subparagraphs.

Structural, and other changes to the proposal would seem to be necessary to address these concerns and facilitate further development this item.

WWMA: - 2018 Fall Annual Meeting. During open hearings, WWMA heard a presentation from Mr. Loren Minnich (KS, submitter) on the proposal. After clarifying with Mr. Minnich that there have been changes to the proposal, Ms. Tina Butcher (NIST OWM), noted OWM has not yet had the opportunity to review and analyze the proposal, but looks forward to doing so.

WWMA acknowledged that additional review by OWM, SMA, and others will be taking place on the revised proposal. However, having no specific suggestions for areas that need work, didn’t feel it appropriate to designate it as

Developing. Consequently, WWMA recommends the item be designated as a voting item on the NCWM S&T Committee's agenda.

WWMA asks that Mr. Minnich's presentation be included with the WWMA's report on the WWMA's website.

NEWMA: - 2018 Fall Interim Meeting. During the open hearings, NEWMA received no comments. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting: Mr. Russ Vires (representing the SMA) commented that the SMA takes no position on this item. Mr. John Barton (NIST) commented that ABWS devices are unique and have specific characteristics identified in the Application section of the ABWS Code and that in this proposal, these characteristics have been taken out of the Applications section of the ABWS Code. He believes that these changes may permit the ABWS Code to be applied to other devices/systems not intended to be evaluated under this HB 44 Code. NEWMA recommends that the item remain Developing on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA received a presentation and comments from the submitter explaining that he was trying to modernize the code with systems being found in service. Mr. Richard Suiter commended Mr. Doug Musick (submitter) on his work. The SMA commented that it had not reviewed the proposal but will do so at its next meeting. NIST OWM commented that this code was written for a certain type of device and that the changes being recommended in this proposal would circumvent the reason that this code was originally developed to address these unique devices and how they operate. NIST also commented that the concerns of the submitters could be addressed through amendments to the Handbook 44 Scale code or perhaps through the development of a new separate code. A representative of Growth Energy commented that the item would be reviewed by the National Feed and Grain Association.

The SWMA recommends the submitter work through the comments and continue to develop the language and address all concerns.

CWMA: - 2018 Fall Interim Meeting. Mr. Loren Minnich (KS) gave a presentation to CWMA describing the proposed changes to the ABWS Code. Mr. Richard Suiter suggested an editorial change to the first sentence of S.1.7. to read as follows:

“No Load Reference Values – An automatic bulk weighing system shall indicate and record weight values, **other than zero**, with no load in the load-receiving element.

The submitter agreed with the suggested editorial change. The CWMA believes this item is fully developed and ready for voting.

During the CWMA's 2019 Spring Annual Meeting, Mr. Russ Vires (SMA) took no position on this item. Ms. Diane Lee (NIST OWM) stated the view that changes proposed to paragraph A.1. are seen as expanding the scope of the current HB 44 Automatic Bulk Weighing Systems Code (ABWS) to encompass types of systems not previously considered as ABWS. While OWM agrees with the concept of updating the current code to pave the way for its application to newer automated weighing systems. OWM believes the current proposal as drafted, is not sufficiently developed enough to be considered for adoption. CWMA recommends this item be given an information status because the item has merit, but the submitter (Kansas) has stated they will not develop it any further.

SMA: - The SMA takes no position on this item.

AWS – AUTOMATIC WEIGHING SYSTEMS

- **AWS-3 V S.3.2. Load Cell Verification Interval Value.**

Organization (* not submitted)	AWS –3 - Automatic Weighing Systems (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
SMA (Industry)							✓
NCWM S&T Committee Interim	✓						

NIST OWM: - OWM concurs with the rationale provided by the NTEP Weighing Sector for the recommended changes in this proposal and agrees that those changes are reasonable. OWM believes the changes proposed will align the Handbook 44 Automatic Weighing Systems Code with the Scales Code and that the omission of criteria providing an exception to the requirement regarding the relationship of minimum load cell verification interval value to the scale division was likely an oversight in the initial drafting of the AWS Code.

WWMA: - 2018 Fall Annual Meeting. WWMA heard comments from Ms. Tina Butcher (NIST OWM) who noted this item was developed and submitted by the NTEP Weighing Sector and believes the item is ready for a vote. WWMA heard no comments in opposition to the item and recommends the item be designated as a Voting item on the NCWM S&T Committee’s agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, NEWMA received no comments. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting: Mr. Russ Vires (representing the SMA) commented that the SMA supports this item. NEWMA recommends this as a voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. No comments were heard on this item. SWMA recognizes the work of the NTEP Weighing Sector and recognizes their expertise. SWMA recommends moving this forward as a Voting item.

CWMA: - 2018 Fall Interim Meeting. No comments were heard regarding this item during open hearings. CWMA agrees this is a necessary addition to harmonize the AWS Code with other Codes, and that this item is ready for voting.

At the CWMA’s 2019 Spring Annual Meeting, Mr. Russ Vires (SMA) voiced support for this item.

SMA: - The SMA supports this item.

WIM – WEIGH-IN-MOTION SYSTEMS USED FOR VEHICLE ENFORCEMENT SCREENING TENTATIVE CODE

- **WIM-1 D Title of Tentative Code, S.1.7.1. Values to be Recorded., S.4.1. Designation of Accuracy., N.1. Test Procedures, T.2. Tolerance Values for Accuracy Class A Classes., UR.1.1. General, Table 1. Typical Class or Type of Device for Weighing Applications.**

Organization (* not submitted)	WIM - 1 – Weigh-in-motion systems used for vehicle enforcement screening tentative code (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
	OWM		✓				
WWMA			✓				
SWMA			✓				
CWMA Interim (Fall)		✓					
CWMA Annual (Spring)			✓				
NEWMA Interim (Fall)		✓					
NEWMA Annual (Spring)		✓					
NCWM S&T Committee Interim		✓					

NIST OWM: - OWM points out that the changes being recommended in this proposal if adopted would set a precedent where the scope of NIST Handbook 44 (as described in the Introduction – sections A. and F. and in the General Code, paragraph G-A.1.) would expand to also apply to many devices that are used in non-commercial applications. If it is the intent of the submitter to create a means by which NIST Handbook 44 could be applied to a specific category of devices or specific application of a device, OWM encourages the submitter to identify that objective in detail as part of this proposal. OWM recognizes that many industry officials (and others) wanting to establish a quality assurance program for weighing or measuring devices used for inventory or production control, collection of operational data, or other non-commercial purposes will often use the requirements and procedures outlined in NIST Handbook 44 to establish guidelines however, the intended application is for those devices used in commercial transactions, law enforcement, or collection of statistical information by government agencies..

OWM believes that to expand the application of NIST Handbook 44 to devices used in applications other than those listed above will lead to confusion and place an even greater burden on weights and measures officials, many of which are severely challenged to fulfill their current obligations for the regulation of commercially-used devices. OWM believes that the principal reason for regulation of commercial devices is to ensure correct and fair measurement/weightment and thereby protect buyers and sellers of commodities.

OWM believes this item should be returned to the submitter for additional development and clarification.

WWMA: - 2018 Fall Annual Meeting. During open hearings, WWMA heard comments from Ms. Tina Butcher (NIST OWM) who pointed out that the scope of Handbook 44 as specified in the General Code does not include “not-legal-for-trade” devices. The Handbook addresses commercial weighing and measuring equipment, statistical data collection, and law enforcement purposes. Handbook 44 is commonly used by companies and individuals for not-legal-for-trade applications as a source of guidelines for their weighing or measuring applications. Those companies and individuals are free to use those portions of the Handbook that are appropriate for their specific application. It isn’t necessary to modify Handbook 44 in order to use the Handbook criteria for this purpose. If the submitter is looking for standardized guidelines to apply to a given category of not-legal-for-trade applications, perhaps they might collaborate with an industry association or other organization who might have an interest in such a document.

Mr. Eric Golden (Cardinal Scale) had questioned the inclusion of different accuracy classes, particularly those designated as “TBD.” Tina Butcher noted OWM had recommended the tolerance table be structured with accuracy classes during the development of the original WIM code to allow for future expansion of the code to include different tolerances for different WIM applications; however, had not intended a “not-legal-for-trade” category to be included in this table.

In its work session, WWMA found no merit in the proposal and noted that not forwarding the proposal does not preclude the use of the code in not legal-for-trade applications. Consequently, the WWMA recommends this item not be forwarded to the NCWM S&T Committee and recommends this item be withdrawn from the WWMA S&T Committee Agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, NEWMA received a comment from Mr. Eric Golden (Cardinal Scale) stating that there are many questions concerning this item and he recommends getting more information in regard to the source of their tolerance numbers.

NEWMA believes this item requires further development by the submitter and recommends the Item be designated a Developing status on the NCWM S&T Committee agenda.

During the 2019 Spring Annual Meeting, Mr. Russ Vires (representing the SMA) commented that the SMA has taken no position on this item and looks forward to additional analysis. NEWMA recommends this to be a developing item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from NIST that the changes in this proposal to the tentative code would make this the only code in HB 44 that would expressly be applied to non-commercial devices and would set a precedent that will drastically change the scope of HB44. SWMA agrees with the comments and recommends the item be Withdrawn.

CWMA: - 2018 Fall Interim Meeting. CWMA received a presentation from Mr. Jon Arnold of Intercomp Company (submitter). Based on a comment referencing G-A.1. (c) this proposal may have a place in Handbook 44.

CWMA is recommending a developing status to allow for additional stakeholder input.

2019 Spring Annual Meeting: Mr. Russ Vires (representing the SMA) commented that the SMA takes no position. Diane Lee, NIST OWM, pointed out that the changes being recommended in this proposal if adopted would set a precedent where the scope of NIST Handbook 44 (as described in the Introduction - sections A. and F. and in the General Code, paragraph G-A.1.) would expand to also apply to many devices that are used in non-commercial applications. The Committee recommends this item be withdrawn because it is not clear why OSHA needs HB44 to certify these devices.

SMA: - The SMA takes no position on this item at this time and looks forward to additional analysis performed by the appropriate stakeholders.

GROUPED ITEMS

(NEW) BLOCK 1 ITEMS (B1) A TERMINOLOGY FOR TESTING STANDARDS (VERIFICATION STANDARDS, FIELD STANDARDS, TRANSFER STANDARDS, FIELD REFERENCE STANDARDS, ETC.,) TOLERANCES ON TESTS WHEN TRANSFER STANDARDS ARE USED, MINIMUM QUANTITY FOR FIELD REFERENCE STANDARD METER TESTS

At the 2019 NCWM Interim Meeting the S&T committee decided to combine the items on the agenda dealing with the issue of transfer standard (Including Items already in a block) into a single block. Block 1 for the Annual Meeting agenda now includes items previously listed as Gen-3, B1 (original items from the 2019 interim agenda that appeared under Block 1), B2, LPG-3 and MFM-5, which were all separate items and blocks of items on the S&T Committees 2019 Interim Meeting agenda (NCWM Publication 15). Agenda items Gen-3, B1, B2, LPG-3 and MFM-5 still appear as individual listings on the agenda with a note added beneath each listing directing the reader to refer to the New B1 items. All items under this New B1 have retained the same numbering system for ease in referring to the appendix for discussion on each item.

- **GEN-3** **A** **G-T.5. Tolerances on Tests When Transfer Standards are Used., Appendix D – Definitions: standards, field., transfer standard. and standard, transfer.**

Organization (*) not submitted	Gen 3 – General Code (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM				✓			
WWMA				✓			
SWMA		✓					
CWMA Interim (Fall)		✓					
CWMA Annual (Spring)				✓			
NEWMA Interim (Fall)		✓					
NEWMA Annual (Spring)				✓			
SMA (Industry)						✓	
NCWM S&T Committee Interim				✓			

NIST OWM: - NIST OWM agrees with the NCWM S&T committee and regional associations that the following items are similar and dependent on each other. OWM also agrees with the NCWM S&T committee that this item be given an assigned status:

- Block items 1;
- Block items 2;
- LPG-3 N.3 Test Drafts;
- MFM-5 N.3 Test Drafts; and
- Gen-3 G-T.5. Tolerances on Tests When Transfer Standards are Used, Appendix D- Definitions: standard, field, transfer standard and standard, transfer.

NIST OWM provides the following comments:

Agenda Items LPG-3 N.3 Test Drafts and MFM-5 N.3 Test Drafts were originally submitted in 2015 and were at that time identified as items 332-2 and 337-3. The purpose for these agenda items are to allow the use of what is termed “transfer standards” in the original proposal and that are also referred to as “master meters.” These agenda items were then revised to change the term “Transfer Standard” to “Field Reference Standard.” There are key issues to consider before using standards to test legal for trade devices:

- Evaluations of any proposed standards are needed to include: collecting data over a wide range of environmental conditions; demonstration of its reliability and repeatability; and determination that its design is suitable.
- Components should be in place at multiple levels of the Weights and measures infrastructure to ensure adequate laboratory testing of the standard prior to use and periodically throughout the use of the standard, and appropriate training for field staff.
- NIST OWM recognizes the need to assess the appropriateness of the use of master meters as field standards. As such, NIST purchased six Coriolis meters to test refined fuels and LPG and plans to purchase one ½ inch meter to test CNG dispensers and these are listed below:
 1. Two ½-inch Coriolis meters (one to be used to test LPG, the other for refined fuels)
 2. One 1-inch Coriolis meter (for refined fuels)
 3. Two 1½-inch Coriolis meters (one to be used to test LPG, the other for refined fuels)
 4. One 3-inch Coriolis meter (for refined fuels), and
 5. One ½-inch meter specifically designed as a master meter to test CNG

- NIST, OWM's next steps in the process are to:
 1. verify functionality of the meters
 2. return the meters to vendors for additional environmental testing
 3. Identify and procure adapters needed for testing field meters and configure cases and carts needed for transport and use. (we are currently looking to equip the meters with inlet and outlet valves and connections, and then mounting them on supporting structures for ease in moving the meters.)
 4. Identify locations for data collection and partners to collect data.
- Four States have volunteered to work with NIST to collect data for CNG testing.
- These efforts are seen as necessary since data is needed to ensure that the one minute of flow specified for the test draft size for a minimum test is appropriate since refueling (especially the topping off) of the tank on a consumer's vehicle is completed in far less time than a minute.
- Appropriate terms and definitions for transfer standards, field reference standard are needed for the language in LPG-3 and MFM-5 and these are being considered in Block 1, Block 2 and Gen-3

Agenda Items Block 1, Block 2 and Gen-3 Block 1 and Block 2 items were originally submitted in 2017 and were previously Block 4 and 5. Gen-3 is a new item submitted for the 2019 S&T agenda.

- Block 1 is a recommendation to remove the term "Transfer Standard" and other terms used in HB 44 to describe a standard used to test legal for trade devices and replace it with the term "Field Standard."
- Block 2 is a recommendation to add a definition for "Field Reference Standard" to some sections in HB 44 and delete references to "Transfer standard."
- Gen-3 is a recommendation to add a definition for "field standard" and "transfer standard" and add a paragraph to the general code that there be an increase in tolerance when "Transfer standards" are used.

All three items are proposals for terminology that will affect the proposal in LPG-3 and MFM-5. NIST continues to review these items and believes that additional consideration of the new proposal, Gen-3 along with Block 1 and Block 2 items is needed to finalize the terms and definitions for standards use to test legal for trade device.

NIST OWM recognizes that one of the issues concerning the use of the term "Field Standard" and having the term apply to all standards is that all standards may not be able to meet the requirements for field standards addressed in Section 3.2 of the Fundamental Considerations in NIST HB 44. There is also an issue of who has the authority to accept a standard for use. To address these and other concerns NIST, OWM believes a possible approach would be as follows:

1. Add a statement to Section 3.2 in NIST HB44, Fundamental Considerations, to address another option for standard accuracy during testing, elaborate on traceability and how it is achieved and language concerning regulatory responsibility similar to what is included in NIST HB 130.
2. Find and examine different terminology used in HB 44 for standards used in testing commercial devices and select an appropriate term for these standards.
3. Make appropriate changes in NIST HB 44, HB130 and other documents as appropriate.
4. Collect data using NIST Purchased Coriolis meters to demonstrate that master meters are a viable option for use in testing devices
5. Develop a guidance document with clear processes to describe how standards are validated and values are assigned.

Over the past several years, NIST OWM has provided comments regarding the necessary items needed for verification of a standard used to test legal for trade devices and has shared some steps that NIST OWM is taking to collect some of this verification data. Additional comments are included in Appendix A.

In addition, information was provided that a single point test of the meter may be used to prove whether or not current meter calibration data is valid. This will likely minimize calibration cost for these meters.

WWMA: - 2018 Fall Annual Meeting. WWMA recommends this item be addressed together with the items in Block 1 and 2; LPG-3; and MFM-5 and designate the status as Developing.

NEWMA: - 2018 Fall Interim Meeting. This is recommended as a Developing Item and part of a group (with Block 1, Block 2, LPG-3, and MFM-5) on the NCWM agenda.

At the NEWMA 2019 Spring Annual Meeting, Mr. Russ Vires (representing the SMA) commented that the SMA opposes GEN 3 as written. He stated the SMA does not believe that the item has been fully developed and that a proposal is put forth for the definition of a field standard that applies to measuring devices but omits other devices such as weighing equipment. Mr. Vires also commented that the SMA does support proposed changes for these items also found in the new Block 1: SCL 4; ABW 1; and AWS 1 and looks forward to further development. Mr. Mike Sikula (NY) commented that it is important to consider that requirements found in HB 44 Appendix A, Section 3.2. "Tolerances for Standards" (less than 1/3 the value of the minimum tolerance applied) cannot always be met but the use of alternative standards may be the only way to get the job done or the only way to do a job safely. Mr. Bob Murnane (Seraphin) commented that he would like to have clear, simple definitions for "transfer standard" and "field standard." He also thinks it may be best to start fresh and focus on the intent of the item. NEWMA recommends that the development of this item continue as an Assigned item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. During open hearings, SWMA heard from NIST OWM that these items are similar and related to the items in Block 1, Block 2, LPG-3, MFM-5 and that OWM recommends the proposals be combined into one block so that items may be developed as a single item. SWMA received written comments from Seraphin that the items mentioned above were similar to other items on the agenda (Blocks 1 & 2, LPG-3, and MFM-5) but that the terminology was different. The SWMA heard from the Scale Manufacturers Association (SMA) that they look forward to the further development of the item. SWMA received written comment from Seraphin that this item does address the possible need to increase the tolerance when a transfer standard is used, but Seraphin recognizes that tolerances applied to devices when transfer standards are used is already addressed in some Handbook 44 device codes.

SWMA does recognize that GEN-4, LPG-3 and MFM-5 are different in that they add further considerations to their respective items in addition to what is being discussed in Block 1 and Block 2. The SWMA recommends this item to be a developing status and that the submitters of these items should work on the differences in terminology before moving the items forward.

CWMA: - 2018 Fall Interim Meeting. No comments were heard on this item during open hearings. CWMA questions the need for G-T.5., and believes the terms included in the Transfer Standard definition are already defined throughout Handbook 44. CWMA recommends this item be developing.

At the CWMA 2019 Spring Annual Meeting, Mr. Russ Vires, SMA stated support for Block 1 but also stated that GEN-3 needs development because the definition should include all device types if it is to be added to HB44. Diane Lee, NIST OWM, commented they have purchased Coriolis meters to begin data collection. Dick Suiter, representing Seraphin, wants a balanced work group with old and new ways of testing, to include petroleum marketers, scale manufactures, large prover manufacturers, and device users. Kansas W&M commented HB 105 will need to be developed and to proceed cautiously with data collection.

SMA: The SMA opposes this item as written for inclusion in the General Code section of Handbook 44. The SMA feels that this item is not fully developed. The proposal puts forth a definition for a Field Standard that applies to measuring devices but omits other devices such as weighing equipment. If this definition is to be added to Handbook 44 in the General Code section, it should be inclusive of all device types that the handbook covers.

- **Block 1 Items A TERMINOLOGY FOR TESTING STANDARDS (original 1 items and title for block one items that were included on the 2019 NCWM S&T Interim Meeting agenda.)**
 - **B1: SCL-4 A N.2. Verification (Testing) Standards**
 - **B1: ABW-1 A N.2. Verification (Testing) Standards**
 - **B1: AWS-1 A N.1.3. Verification (Testing) Standards, N.3.1. Official Tests, UR.4. Testing Standards**
 - **B1: CLM-1 A N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards**
 - **B1: CDL-1 A N.3.2. Transfer Standard Test, T.3. On Tests Using Transfer Standards**
 - **B1: HGM-1 A N.4.1. Master Meter (Transfer) Standard Test, T.4. Tolerance Application on Test Using Transfer Standard Test Method**
 - **B1: GMM-1 A 5.56(a): N.1.1. Air Oven Reference Method Transfer Standards, N.1.3. Meter to Like-Type Meter Method Transfer Standards and 5.56(b): N.1.1. Transfer Standards, T. Tolerances**
 - **B1: LVS-1 A N.2. Testing Standards**
 - **B1: OTH-1 A Appendix A: Fundamental Considerations, 3.2. Tolerances for Standards, 3.3. Accuracy of Standards**
 - **B1: OTH-2 A Appendix D – Definitions: fifth-wheel, official grain samples, transfer standard and Standard, Field**

Organization (* not submitted)	B1 Terminology For Testing Standards (10 Items), Initial Status - D 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM				✓			
WWMA		✓					
SWMA		✓					
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)				✓			
NEWMA Interim (Fall)		✓					
NEWMA Annual (Spring)				✓			
SMA (Industry)							✓
Seraphin		✓					
NCWM S&T Committee Interim				✓			

NIST OWM: See comments under the first item (GEN-3) included under the NEW Block 1.

WWMA: 2018 Annual Meeting. The WWMA believes the items in Blocks 1 and 2; Gen-4; LPG-3; and MFM-5 are related and recommends the NCWM S&T Committee combine them into a single block for the purposes of further development rather than present them in a piecemeal fashion as is currently the case with these multiple items. The commonalities in all these items is the need to ensure that terminology for testing equipment and the underlying principles align across all codes and that the criteria in the Fundamental Considerations in Appendix A of NIST Handbook 44 are considered.

Mr. Bob Murnane (Seraphin) indicated he would like to see Block 1 items remain Developing. He noted Seraphin has submitted written comments on these items (and these were made available to the WWMA). Mr. Michael Keilty (Endress + Hauser Flowtec) commented that the LPG-3 and MFM-5 have been on the agenda since 2014 and he

believes they need to be made voting items; he doesn't know what more work is needed. He presented the items in Block 2 to attempt to clean up the language.

Ms. Tina Butcher (NIST OWM) referenced OWM's past analysis, which is available on the NCWM website and shared information about a project to research the use of master meters to assist states and industry and is looking for assistance from the community. Mr. Mahesh Albuquerque (CO) and Mr. Brett Gurney (UT) offered to assist in the gathering of data and noted they really want to see progress on this issue.

The WWMA also recommends the submitters define the function and capabilities of the test equipment that will be used; specify the criteria it will need to meet; and then name the equipment using appropriate terminology. Definitions for any terminology not currently found in NIST Handbook 44 should be included in the final recommendation (such as is done in Gen-4). The WWMA recommends this block be given Developing status.

NEWMA: See comments under GEN-3 item.

SWMA: 2018 Annual Meeting. NIST noted that these items were similar in purpose to the items in Block 2, Gen-4, LPG-3, MFM-5 and suggested that the proposals be combined in one block so that items may be worked on by the submitters of the items. The SWMA received written comment from Seraphin that the items mentioned above were similar to items but that the terminology was different. The Scale Manufacturers Association looks forward to the further development of the item.

CWMA: 2019 Spring Annual Meeting. See comments under GEN-3 item.

SMA: The SMA supports the proposal as it applies to the items SCL-4, ABW-1, and AWS-1 items, and looks forward to further development by the Task Group. It is important to be consistent in our use of terms across multiple sections of Handbook 44.

- **Block 2 items (B2)** **A** **define “field REFERENCE standard”**
 - **B2: CLM-2** **A** **N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards**
 - **B2: CDL-2** **A** **N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards**
 - **B2: HGM-2** **A** **N.4.1. Master Meter (Transfer) Standard Test and T.4. Tolerance Application on Test Using Transfer Standard Test Method**
 - **B2: OTH-3** **A** **Appendix D – Definitions: field reference standard meter and transfer standard**

Organization (* not submitted)	B2 Define “Field Reference Standard” (4 Items), Initial Status – D 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM				✓			
WWMA		✓					
SWMA		✓					
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)				✓			
NEWMA Interim (Fall)		✓					
NEWMA Annual (Spring)				✓			
Seraphin		✓					

NIST OWM: See comments under the first item (GEN-3) included under the NEW Block 1.

WWMA: - 2018 Fall Annual Meeting. The WWMA recommends this item be addressed together with the items in Block 1; Gen-4; LPG-3; and MFM-5 and designate the status as Developing. For details, see the “Comments and Justification” in Block 1.

NEWMA: 2019 Spring Annual Meeting. The New Block 1 (B1) now includes all Block 2 (B2) items, per NCWM S&T Committee. No additional comments were heard on the former Block 2 items. Please see GEN-3 for comments. The committee recommends this as an Assigned item on the NCWM S&T Committee agenda.

CWMA: 2019 Spring Annual Meeting. See comments under GEN-3 item.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from NIST OWM noting that these items were similar in purpose to the items in Block 1, Gen-4, LPG-3, MFM-5 and asked the SWMA to consider that the proposals be combined in one block so that items may be worked on by the submitters of the items. SWMA received written comment from Seraphin that the items mentioned above were similar although the terminology proposed was different. The SWMA heard from the Scale Manufacturers Association that they looked forward to the further development of the item. SWMA does recognize that GEN-4, LPG-3 and MFM-5 are different in their purpose but use language that is common to all the proposals and which is specifically addressed in Block 1 and Block 2 items. SWMA recommends that these items remain developing and that the submitters of these items should work out the differences in terminology before moving the items forward.

• **LPG-3** **A** **N.3. Test Drafts.**

Organization (* not submitted)	LPG - 3 – LPG and Anhydrous Ammonia Liquid Measuring Devices (1 Items), Initial Status – D 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM				✓			
WWMA		✓					
SWMA		✓					
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)				✓			
NEWMA Interim (Fall)		✓					
NEWMA Annual (Spring)				✓			
NCWM S&T Committee Interim				✓			

OWM: See comments under the first item (GEN-3) included under the NEW Block 1.

WWMA: - 2018 Fall Annual Meeting. The WWMA recommends this item be addressed together with the items in Block 1; Gen-4; LPG-3; and MFM-5 and designate the status as Developing. For details, see the “Comments and Justification” in Block 1.

NEWMA: 2019 Spring Annual Meeting. See comments under GEN-3 item.

SWMA: 2018 Fall Annual Meeting. The SWMA heard from NIST OWM recommending that this item be included in a block along with items listed as Block 1, Block 2, GEN-4 and MFM-5. SWMA received comments from Seraphin that this item had different criteria for test drafts than those that were included in Block 2 items. SWMA encourages the submitters of these items to work to a common proposal and recommends this as a Developing item.

CWMA: 2019 Spring Annual Meeting. See comments under GEN-3 item.

• **MFM-5** **A** **N.3. Test Drafts.**

Organization (* not submitted)	MFM - 5 – Mass Flow Meters (1 Items), Initial Status – D 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM				✓			
WWMA		✓					
SWMA		✓					
CWMA Interim (Fall)		✓					
CWMA Annual (Spring)				✓			
NEWMA Interim (Fall)		✓					

Organization (* not submitted)	MFM - 5 – Mass Flow Meters (1 Items), Initial Status – D 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
NEWMA Annual (Spring)				✓			
NCWM S&T Committee Interim				✓			

OWM: See comments under the first item (GEN-3) included under the NEW Block 1.

WWMA: 2018 Fall Annual Meeting. WWMA recommends this item be addressed together with the items in Block 1 and 2; and MFM-2; LPG-3 and designate the status as Developing. For details, see the “Comments and Justification” in Block 1.

NEWMA: 2019 Spring Annual Meeting. See comments under GEN-3 item.

CWMA: 2019 Spring Annual Meeting. See comments under GEN-3 item.

SWMA: 2018 Fall Annual Meeting. The SWMA heard comment that this should be included in a block with Block 1, Block 2, GEN-4 and LPG-3. NIST OWM also notes that there was concern raised with the appropriateness of the minimum delivery time. SWMA encourages this item be included in the block and consider the minimum delivery time as it is being developed.

BLOCK 3 ITEMS (B3) V ADDRESS DEVICES AND SYSTEMS ADJUSTED USING A REMOVABLE DIGITAL STORAGE DEVICE

- **B3: GEN-2 V G-S.8.2. Devices and Systems Adjusted Using Removable Digital Device Storage**
- **B3: SCL-5 V S.1.11. Provision for Sealing.**
- **B3: BCS-1 V S.5. Provision for Sealing.**
- **B3: ABW-2 V S.1.6. Provision for Sealing Adjustable Components on Electronic Devices.**
- **B3: AWS-2 V S.1.3. Provision for Sealing.**
- **B3: LMD-1 V S.2.2. Provision for Sealing.**
- **B3: VTM-2 V S.2.2. Provision for Sealing.**
- **B3: LPG-1 V S.2.2. Provision for Sealing.**
- **B3: HGV-1 V S.2.2. Provision for Sealing.**
- **B3: CLM-2 V S.2.5. Provision for Sealing.**
- **B3: MLK V S.2.3. Provision for Sealing.**
- **B3: WTR-1 V S.2.1. Provision for Sealing.**
- **B3: MFM-1 V S.3.5. Provision for Sealing.**
- **B3: CDL-3 V S.2.5. Provision for Sealing.**
- **B3: HGM-3 V S.3.3. Provision for Sealing.**
- **B3: EVF-1 V S.3.3. Provision for Sealing.**

- **B3: TIM-1** V S.4. Provision for Sealing.
- **B3: GMA-1** V S.2.5. Provision for Sealing.
- **B3: MDM-1** V S.1.11. Provision for Sealing.

Organization (* not submitted)	B3 - Address Devices and Systems adjusted using a removable digital storage device (19 Items), Initial Status – D 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
SMA (Industry)							✓
GA NTEP Sector							✓
NCWM S&T Committee Interim	✓						

NIST OWM: During its work session at the July 2018 NCWM Annual Meeting, members of the S&T Committee agreed that an amended version of paragraph G-S.8.2 offered by OWM to address concerns raised about the use of a laptop connected via cable improved clarification. Consequently, the Committee agreed to OWM’s request to replace the existing proposed G-S.8.2. with the amended version made available by OWM and as shown in the item under consideration. OWM also wants to clarify that this proposal does not prohibit devices that have parts that are disassembled and replaced, but that the proposal is specific to devices that are designed to be configured using removable media such as memory cards, flash drives, or other media.

NIST OWM recognizes that comments received during the 2019 Spring Annual NEWMA meeting were in support of making this a voting item. At the NEWMA meeting additional comments were heard in reference to the future use of electronic representation as a push to go paperless. This comment was based on a sentence in the proposed new paragraph G-S.8.2 stating that “A printed copy of the information must be available on demand through the device or through another on-site device. NIST participants at the NEWMA meeting pointed out that in addition to providing a printed copy of the information, the information may be made available electronically. The “information” referenced in G.S.8.2 refers to audit trail information however, during the NEWMA Annual Meeting an industry representative also shared that customers who want receipts will eventually have to go inside rather than receive them at the pump.

In reference to the move to paperless systems and the industry comment, although many gas stations may be moving to providing a printed copy of the customer transaction at the cash register, an audit trail receipt is viewed by an inspector to ensure that adequate information is included. In addition, the inspector also compares current and previous audit trail information to determine any trends in changes to calibrations for that specific device. This information may be reviewed at a later time, making an audit of the information difficult without a printed copy. NIST feels that a printed copy of the audit trail information is necessary for a weights and measures inspector to assess and adequately review changes to the calibration of the device overtime.

OWM agrees with the Regional Weights and Measures Associations that these items should be designated as voting items at the 2019 Annual Meeting.

WWMA: - 2018 Fall Annual Meeting. The WWMA heard comments from Ms. Tina Butcher (NIST OWM), submitter of the item, who provided a history of the item. She noted that the proposal was modified based on input from the Measuring Sector last fall and was modified again following the Interim Meeting to address comments made at that meeting. OWM believes the item is ready for a vote.

Mr. Michael Keilty (Endress + Hauser) commented that the Measuring Sector has not reviewed the current proposal. He also noted his equipment includes internal components such as a (circuit) board that could be removed and replaced and questioned how this would apply to his equipment.

Mr. Lou Straub (Fairbanks), speaking on behalf of the Scale Manufacturers Association (SMA) expressed appreciation for the changes in response to the comments; however, SMA has not had the opportunity to review the revised proposal and can't comment on the current version. He will take the revised proposal to their next meeting and ask for input.

In response to Mr. Keilty's comment, Ms. Butcher stated the proposal is not intended to address the fact that all devices have parts that can be disassembled and replaced. This proposal specifically applies to devices that are designed to be configured with "readily-removable" media such as memory cards, flash drives, or other media. She agreed the Measuring Sector has not seen the current proposal however, the item has been included on the Sector's agenda for their next meeting under the "as time allows" section to provide the Sector the opportunity to review it. Ms. Bucher added that the Sector's input is welcome.

WWMA recommends the item be designated as a Voting item on the NCWM S&T Committee's agenda.

NEWMA: - 2018 Fall Interim Meeting. During its open hearing, NEWMA received a comment from Mr. Mike Sikula (New York) stating that in this day and age, a printer and a printed paper copy should not be a requirement and should be removed (page 14 G.S.8.2). Also, there is duplication of this from general code to other codes that he believes is redundant.

During its work session, NEWMA discussed the comment received and while they believe printers will eventually be phased out of many transactions, that time has not quite arrived. NEWMA recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. Mr. Russ Vires (representing the SMA) stated that the SMA supports the item and thanks the committee for addressing their concerns. Mr. Mike Sikula (NY) Commented that people don't want paper receipts and paperless is the future. NY still supports the block but wants paperless to be on the radar. Mr. Randy Moses (Wayne Fueling Systems) Supports NY comments. Mr. Walt Remmert (PA) Supports NY comments. Audit trail still created and should be available electronically. Mr. Rick Harshman (NIST) pointed out that the proposal also provides the option for electronic receipts in addition to a printed receipt. Mr. Randy Moses (Wayne Fueling Systems) Shared that customers who want receipts will eventually be forced to go inside rather than receive them at the pump. Mr. John Barton (NIST) provided some background information for reference; this originated from the grain moisture meter NTEP Sector where, for those types of devices, it is important to keep track of the often-updated calibrations. Mr. Mike Sikula, (NY) does not believe inspectors will use the paper audit trails. He agrees the information is important, but it needs a different method to be obtained. Mr. Jim McEnery, (CT) commented that scales have an electronic feature to record and log events and that he can already access. Mr. Rick Harshman (NIST) believes printed tickets may be easier to use for an audit trail than other electronic methods, explaining that looking at the screen of a phone provides a relatively small viewable display.

Mr. Randy Moses (Wayne Fueling Systems) commented that if it is on a printed ticket it will be the narrow width of receipt paper so a spreadsheet on a tablet or other device could be much easier to use. The committee recognizes opposition of a printed copy and recommends this as a Voting item on the NCWM S&T Committee agenda, while keeping in mind concerns for the future.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from the Scale Manufacturers Association (SMA) that they look forward to the work being done on this item. The SWMA also heard from NIST to provide an explanation as to the intent of the proposal. The submitter (NIST OWM) believes that the item is fully developed.

The SWMA feels that that there is no additional work that needs to be done on this item.

CWMA: - 2018 Fall Interim Meeting. No comments were heard. The CWMA feels this item is fully developed and ready for voting.

2019 Spring Annual Meeting. Mr. Russ Vires (SMA) supports the item. Ms. Diane Lee (NIST OWM) believes the item is fully developed.

SMA: - The SMA initially opposed this item due to the use of the term "configuration" in the proposed paragraph S.1.11.1. "Devices and Systems Adjusted Using a Removable Digital Storage Device." They opposed this item primarily because an industry-accepted definition for "configuration" included some features (considered to be configuration parameters) that were not required to be sealed. At their 2018 Fall Meeting, the SMA voiced support for this item when they recognized that the efforts of the Committee satisfactorily addressed their earlier concerns.

NTEP Grain Sector: The Grain Analyzer Sector supports this item.

BLOCK 4 ITEMS (B4) AUTOMATIC TIMEOUT SPECIFICATIONS

- **B4: MFM-3** **V** **S.2.9. Automatic Timeout – Pay-At-Retail Motor-Fuel Devices.**
- **B4: HGM-4** **V** **S.2.8. Automatic Timeout – Pay-At-Vehicle Fuel Dispensers.**
- **B4: EVF-2** **V** **S.2.8. Automatic Timeout – Pay-At-EVSE.**

Organization (* not submitted)	B4 – Automatic Timeout Specifications (3 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
NCWM S&T Committee Interim	✓						

NIST OWM: - As the submitter of this proposal, OWM intends to address the possible fraudulent use of commercial measuring devices by recommending the changes proposed. While paragraph G-S.2. in Handbook 44’s General Code is recognized as the requirement addressing fraudulent use for all types of devices, this proposal addresses the problem specifically as it relates to dispensers for vehicle refueling. OWM has recognized a potential risk for fraud when these dispensers are authorized using electronic payment means such as credit or debit cards. The risk identified is that, if the dispenser is not activated following its authorization, the device remains available for use indefinitely unless it is de-authorized. OWM believes there is a potential for the owner of the credit/debit card used to authorize the dispenser to become distracted or to be delayed in activating the dispenser for a period of time that would allow another person to use the dispenser.

The proposed addition of new specification requirements in Sections 3.37., 3.39., and 3.40. in Handbook 44 will require a “time-out” of the devices if not activated within two-minutes after authorization. OWM believes this limit will provide the operator enough time to access the controls on the dispenser, make any selections available, and to activate the dispenser before the “time-out” would occur. This limit of two-minutes would also serve to reduce the amount of time presenting an opportunity for fraudulent use of the dispenser. OWM believes by requiring a time limit for the period of time permitted after a dispenser is authorized and until it is activated (by dispensing product), the risk for fraud will be mitigated.

OWM notes that a change was adopted in 2016 that required a “time-out” feature in the Handbook 44 LMD Code and that this proposal, if adopted will align the Mass Flow Meters Code, the Hydrogen Gas-Measuring Devices Code, and the Electric Vehicle Fueling Systems Code with the LMD Code. OWM also notes that this proposal will align Handbook 44 requirements with practices that NTEP evaluators have been following for a number of years.

While these changes are proposed as nonretroactive requirements which would have an effective date of January 1, 2020, the General Code requirement in paragraph G-S.2. will serve regulatory officials in the prevention of fraudulent use in the interim period.

NIST OWM also concurs with the WWMA’s findings that retail motor-fuel dispensing systems that fall under NIST HB 44 Section 3.32 LPG and Anhydrous Ammonia Liquid-Measuring Devices Code should also be subject to similar requirements as corresponding other vehicle fueling systems in Sections 3.30, 3.37, 3.39, and 3.40. to ensure customers’ credit- and debit cards do not remain authorized indefinitely. Consequently, NIST OWM supports the WWMA recommendation to include a proposed new Automatic Timeout – Pay-At-Pump Retail Motor-Fuel Devices requirement in Section 3.32. Since the January 2019 S&T Committee did not modify the proposal to include the WWMA’s recommended LPG timeout application, NIST OWM highly recommends the S&T Committee consider the LPG timeout feature as a new item for a vote in 2020. OWM also suggests alternative language for a timeout requirement that addresses stationary, vehicle mounted, and retail motor-fuel LPG devices as follows:

S.2.6. Automatic Timeout.

S.2.6.1. Stationary (Other than Stationary Retail Motor-Fuel Dispensers) and Vehicle-Mounted Meters, Electronic. – For individual deliveries, if there is no product flow for three minutes the transaction must be completed before additional product flow is allowed. The 3-minute timeout shall be a sealable feature on of an indicator.

[Nonretroactive as of 2021]

(Added 2020)

S.1.5-82.6.2. Automatic Timeout – Pay-At-Pump Retail Motor-Fuel Devices. – Once a device has been authorized, it must de-authorize within two minutes if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than two minutes.

[Nonretroactive as of January 1, 2021]

(Added 2020)

WWMA: - 2018 Fall Annual Meeting. WWMA heard from Ms. Tina Butcher (NIST OWM) who explained that this series of proposals are intended to align the codes referenced in this block with a corresponding requirement added to the Liquid-Measuring Devices Code in 2016. The proposal helps ensure a consumer's credit card does not remain activated for an indefinite period of time should the system not be used to deliver product. In reviewing this proposal prior to the WWMA meeting, it was recognized that the LPG and Anhydrous Ammonia Liquid-Measuring Devices Code is also lacking a corresponding requirement. Should the WWMA be amenable to forwarding this block of items, she suggested that the proposal include a recommendation to add a corresponding requirement to the LPG Code.

The WWMA heard no comments in opposition to the item and acknowledged this block of items will serve to align the measuring codes as they apply to retail motor-fuel applications. WWMA agreed that retail motor-fuel dispensing systems that fall under the LPG and Anhydrous Ammonia Liquid-Measuring Devices Code should be subject to similar requirements to ensure consumers' cards do not remain authorized indefinitely. WWMA recommends a corresponding paragraph be included in LPG and Anhydrous Ammonia Liquid-Measuring Devices Code.

With the addition of the additional proposed paragraph, WWMA recommends this block of items be designated as a Voting item on the NCWM S&T Committee's agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, a comment from Mr. Mike Sikula (New York) was heard and in which he stated that he would like to make sure this code makes consideration for people with disabilities. Two minutes may not be enough time for a disabled person. During the work session, NEWMA determined that by the time a person had exited the vehicle and swiped their card, this amount of time was sufficient to both: a) allow them to select a grade and remove the nozzle; or to b) change their mind and leave without so much time left that another person could fraudulently use the card had it not been canceled. NEWMA recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. A single comment was heard from Mr. Jim McEnery (CT) in support of this item. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard background on this item from NIST that this paragraph was added into the LMD code in 2016. The submitter believes this item should be added to the LPG code and that the item was fully developed and would request that it be sent forward as a voting item.

SWMA agrees with the commenter and recommends moving it forward as a Voting item.

CWMA: - 2018 Fall Interim Meeting. Mr. Charles Stutesman (KS) state that his understanding of the item is to make the codes in this block uniform with the LMD code, but he questions the length of the time limit and the effect it may have on elderly and physically challenged. Mr. Michael Keilty (Endress + Hauser) stated the original proposal was three minutes, but the NCWM adopted two minutes. CWMA recommends this item move forward as voting.

2019 Spring Annual Meeting. Mr. Charlie Stutesman (Kansas W&M) expressed concern regarding the limited amount of time before deactivation of the device.

BLOCK 5 ITEMS (B5) REPEATABILITY TESTS AND TOLERANCES

- **B5: LMD-2** V N.4.1.2. N.4.6. Repeatability Tests. and T.3. Repeatability.
- **B5: VTM-3** V N.4.1.2. N.4.6. Repeatability Tests. and T.3. Repeatability.
- **B5: LPG-4** V N.4.1.2. N.4.6. Repeatability Tests. and T.3. Repeatability.
- **B5: HGV-2** V N.4.1.2. N.4.3. Repeatability Tests. and T.2. Repeatability.
- **B5: CLM-3** V N.5.1.1. N.5.3. Repeatability Tests. and T.4. Repeatability.
- **B5: MLK-2** V N.4.1.1. N.4.4. Repeatability Tests. and T.3. Repeatability.
- **B5: WTR-2** V N.4.1.1. N.4.4. Repeatability Tests.
- **B5: MFM-5** V N.6.1.1. N.6.3. Repeatability Tests. and T.3. Repeatability. **B5: CDL-4**
V N.4.1.1. N.4.5. Repeatability Tests. and T.2.1. Repeatability.
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- **B5: HGM-5** V N.6.1.1. N.6.2. Repeatability Tests. and T.3. Repeatability.

Organization (* not submitted)	B5 – Repeatability Tests and Tolerance (10 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓ (w/chngs)						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)		✓					
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
NCWM S&T Committee Interim	✓						

NIST OWM: - OWM concurs with the need to make modifications to the measuring codes to clarify the application of repeatability criteria and believes the proposed changes accomplish this clarification.

OWM offers the additional following points (some of which were made at previous NCWM meetings) for consideration:

- In adding a separate “repeatability tolerance” to the measuring codes some years ago, the W&M community felt strongly measuring systems should be able to repeat indications within a tighter limit than the basic tolerances.
- Systems must be able to provide repeatable measurements under all conditions of use, not just at the normal flow rate and not just during type evaluation.
- Field officials should not be precluded from conducting a repeatability test at all flow rates within the rated flow range of the meter. The opportunity to conduct a repeatability test at different flow rates should not be limited to type evaluation.
- Regarding past concerns about the tolerance being too stringent to apply at lower flow rates, OWM notes, based on discussions at past MMA meetings, that repeatability tolerance is based on the applicable “normal” or “special” test maintenance tolerances. Thus, the tolerance structure does allow for a larger maintenance tolerance (and, therefore, a larger repeatability tolerance) for most VTMs.
- Tests run at reduced flow rates often reveal problems with meter repeatability that may not be observed at normal flow rates.

- OWM agrees that repeatability tests should not be conducted when mechanical ATC systems are activated. For systems equipped with electronic ATC, the calculation of the net value is determined based on a mathematical calculation, so the exemption should be unnecessary for those systems.
- OWM concurs that the initial placement of the repeatability test under N.4.1. Normal Tests indicates the test is to be run at a normal flow rate; however, it is not clear that this limitation was originally intended, either from past S&T Committee or NTEP Measuring Sector summaries.

OWM concurs with the proposed renumbering of the paragraphs from under the “Normal Test” section as shown in the current proposal. OWM recommends however, that the Committee ensure the numbering of the paragraphs included (and any subsequent paragraphs) in the proposal are correct and consistent with the 2019 version of HB44. We have identified the following paragraphs in the proposal where the renumbering is not consistent with the intent and/or the proper sequence in the 2019 edition of HB44:

- Item VTM-3, the renumbering of the paragraph titled “Repeatability Tests” in the item under consideration is recommended to be changed from N.4.6. to N.4.7. The same change is recommended for inclusion in the amendment of T.3. Repeatability listed under that same item.
- Item LPG-4, the renumbering of the paragraph “Repeatability Tests” in the item under consideration is recommended to be changed from N.4.6. to N.4.4. The same change is recommended for inclusion in the amendment of T.3. Repeatability listed under that same item.
- Item HGM-5, OWM notes that the amendment to the numbering in the title of the paragraph (N.6.1.1. changed to N.6.2.) does not reflect N.6.1.1. as being deleted using “strike-through” text.

WWMA: - 2018 Fall Annual Meeting. The WWMA heard comments from Ms. Tina Butcher (NIST OWM) who noted there has been good progress on these items and the revised language will clear up confusion about how the repeatability requirements are to be applied and eliminate possible inconsistencies between Handbook 44 and NCWM Publication 14. OWM’s comments included that the intent of the current proposal is to move the current repeatability paragraphs in the proposal out from under the “Normal Tests” heading and assign a new number to them. Each newly numbered paragraph is also proposed to include some additional language from the original paragraph.

Hearing no comments in opposition to the items proposed in the block the WWMA agreed the proposed changes will provide necessary clarifications to help ensure proper application of the repeatability criteria. The WWMA also agreed with comments heard that the current paragraphs should correctly appear as stricken text and the newly numbered paragraph should appear as bold, underlined text to identify them as new paragraphs. The following example illustrates how the WWMA believes the proposed changes should appear in each respective code included in this proposal.

Delete existing paragraph “Repeatability Tests.”

~~**N.4.1.2. Repeatability Tests. – Tests for repeatability should include a minimum of three consecutive test drafts of approximately the same size and be conducted under controlled conditions where variations in factors such as temperature, pressure, and flow rate are reduced to the extent that they will not affect the results obtained.**~~

~~(Added 2001)~~

Add a new paragraph “Repeatability Tests” (including content from the previous deleted paragraph along with additional criteria):

N.4.6. Repeatability Tests. – Tests for repeatability should include a minimum of three consecutive test drafts of approximately the same size and be conducted under controlled conditions where variations in factors such as temperature, pressure, and flow rate are reduced to the extent that they will not affect the results obtained. When conducting the tests, the flow rates shall be within the minimum and maximum discharge rates as marked by the manufacturer. For devices with no marked minimum and maximum flow rates, the minimum discharge rates shall be as specified in N.4.2.1. or N.4.2.2. and the maximum discharge rates shall be the maximum discharge rate developed under the conditions of the installation. For devices

equipped with an automatic temperature compensator, the results shall be based on uncompensated (gross) volume, i.e. with the temperature compensator deactivated.

(Added 20XX)

The WWMA recommends the items in this block of items be designated as Voting items on the NCWM S&T Committee’s Agenda.

NEWMA: - 2018 Fall Interim Meeting. During the open hearings, no comments were heard. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. No comments were heard during the open hearing. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA noted that all the individual items (with the exception of the first item in the block – LMD-2) are incorrectly identified in the title. The “Item under Consideration” for each of the remaining specific device codes listed in this proposal incorrectly states the changes apply to the LMD Code in the SWMA’s Annual Meeting agenda, when in fact the application of each proposed change should refer to each of these respective codes. Hearing from NIST OWM in the open hearings, the SWMA agrees that the item is fully developed and recommends it as a Voting item.

CWMA: - 2018 Fall Interim Meeting. During the open hearings, Mr. Charles Stutesman (KS) stated Handbook 44 allows for special tests if an issue is suspected. Therefore, he believes this proposal may not be necessary, and should remain developing. CWMA recommends this item remain developing because field testing can mirror NTEP evaluation procedures, but in this case may not be appropriate.

2019 Spring Annual Meeting. One comment was heard that the state of Kansas will support the item.

LMD – LIQUID MEASURING DEVICES

- **LMD-3 V A.1. General., S.2.5. Zero-Set-Back Interlock, for Retail Motor-Fuel Devices., S.4. Marking Requirements., S.5. Zero-Set-Back Interlock, for Retail Motor-Fuel Devices., UR.2.4. Diversion of Liquid Flow. and UR.2.5. Product Storage Identification.**

Organization (* not submitted)	LMD - 3 – Liquid Measuring Devices (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM (w/chgs.)	✓						
WWMA (w/chgs.)	✓						
SWMA	✓						
CWMA Interim (Fall)		✓					
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
NCWM S&T Committee Interim	✓						

NIST OWM: OWM received an inquiry in reference to which requirements to apply to devices that measure diesel exhaust fluid (DEF). Currently there are paragraphs in the LMD code that specifically apply to motor fuel but should also apply to other products dispensed in similar retail deliveries of other types of liquid. Although the inquiry was concerning DEF, during the development of the proposed language NIST OWM considered that other retail products may be dispensed using the same method as what is used for motor fuel. The NIST OWM proposed language is broad to include all retail products, so that a laundry list of products is not needed when other products are dispensed using the same method.

The WWMA expressed concerns with broadening the requirements to other products such as water dispensing systems. Although, NIST OWM questions why all retail dispensing systems should not be subjected to the requirements in the LMD code, NIST agrees with the WWMA’s revisions to the proposal to include a specific reference to DEF in an effort to advance this proposal. There is a growing number of other liquids being dispensed in retail applications. Consequently, OWM recommends that the community may want to consider in a future proposal, whether some of the requirements should be applied more broadly.

WWMA: - 2018 Fall Annual Meeting. Ms. Tina Butcher (NIST OWM), submitter of the item provided an overview of the item. She noted a number of requirements in the LMD Code should be applied to DEF dispensers which are used in the same type of applications as Retail Motor-Fuel Dispensers. However, DEF is not a motor fuel and the application of those requirements has been challenged.

Mr. Kurt Floren (LA County) and Mr. Brett Gurney (UT) expressed concerns that broadening these paragraphs to “retail devices” may not be appropriate because it would encompass other devices such as water dispensing systems. Mr. Gurney commented that if the intent of the original issue was to address DEF, perhaps a solution would be to add only references to DEF. Ms. Butcher questioned why those devices shouldn’t be subject to the same requirements and noted the community may want to consider whether some of those requirements should be applied more broadly at some point. However, she agreed that limiting the changes to specifically “DEF” would be an acceptable solution to the immediate problem.

During its work session, the WWMA expressed concern about broadening these requirements to encompass all retail devices, though in some cases it may be appropriate. To avoid these concerns, it was recommended to replace the proposal shown in the WWMA Agenda in the Item Under Consideration with the following.

A.1. General. – This code applies to:

- (a) devices used for the measurement of liquids, including **but not limited to** liquid fuels and lubricants, and
- (b) wholesale devices used for the measurement and delivery of agri-chemical liquids such as fertilizers, feeds, herbicides, pesticides, insecticides, fungicides, and defoliant.

(Added 1985)

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S.1.6.10. Automatic Timeout – Pay-At-Pump for Retail Motor-Fuel and Diesel Exhaust Fluid Devices. – *Once a device has been authorized, it must de-authorize within two minutes if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than two minutes*

[Nonretroactive as of January 1, 2017]

(Added 2016) (**Amended 20XX**)

S.2.5. Zero-Set-Back Interlock, for Retail Motor-Fuel and Diesel Exhaust Fluid Devices. – A device shall be constructed so that:

- (a) after a delivery cycle has been completed by moving the starting lever to any position that shuts off the device, an automatic interlock prevents a subsequent delivery until the indicating elements, and recording elements if the device is equipped and activated to record, have been returned to their zero positions;
- (b) the discharge nozzle cannot be returned to its designed hanging position (that is, any position where the tip of the nozzle is placed in its designed receptacle and the lock can be inserted) until the starting lever is in its designed shut-off position and the zero-set-back interlock has been engaged; and

- (c) in a system with more than one dispenser supplied by a single pump, an effective automatic control valve in each dispenser prevents product from being delivered until the indicating elements on that dispenser are in a correct zero position.

(Amended 1981, ~~and~~ 1985, and 20XX)

S.4.4.1. Discharge Rates. – *On a retail device with a designed maximum discharge rate of 115 L (30 gal) per minute or greater, the maximum and minimum discharge rates shall be marked in accordance with S.4.4.2. Location of Marking Information; Retail Motor-Fuel and Diesel Exhaust Fluid Dispensers. The marked minimum discharge rate shall not exceed 20 % of the marked maximum discharge rate.*

[Nonretroactive as of January 1, 1985]

(Added 1984) (Amended 2003 and 20XX)

S.4.4.2. Location of Marking Information; for Retail Motor-Fuel Diesel Exhaust Fluid Dispensers. – *The marking information required in the General Code, paragraph G-S.1. Identification shall appear as follows:*

- (a) *within 60 cm (24 in) to 150 cm (60 in) from the base of the dispenser for system in a dispenser;*
- (b) *either internally and/or externally provided the information is permanent and easily read; and*
- (c) *on a portion of the device that cannot be readily removed or interchanged (i.e., not on a service access panel).*

Note: *The use of a dispenser key or tool to access internal marking information is permitted for retail liquid-measuring devices.*

[Nonretroactive as of January 1, 2003]

(Added 2002) (Amended 2004 and 20XX)

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S.5. Totalizers for Retail Motor-Fuel and Diesel Exhaust Fluid Dispensers. – *Retail ~~motor-fuel~~ dispensers shall be equipped with a non-resettable totalizer for the quantity delivered through the metering device.*

[Nonretroactive as of January 1, 1995]

(Added 1993) (Amended 1994 and 20XX)

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N.4.2.2. Retail Motor-Fuel and Diesel Exhaust Fluid Devices.

- (a) Devices without a marked minimum flow-rate shall have a “special” test performed at the slower of the following rates:
 - (1) 19 L (5 gal) per minute; or
 - (2) the minimum discharge rate at which the device will deliver when equipped with an automatic discharge nozzle set at its slowest setting.
- (b) Devices with a marked minimum flow-rate shall have a “special” test performed at or near the marked minimum flow rate.

(Added 1984) (Amended 2005 and 20XX)

Make no changes to UR.2.4.

UR.2.5. Product Storage Identification.

(a) The fill connection for any petroleum product or **other product** storage tank or vessel supplying **petroleum product or other products motor-fuel devices** shall be permanently, plainly, and visibly marked as to product contained.

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(Added 1975) (Amended 1976, **and 20XX**)

The WWMA recommends the proposal, with the modifications as shown above be designated as a Voting item on the NCWM S&T Committee’s Agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, NEWMA received no comments. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. No comments were heard during the open hearing. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from NIST OWM that the proposal’s intent is to remove the words “Motor Fuel” to encompass products such as Diesel Exhaust Fluid (DEF) or other products not identified as “Motor Fuel.” A representative of Arkansas rose to discourage the use of acronyms in the language. (ex. DEF should read Diesel Exhaust Fluid in section N.4.2.2.)

SWMA agrees with the proposal and the following change: ~~DEF~~ Diesel Exhaust Fluid in the item. SWMA also recommends the item as a Voting item

CWMA: - 2018 Fall Interim Meeting. Mr. Charles Stutesman (KS) stated the terms Retail Motor Fuel Device and Retail Motor Fuel Dispenser need clarification. CWMA found several inconsistencies throughout the Handbook 44 LMD Code and suggests that the term “dispenser” be replaced with “device” in addition to striking “motor fuel” as recommended in the proposal. There may also be an unintended consequence that would eliminate the exemption for special test tolerances for RMFD.

CWMA recommends this moving forward as a developing item.

2019 Spring Annual Meeting. Mr. Greg Vanderplaats (MN W&M) suggested that the word “fueling” in UR.2.4. be changed. The Committee believes an amendment may be necessary to achieve the proposed change.

• **LMD-4 W Airport Refueling Systems – Agreement of Indications and Reset to Zero**

The S&T Committee has withdrawn this item from the agenda.

• **LMD-5 V UR.3.4. Printed Ticket**

Organization (* not submitted)	LMD - 5 – Liquid Measuring Devices (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓ (w/chgs.)						
WWMA		✓					
SWMA			✓				
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)		✓					
NEWMA Annual (Spring)	✓						

Organization (* not submitted)	LMD - 5 – Liquid Measuring Devices (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
MMA (Industry)							
NCWM S&T Committee Interim	✓						

NIST OWM: - OWM agrees some exemption may be appropriate for small stations where there would be no difficulty in determining which dispenser is used for a given transaction. For example, if there is only one dispenser at a station, it seems unnecessary to require a dispenser number to be designated on the receipt.

However, OWM concurs with questions raised during some of the regional weights and measures association meetings as well as at the September 2018 Measuring Sector meeting regarding how to apply the proposed exemption.

OWM concurs with the concerns raised during the Measuring Sector’s discussion. Even a single “dispenser” might be equipped with multiple meters, and those meters may serve different sides of a dispenser. For example, Side A of a dispenser might include a low-grade and high-grade meter and Side B of the same dispenser might include an additional low-grade meter and an additional high-grade meter. If such a dispenser were exempt, it might be difficult to determine which meter was in question in the case of a dispute.

OWM suggests modifying the exemption by striking the proposed text as follows and inserting the double underlined alternative:

Establishments with a single dispenser having multiple meters or not more than one individual dispenser with a single meter for each product delivered equipped with a single-hose and single meter are exempt from the dispenser designation requirement.

- OWM also recommends modifying the effective dates to make it clear that the entire paragraph would become retroactive in 2023.
- The revised proposal would read as follows:

UR.3.4. Printed Ticket. – The total price, the total volume of the delivery, the price per liter or gallon, *and a corresponding alpha or numeric dispenser designation shall be shown*, either printed by the device or in clear hand script, on any printed ticket issued by a device and containing any one of these.

Establishments with a single dispenser equipped with a single-hose and single meter are exempt from the dispenser designation requirement.

(Amended, 2001 and 2019) [Nonretroactive as of January 1, 2021; to become retroactive as of January 1, 2023]

2018 NTEP Measuring Sector Meeting: The following points were raised in the Measuring Sector’s discussion of the proposed exemption to UR.3.4.

- The Sector also discussed a proposal under consideration for the 2019 NCWM cycle to add a nonretroactive exemption for establishments with a single dispenser having multiple meters or not more than one individual dispenser with a single meter for each product delivered. A question was raised about the purpose of the exception in paragraph UR.3.4. Printed Ticket as it applies to a single multi-product dispenser. Such a device often has two sides, which means that not including the dispenser designation on receipts issued by such a device will not clearly indicate the hose and meter used by a customer.
- It was suggested a better approach would have been to make the exception applicable only to single-hose, single-meter dispensers.
- The requirement should be related to the hose, not the meter.

For retail motor-fuel dispensers (RMFDs) interfaced with point-of-sale (POS) systems, this information is controlled by the POS system software, not the RMFD. Thus, a specific model of RMFD at one station might print out the correct information, but the same model of RMFD may not print out the correct information at another station. It is dependent on the programming of the POS system, not the RMFD design or functionality. The NTEP Director clarified these requirements apply to card-activated RMFDs, not just those interfaced with POS systems.

Although, the S&T Committee during the 2019 Interim meeting did not discuss the NIST, OWM revisions to the proposed language or the recommendation from the Measuring Sector, NIST OWM continues to recommend its revised proposal as provided in our analysis.

WWMA: - 2018 Fall Annual Meeting. WWMA heard no comments on this item during its open hearings. During the work session, concerns were expressed that this appears to be attempting to provide an exemption from the provisions of paragraphs S.1.6.7. and S.1.6.8. which currently requires the pump number be included on receipts for equipment installed as of 2021. WWMA believes additional work is required on this item to ensure there is no confusion about the application of the proposed requirements. Consequently, WWMA recommends this be designated as a Developing item on the NCWM S&T Committee's Agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, NEWMA received a comment from Mr. Walt Remmert (Pennsylvania) who thought that a paperless option for a receipt should be considered.

NEWMA believes this item has merit but that the submitter should take regional comments in to consideration and continue developing. NEWMA recommends this Item be designated a Developing status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. No comments were heard during the open hearing. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from Arkansas that dispensers were not required to be numbered so this would prevent this item from being practical.

SWMA agrees with the comments and recommends the item be withdrawn.

CWMA: - 2018 Fall Interim Meeting. Mr. Tom Konst (Carroll County) explained this item and requested that the item be amended as follows:

UR.3.4. Printed Ticket. – The total price, the total volume of the delivery, the price per liter or gallon, *and a corresponding alpha or numeric dispenser designation shall be shown*, either printed by the device or in clear hand script, on any printed ticket issued by a device and containing any one of these.

(Amended, 2001 and 2019) (*Nonretroactive as of January 1, 2021 becoming Retroactive as of January 1, 2023*)

Establishments with a single dispenser having multiple meters or not more than one individual dispenser with a single meter for each product delivered are exempt from the dispenser designation requirement. (Retroactive as of January 1, 2023XX.) (Added 2020)

CWMA recommends this be a voting item.

2019 Spring Annual Meeting. Mr. Tom Konst (Carroll County Ohio) expressed support for this item. Ms. Diane Lee (NIST OWM) suggests modifying UR.3.4. in the proposal as follows:

Establishments with a single dispenser ~~having multiple meters or not more than one individual dispenser with a single meter for each product delivered~~ **equipped with a single-hose and single meter** are exempt from the dispenser designation requirement.

Charlie Stutesman, Kansas W&M, supports this item as proposed.

VTM – VEHICLE TANK METERS

- **VTM-1 V S.3.1.1. Means for Clearing the Discharge Hose and UR.2.6. Clearing the Discharge Hose.**

Organization (* not submitted)	VTM - 1 – Vehicle Tank Meters (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA	✓						
SWMA	✓ (w/chg. to address heating oil only)				✓		
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)					✓		
NEWMA Annual (Spring)	✓ (w/chg.)						
MMA (Industry)							
NCWM S&T Committee Interim	✓						

NIST OWM: OWM agrees with the WWMA, CWMA, and NEWMA that this item should be accepted as a voting item. NIST OWM also agrees with making the added requirements in “f” and “g” non-retroactive as of January 1, 2022 and retroactive as of January 1, 2023 to allow time for manufacturers of flush systems to incorporate the safeguards into their system and allows States the time to work with the manufacturers and the different metering systems. NIST OWM continues to provide the following review of the operation of the equipment and proposed changes:

- At the 2018 NCWM Annual Meeting the Conference voted to allow an exemption to S.3.1. for Manifold Flush Systems, which is currently in the 2019 NIST HB 44 VTM code.
- S.3.1. states that “no means” shall be provided to divert liquid from the measuring chamber of the meter or the discharge line.
- A manifold flush system allows liquid to be diverted from the discharge line on single hose multi-compartment VTMs so that liquid of one product is not mixed with liquid of another in the discharge line.
- Without a manifold flush system, the operator must manually return the product to the correct compartment to clear the discharge line before using another product.
- There are safety hazards with manually returning the product to storage (operator climbing on top of tank and lifting hose to return the product. There are also safety concerns when not properly clearing the discharge lines prior to delivering a different product.
- Because of these safety concerns it was reported that more of these systems will likely be installed on single hose multicompartments trucks.
- Although safety is a high priority, the “means” used to return product back to storage is not as visible and makes facilitation of fraud a high possibility.
- The additional changes proposed are intended to ensure such systems are designed such that they do not facilitate fraud; help ensure owners understand their responsibilities when installing such a system; and ensure uniformity in enforcement throughout the country.
- OWM notes that the proposed new language under bullet (f) and all language proposed as the new bullet (g) should be presented in italicized font to indicate a non-retroactive status.

WWMA: - 2018 Fall Annual Meeting. Ms. Tina Butcher (NIST OWM), one of the two submitters of the item outlined the history of the proposal, noting the proposed changes are a follow-on to the related item voted on and adopted at the 2018 NCWM Annual Meeting to address the appropriate use of these systems. At that same meeting, NIST OWM recommended additional changes as shown in the current proposal to help ensure systems are designed with features that help to minimize the potential for fraud when these manifold systems are in use and to ensure owners/operators

understand what criteria they must adhere to when using the device. The two submitters of this item (OWM and NY) believe these changes are ready for consideration as Voting items.

Hearing no other comments from the body on this item, WWMA recommends the item be designated as a Voting item on the NCWM S&T Committee’s Agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, NEWMA received a comment from Mr. Mike Sikula (New York) expressing support for the direction of this proposal. Mr. Sikula stated he is not aware of any flush systems that communicate with a metering system at this time and recommends this item continue as an Informational item in order to gather more information from meter manufacturers.

NEWMA recommends this item remain with an Informational status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. Mr. Mike Sikula (NY) spoke in support of this item but believes the effective date should be 3 years out. Expects to have to work with every manufacturer and each metering system. He states there is a difficulty associated for mechanical systems working with electronic commands. He supports a 3 year effective date and nonretroactive at this time. Mr. Jim McEnery (CT) commented that CT does not support this. Mr. Rick Harshman (NIST) included that it is important to note this is on multicompartment trucks with a single meter, which not all states have. The committee recommends this as a Voting item on the NCWM S&T Committee agenda with the following changes to the shaded portions below:

(f) clear means, such as an indicator light or audible alarm, is used to identify when the valve is in use on both quantity indications and any associated recorded representations (e.g., using such terms as “flushing mode” or “not for commercial use”);
[nonretroactive as of January 1, 2022 to become retroactive January 1, 2025]

(g) effective, automatic means shall be provided to prevent passage of liquid through any such flush system during normal operation of the measuring system; and
[nonretroactive January 1, 2022 to become retroactive January 1, 2025]

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from a representative of Florida that although he understands that this proposal was submitted to allow companies to purge similar products but warned of cross-contamination of non-compatible products (Diesel and Gasoline) when a single hose and single meter was used for a multiple-compartment truck. NIST OWM believes the item to be fully developed.

SWMA would like for the proposal to state this was meant for heating oil product applications only. With this addressing the heating oil application they are recommending it be a Voting item.

CWMA: - 2018 Fall Interim Meeting. No comments were heard. CWMA recommends this be a voting item with clarification of when this will be implemented, and what requirements are Non-retroactive.

2019 Spring Annual Meeting. No additional comments were heard.

LPG – LPG AND ANHYDROUS AMMONIA LIQUID-MEASURING DEVICES

- **LPG-2 V S.2.5. Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic**

Organization (* not submitted)	LPG - 2 – LPG and Anhydrous Ammonia Liquid Measuring Devices (1 Items), Initial Status – D 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA		✓					
SWMA	✓ (w/chg.)						

Organization (* not submitted)	LPG - 2 – LPG and Anhydrous Ammonia Liquid Measuring Devices (1 Items), Initial Status – D 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
CWMA Interim (Fall)		✓					
CWMA (Annual) (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA (Annual) (Spring)	✓						
NCWM S&T Committee Interim	✓						

NIST OWM: OWM offers the following points for consideration.

- As noted at past meetings, OWM agrees with the submitter that additional requirements should be added to the LPG code for zero-set-back interlock for electronic stationary (other than stationary retail motor fuel dispensers) and vehicle-mounted meters.
- OWM recommends the addition of a specific nonretroactive date to allow manufacturers to consider the proposed timeline for implementation and, based on consultation with the submitter, recommends a date of 2021.
- As with the VTM Code paragraph on which the proposal was patterned, OWM notes the proposed requirement includes requirements to address both zero-set-back interlock and time-out features in a single paragraph.
- OWM notes a paragraph was added to the LMD Code in 2016 to include a provision for an automatic timeout on “pay-at-pump” retail motor fuel dispensers where payment is rendered via a card at the dispenser. A corresponding paragraph was *not* added to the LPG code to address LPG retail motor-fuel dispensers. The proposal should include language to mirror the corresponding LMD requirement for RMFDs.
- Unlike the VTM Code and the LMD Code, the LPG & NH₃ Code addresses both vehicle-mounted and stationary devices.
- OWM acknowledges the comments from CWMA and SWMA in reference to two-minute time out versus three-minute time out. A time out limit of three minutes aligns with the current VTM Code while a two-minute time out limit aligns with the current LMD Code for stationary devices.
- OWM does not believe that the current proposal should be delayed and recommends the Committee proceed with the current proposal as it sees fit. However, OWM also believes the requirements for zero-set-back interlock and time-out features need to be reformatted for clarity and consistency with other codes. Consequently, OWM recommends as a future item the following proposal to align corresponding requirements for stationary RMFDs and other stationary devices and vehicle-mounted applications with the LMD and VTM Codes. This proposal would address the zero-set-back interlock and timeout requirements in separate paragraphs as shown below. (Note this recommendation includes language for zero-set-back interlock requirements for stationary RMFDs which is already included in H44 as paragraph S.2.5. and is nonretroactive as of 2017.)

S.2.5. Zero-Set-Back Interlock for Stationary Retail Motor-Fuel Devices.

S.2.5.1. Zero-Set-Back Interlock, Stationary (Other than Stationary Retail Motor-Fuel Dispensers) and Vehicle-Mounted Meters, Electronic. - A device shall be so constructed~~so~~ that after an individual delivery or multiple deliveries at one location have been completed, an automatic interlock system shall engage to prevent a subsequent delivery until the indicating and, if equipped, recording elements have been returned to their zero position.

[Nonretroactive as of 2021]
(Added 2019)

S.2.5.2. Zero-Set-Back Interlock for Stationary Retail Motor-Fuel Devices. – A device shall be constructed so that:

- (a) after a delivery cycle has been completed by moving the starting lever to any position that shuts off the device, an automatic interlock prevents a subsequent delivery until the indicating elements and recording elements, if the device is equipped and activated to record, have been returned to their zero positions;
- (b) the discharge nozzle cannot be returned to its designed hanging position (that is, any position where the tip of the nozzle is placed in its designed receptacle and the lock can be inserted) until the starting lever is in its designed shut-off position and the zero-set-back interlock has been engaged; and
- (c) in a system with more than one dispenser supplied by a single pump, an effective automatic control valve in each dispenser prevents product from being delivered until the indicating elements on that dispenser are in a correct zero position.

[Nonretroactive as of January 1, 2017]

(Added 2016) (**Amended 2019**)

S.2.6. Automatic Timeout.

S.2.6.1. Stationary (Other than Stationary Retail Motor-Fuel Dispensers) and Vehicle-Mounted Meters, Electronic. For individual deliveries, if there is no product flow for three minutes the transaction must be completed before additional product flow is allowed. The 3-minute timeout shall be a sealable feature on of an indicator.

[**Nonretroactive as of 2021**]

(**Added 2019**)

S.2.6.2. Automatic Timeout Pay-at-Pump Retail Motor-Fuel Devices. – Once a device has been authorized, it must de-authorize within two minutes if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than two minutes.

[**Nonretroactive as of 2021**]

(**Added 2019**)

S.2.67. Thermometer Well. - ...

S.2.78. Automatic Temperature Compensation. – ...

WWMA: - 2018 Fall Annual Meeting. No comments were heard on this item during open hearings. During the work session, WWMA questioned whether equipment is available to meet this requirement in stationary applications. While it is appropriate to apply this requirement to electronic vehicle-mounted systems as is done in the Vehicle-Tank Meters Code, WWMA questions the impact on stationary devices currently in the field and believes the reference to “stationary” should be struck. WWMA believes additional input and possible modification is needed before recommending this item for Voting. Consequently, WWMA recommends this item be designated as Developing on the NCWM S&T Committee’s Agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, no comments were heard. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. No comments were heard during the open hearing. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from the submitter that they would like to see it as a Voting item. A representative of Arkansas stated he would like to see the auto time-out period stated in the requirement set to 2 minutes (rather than 3 minutes) to be in harmony with other codes. The submitter (MD) agreed to that change.

SWMA recommends moving this item forward as a voting item with the time-out period changed from 3 minute to 2 minutes.

CWMA: - 2018 Fall Interim Meeting. No comments were heard on this item. CWMA recommends this item be developing with clarification of the reasoning of the three-minute time-out versus the two-minute.

2019 Spring Annual Meeting. No additional comments were heard.

- **LPG-3 N.3. Test Drafts.**

LPG-3 has been incorporated into Block 1 for the 2019 NCWM Annual Meeting, see comments listed under the first item (GEN-3) included under the NEW Block 1.

MFM – MASS FLOW METERS

- **MFM-2 V S.1.3.3. Maximum Value of Quantity-Value divisions.**

Organization (* not submitted)	MFM - 2 – Mass Flow Meters (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
NCWM S&T Committee Interim	✓						

NIST OWM: - OWM comments were provided to the Committee in advance of the 2019 Interim Meeting and subsequently posted and made available on the NCWM website. Since February 2019 OWM has reconsidered the original proposal that appeared in the January 2019 NCWM Publication 15 and agrees with the alternative proposal that now appears in Publication 16. OWM acknowledges that all four regional weights and measures associations agreed the proposal should move forward as written for a vote in 2019 and believes this new proposal does not change that intent.

The original proposed modifications to MFM Code paragraph S.1.3.3. (b) were in essence housekeeping items intended to fully address 2016 changes that were made to the code. The proposal recommends modifying S.1.3.3. (b): 1) by removing the “gasoline liter equivalent or GLE” a unit that is no longer referenced in the code; and 2) to clarify that the maximum quantity-value for natural gas fuel sales in diesel gallon equivalent (DGE) units shall not exceed an increment of 0.001. These two actions were inadvertently omitted during the extensive 2016 deliberations that resulted in modification of the MFM Code to recognize diesel gallon equivalent units.

Specifying the maximum size of the unit recognized for the sale of a commodity is: 1) consistent across the handbook codes; 2) essential for the selection of suitable dispensing equipment; and 3) necessary to facilitate transparency in sales transactions and for making comparisons in fuel pricing. These modifications eliminate confusion, foster acceptance and proper use of the newest noncustomary unit introduced for sales of natural gas engine fuel.

In March 2019 NIST OWM consulted Dmitri Karimov (LC Controls) then proceeded with several slight modification to his alternative proposal for paragraph S.1.3.3. These collaborations resulted in reformatting the proposal in a way that OWM believes more clearly specifies the maximum permissible quantity value for “d” for the CNG and LNG applications. This alternative proposal is reflected in the Item Under Consideration. OWM notes that the reformatting of paragraph S.1.3.3 could well be considered as editorial change to what already appeared on the Publication 15 agenda and that it makes this requirement more easily understood.

OWM also recognizes that there is a gap in this requirement with-regard-to the maximum quantity-value division for gases other than CNG; however, OWM did not want to make any such corrective amendments at this time believing that this could jeopardize the proposal moving forward. OWM instead believe that amending this requirement to include reference to all other gases would best be done in the next NCWM cycle.

WWMA: - 2018 Fall Annual Meeting. Ms. Tina Butcher (NIST OWM) provided an overview of the item and its purpose noting its intent is to clean up some gaps in the language. Hearing no additional comments and no comments in opposition to the proposal, WWMA recommends this item be designated as Voting on the NCWM S&T Committee’s Agenda.

NEWMA: - 2018 Fall Interim Meeting. During the open hearings, NEWMA received no comments. Hearing no opposition or discussion on this item, the NEWMA S&T Committee believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. A comment was heard from Mr. Rick Harshman (NIST) clarifying that this is to clean up language left over from GGE items. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. A representative of NIST OWM stated to the SWMA that the item was housekeeping in nature and recommended that it be a voting item. SWMA agrees that this item is ready for a vote.

CWMA: - 2018 Fall Interim Meeting. No comments were heard. CWMA recommends this as a voting item.

2019 Spring Annual Meeting. No additional comments were heard.

• **MFM-4 V S.5.1. Location of Marking Information; Retail Motor-Fuel Dispensers.**

Organization (* not submitted)	MFM - 4 – Mass Flow Meters (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
NCWM S&T Committee Interim	✓						

NIST OWM: - OWM is the submitter of this proposal. The proposal would extend the provisions in Mass Flow Meters (MFM) Code, paragraph S.5.1 allowing for the use of a key or tool to access marking information located inside liquid retail motor-fuel dispensers to also apply to retail motor-fuel dispensers delivering compressed gases. OWM believes it noteworthy that the four regional weights and measures associations have unanimously recommended the proposal as a voting item in 2019.

Although General Code paragraph G-S.1. Identification specifies that required markings must be visible after installation, MFM Code paragraph S.5.1 provides a device-specific exemption by permitting the use of a dispenser key or tool to access internal marking information. This exception was included in the Liquefied Petroleum Gas and Anhydrous Ammonia Liquid-Measuring Devices Code (Handbook 44 Section 3.32) and the Mass Flow Meters Code (Handbook 44 Section 3.37) in 2005. However, as currently written, the MFM Code paragraph appears to restrict this provision to only “liquid” retail dispenser fueling applications. The primary intent of the proposed modification to S.5.1. is to recognize the exception also applies to dispensers used to deliver compressed natural gas (CNG) motor fuel.

OWM has found no information to exist that would indicate that compressed gas dispensers were to be expressly excluded from the exemption since the exception was extended in 2005 to other measuring devices codes that align requirements for all retail vehicle fueling applications.

WWMA: - 2018 Fall Annual Meeting. Ms. Tina Butcher (NIST OWM) provided an overview of the item, noting its intent is to extend the requirement, which presently only addresses liquids to include compressed gas dispensers. Hearing no additional comments and no comments in opposition to the proposal, WWMA recommends this item be designated as Voting on the NCWM S&T Committee’s Agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, NEWMA received no comments. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. No comments were heard during the open hearing. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. A representative of NIST OWM stated to the SWMA that the item was housekeeping in nature and recommended that it be a voting item. SWMA agrees that this item is ready for a vote.

CWMA: - 2018 Fall Interim Meeting. No comments were heard. CWMA recommends this as a voting item. 2019 Spring Annual Meeting - no additional comments were heard.

- **MFM-5 D N.3. Test Drafts.**

MFM-5 has been incorporated into Block 1 for the 2019 NCWM Annual Meeting, see comments under the first item (GEN-3) included under the NEW Block 1.

HGM – HYDROGEN GAS-MEASURING DEVICES

- **HGM-6 V Tentative Code Status and Preamble., A.2.(c). Exceptions., N.2 Test Medium., N.3. Test Drafts., N.4.1. Master Meter (Transfer) Standard Test., N.4.2. Gravimetric Tests., N.4.3. PVT Pressure Volume Temperature Test., N.6.1.1. Repeatability Tests., T.3. Repeatability., T.6. Tolerance –Minimum Measured Quantity (MMQ), and Appendix D - Definitions where applicable.**

Organization (* not submitted)	HGM – 6 – Hydrogen Gas Measuring Device (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
NCWM S&T Committee Interim	✓						

NIST OWM: OWM agrees with moving this proposal forward to modify and upgrade the status of NIST Handbook (HB) 44 Hydrogen Gas-Measuring Devices – Tentative Code with the following exceptions:

1: Make no modification to the hydrogen code to remove paragraphs N.4.1. and N.4.1.1. Verification of Master Metering Systems.

- ❖ In 2010 the U.S. National Work Group drafting the hydrogen code agreed to recognize three test methods (i.e., gravimetric, reference standard, and pressure/volume/temperature).

- ❖ “All three methods can be successfully performed in the field, although not all test methods are equally practical in the field” for hydrogen dispensers.
- ❖ In 2018 discussion began to determine the basis for the tolerance that applies when using the transfer standard test method.
- ❖ Transfer standard test method is recognized in HB 44 Code Sections 3.34, 3.38, 3.39, 5.54, 5.56(a), 5.56(b) and 5.60.
- ❖ Does the action of the 2019 NCWM, if adopted, call into question this test method already in use? This action is *only* taken on the hydrogen code.
- ❖ There are also ongoing deliberations about the nomenclature used to identify and define test apparatus/equipment that have not reached any conclusion.
- ❖ While there is another item on the S&T agenda (NEW Block 1) to address the use of “transfer standards” across multiple codes, OWM believes it would be premature to remove or modify those references until that work has been completed.

2: *Make no change to the requirements for Repeatability Tests for Small Deliveries at the Minimum Measured Quantity (MMQ) Delivery in Hydrogen Code Paragraphs N.6.1.1. Repeatability Tests and T.3. Repeatability*

- ❖ Specifying a 1000 division test draft is more than the minimum measured quantity (MMQ) the manufacturer typically declares for hydrogen dispensers. The weights and measures community needs to avoid using language that may be construed as prohibiting the proper verification of a design feature that affects commercial equipment’s performance.
- ❖ The submitter of the proposal has performed repeated evaluations at the manufacturer’s declared MMQ of 500 grams (500 increments or divisions of the device) where the devices met current NIST HB tolerances.
- ❖ MMQ is a point at which these devices would be commonly used.
- ❖ Commercial devices are tested:
 - as used; and
 - in the case of mass flow meters and alternative fuel dispensers the test draft size would correspond to the manufacturer’s claims for an accurate delivery at the MMQ.
- ❖ The MMQ delivery represents:
 - fuel tank top-off amounts;
 - the typical minimum measurement that can be accurately delivered by the dispenser; and
 - the delivery amount required to be a marking on the dispenser’s identification plate since 2010.
- ❖ As a result of a dispenser’s examination, type evaluators and weights and measures officials may deem it necessary to repeat tests at the MMQ delivery.
- ❖ The limitation on the minimum size of a repeatability test draft will apply *only* to hydrogen dispensers and not to other mass flow meter and electric vehicle fueling applications.
- ❖ This is an example where it may not be practical to harmonize with corresponding international standards.

3: *Data has shown it is excessive and unnecessary to double the Tolerance for Small Deliveries at the Minimum Measured Quantity (MMQ) from ± 5 % Acceptance/± 7 % Maintenance Tolerance to ± 10 % Acceptance/± 14 % Maintenance Tolerance as Specified in New Paragraph T.6. Tolerance – on Minimum Measured Quantity (MMQ)*

- ❖ Given the allowable errors proposed in new paragraph T.6. Tolerances MMQ, double the current acceptance and maintenance tolerances of 5.0 % and 7.0 % would allow significant errors for deliveries of such small quantities of hydrogen.

- ❖ The U.S. has the largest tolerances globally for hydrogen gas dispensing systems (i.e., in NIST HB 44), and testing conducted thus far has demonstrated they are achievable and already comparable to twice those specified in related hydrogen standards for MMQ deliveries.
- ❖ The MMQ:
 - first appeared in the NIST HB 44 Section 3.37 Mass Flow Meters Code almost 30 years ago; and
 - is one method for determining if a device is suitable for use in a given application.
- ❖ The device:
 - may not be used to measure quantities smaller than its declared/marked MMQ; and
 - MMQ is comparable to the minimum load that may be weighed on a scale.
- ❖ The weights and measures community considered a proposed set of criteria for use to establish the suitability of liquid measuring devices, where:
 - the accuracy test tolerance for deliveries at the MMQ was twice the tolerance applied for a normal delivery;
 - at that point in time tolerances ranged from 0.25 % to 1.0 % much smaller than 2019 tolerances; even so tolerance were not relaxed.
- ❖ To widen the dispenser tolerances to ± 14 % when these devices have demonstrated they can meet the current tolerance of 5 % makes it difficult to:
 - return at some point to the current ± 7 % or
 - align the devices being installed in the 49 U.S. states and territories with those in California and countries applying OIML standards.
- ❖ Once again, the proposed expansion of the tolerance for deliveries at the MMQ is:
 - solely being advocated for hydrogen gas dispensers;
 - not recommended for any of the other related code applications where the concept of the MMQ is recognized; or
 - applicable in the only U.S. code where a generous 5 % and 7 % tolerance already apply.

WWMA: - 2018 Fall Annual Meeting. During the WWMA meeting, NIST OWM and California Dept. of Food and Agriculture - Division of Measurement Standards (CADMS) collaborated on OWM's open hearing comments and brought back a revised recommendation for WWMA to consider. This revision is outlined below. OWM believes the additional modifications are appropriate, though has some remaining questions about the 1000-division draft size for repeatability. OWM is confident that, with additional input and discussion from the community, ***this point can be resolved without delaying action on this proposal.*** Thus, rather than delay progress on upgrading this code, OWM believes it appropriate and expedient to move the item forward for a vote and, should an alternative solution present itself between now and the 2019 Interim Meeting as a result of collaboration between CA and OWM (along with any other input received) that alternative could be presented to the NCWM S&T Committee at that time.

WWMA considered the comments received and acknowledged the points raised by Michael Keilty regarding the references to "transfer standards" in the current code. The WWMA noted these references have been in the code since its inception and are presently in multiple other codes including the Cryogenic LMD Code, Carbon Dioxide LMD Code, EVSE Code, and others. The proposals referenced in Blocks 1 and 2; Gen-4; LPG-3; and MFM-5 (which the WWMA has recommended grouping together) have raised the question of the appropriateness of the terminology of the test equipment used in this item. However, those proposals do not currently recommend removing the paragraphs using that terminology from those codes. Should the work in that grouped item result in recommended changes to those references, the WWMA would expect that such recommendations would apply universally to all those codes, including the Hydrogen Gas-Measuring Devices Code. The WWMA did not feel it would be appropriate to single out this code in advance of such recommendations.

The WWMA agreed that the code is ready to upgrade to a permanent status with the revisions proposed by CA in the WWMA's Agenda and the additional changes outlined in the attached updated version of its proposal. During the WWMA's work session, the WWMA identified a term that needed clarification in paragraph N.6.1.1. Repeatability Tests and T.3. Repeatability. A summary of the changes proposed to the code are shown below, including that change made by the WWMA. The WWMA recommends this item be forwarded to the NCWM S&T Committee with these changes and designated as a Voting item on the NCWM S&T Committee Agenda.

Section 3.39. Hydrogen Gas-Measuring Devices — ~~Tentative Code~~

~~This tentative code has trial or experimental status and is not intended to be enforced. The requirements are designed for study prior to the development and adoption of a final code. Requirements that apply to wholesale applications are under study and development by the U.S. National Working Group for the Development of Commercial Hydrogen Measurement Standards. Officials wanting to conduct an official examination of a device or system are advised to see paragraph G-A.3. Special and Unclassified Equipment. (Tentative Code Added 2010)~~

The status of Section 3.39. Hydrogen Gas-Measuring Devices was changed from "tentative" to "permanent" effective January 1, 2020.

(Code Added 2010 and Upgraded 2019)

A.2. Exceptions. -

(c) Devices used for dispensing a hydrogen gas with a hydrogen fuel index lower than 99.97 % and concentrations of specified impurities that exceed level limits in the most current latest version of SAE International J2719.

N.2. Test Medium. – The device shall be tested with the product commercially measured except that, in a type evaluation examination, hydrogen gas as specified in NIST Handbook 130 shall be used.

~~**Note:** Corresponding requirements are under development and this paragraph will be revisited.~~

N.3. Test Drafts. –The minimum test shall be one test draft at the declared minimum measured quantity and one test draft at approximately ~~ten-five~~ times the minimum measured quantity or ~~4~~ 4 kg, whichever is greater. More tests may be performed over the range of normal quantities dispensed. (See T.3. Repeatability)

The test draft shall be made at flows representative of that during normal delivery. The pressure drop between the dispenser and the proving system shall not be greater than that for normal deliveries. The control of the flow (e.g., pipework or valve(s) size, etc.) shall be such that the flow of the measuring system is maintained within the range specified by the manufacturer.

N.4.1. Master Meter (Transfer) Standard Test. –When comparing a measuring system with a calibrated transfer standard, the minimum test shall be one test draft at the declared minimum measured quantity and one test draft at approximately ~~ten-five~~ times the minimum measured quantity or ~~4~~ 4 kg, whichever is greater. More tests may be performed over the range of normal quantities dispensed.

N.4.2. Gravimetric Tests. – The weight of the test drafts shall be equal to at least the amount delivered by the device at the declared minimum measured quantity and one test draft at approximately ~~ten five~~ times the minimum measured quantity or ~~4.4~~ kg, whichever is greater. More tests may be performed over the range of normal quantities dispensed

N.4.3 PVT Pressure Volume Temperature Test. – The minimum test with a calibrated volumetric standard shall be one test draft at the declared minimum measured quantity and one test draft at approximately ~~ten five~~ times the minimum measured quantity or ~~4.4~~ kg, whichever is greater. More tests may be performed over the range of normal quantities dispensed.

N.6.1.1. Repeatability Tests. – Tests for repeatability should include a minimum of three consecutive test drafts of approximately the same size ~~with no less than a minimum of 1000 scale intervals (increments on the device under test)~~, and be conducted under controlled conditions where variations in factors are reduced to minimize the effect on the results obtained.

N.7. Density. - N.7. Density. – Temperature and pressure of hydrogen gas shall be measured during the test for the determination of density or volume correction factors when applicable. For the thermophysical properties of hydrogen the following publications shall apply: for density calculations at temperatures above 255 K and pressures up to 120 MPa, a simple relationship may be used that is given in the publication of Lemmon et al., J. Res. NIST, 2008. Calculations for a wider range of conditions and additional thermophysical properties of hydrogen are available free of charge online at the “NIST Chemistry WebBook, NIST Standard Reference Database Number 69” <https://webbook.nist.gov/chemistry>, or available for purchase from NIST as the computer program NIST Standard Reference Database 23 “NIST Reference Fluid Thermodynamic and Transport Properties Database (REFPROP): Version 8 ~~10.0~~” <https://www.nist.gov/srd/nist23.cfm#refprop>. These calculations are based on the reference Leachman, J.W., Jacobsen, R.T, Lemmon, E.W., and Penoncello, S.G. “Fundamental Equations of State for Parahydrogen, Normal Hydrogen, and Orthohydrogen” to be published in the Journal of Physical and Chemical Reference Data (~~http://www.nist.gov/manuscript-publication-search.cfm?pub_id=832374~~) (~~https://www.nist.gov/publications/fundamental-equations-state-parahydrogen-normal-hydrogen-and-orthohydrogen?pub_id=832374~~). More information may be obtained from NIST at ~~<http://www.boulder.nist.gov/div838/Hydrogen/Index.htm>~~ ~~<https://www.nist.gov/publications/fundamental-equations-state-parahydrogen-normal-hydrogen-and-orthohydrogen>~~.

T.3. Repeatability. – When multiple tests are conducted at approximately the same flow rate and draft size ~~greater than 1000 scale intervals (increments on the device under test)~~, the range of the test results for the flow rate shall not exceed 40 % of the absolute value of the maintenance tolerance and the results of each test shall be within the applicable tolerance. (Also see N.6.1.1. Repeatability Tests.)

Appendix D. Definitions

Instructions:

- (A) Take all the definitions from the 3.39. Hydrogen Gas-Measuring Devices – Tentative Code and replace the current definitions in NIST HB 44 Appendix D. Definitions, and
- (B) Add 3.39 to these definitions in NIST HB 44 Appendix D. Definitions:

configuration parameter. – Any adjustable or selectable parameter for a device feature that can affect the accuracy of a transaction or can significantly increase the potential for fraudulent use of the device and, due to its nature, needs to be updated only during device installation or upon replacement of a component, e.g., division value (increment), sensor range, and units of measurement. [2.20, 2.21, 2.24, 3.30, 3.37, 3.39, 5.56(a)]

equipment, commercial. – Weights, measures, and weighing and measuring devices, instruments, elements, and systems or portion thereof, used or employed in establishing the measurement or in computing any basic charge or payment for services rendered on the basis of weight or measure. As used in this definition, measurement includes the determination of size, quantity, value, extent, area, composition (limited to meat and poultry), constituent value (for grain), or measurement of quantities, things, produce, or articles for distribution or consumption, purchased, offered, or submitted for sale, hire, or award. [1.10, 2.20, 2.21, 2.22, 2.24, 3.30, 3.31, 3.32, 3.33, 3.34, 3.35, 3.38, 3.39, 4.40, 5.51, 5.56.(a), 5.56.(b), 5.57, 5.58, 5.59]

unit price. – The price at which the product is being sold and expressed in whole units of measurement. [1.10, 3.30, 3.39] (Note: The Specifications and Tolerances Committee may wish to check other code sections to add for reference to this definition.)

NEWMA: - 2018 Fall Interim Meeting. During its open hearings, NEWMA received a comment from Mr. Mike Sikula (New York) that a Hydrogen Gas Measuring (HGM) system was tested in NY and appeared to test successfully. The system was tested by a private company and witnessed by NY state weights and measures officials.

Mr. Walt Remmert (Pennsylvania) commented that most states will find the test equipment cost prohibitive and feels that weights and measures will not be testing these systems. Mr. Jim McEnerney (Connecticut) stated that CT has a HGM but is not being used due to it being new to the market.

NEWMA believes this item should be upgraded from tentative code and recommends it be given a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. Comments were heard from Mr. John Barton (NIST) that the work group has not yet been able to reach a consensus on two key issues but the work group is still hoping this code is made permanent. Concerns include repeatability tests with minimum measured quantities and raised tolerances. Mr. Walt Remmert (PA) had questions on size of test equipment and devices. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard that an agreement has been reached on the development of this proposal that has been supported by the Western Weights and Measures Association (WWMA) and the revised version of the proposal appears in their report which was provided to SWMA. NIST OWM considers the WWMA revised version of this proposal to be fully developed.

SWMA agrees that the WWMA proposal should be used and recommends that version of the proposal as a voting item.

CWMA: - 2018 Fall Interim Meeting. No comments were heard. CWMA recommends this as a voting item. 2019 Spring Annual Meeting - no additional comments were heard.

EVF – ELECTRIC VEHICLE FUELING SYSTEMS

- **EVF-3 D S.3.5. Temperature Range for System Components. and S.5.2. EVSE Identification and Marking Requirements.**

Organization (* not submitted)	EVF - 3 – Electric Vehicle Fueling Systems (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM		✓					
WWMA		✓					
SWMA		✓					
CWMA Interim (Fall)		✓					
CWMA Annual (Spring)		✓					
NEWMA Interim (Fall)		✓					
NEWMA Annual (Spring)		✓					
NCWM S&T Committee Interim		✓					

NIST OWM: NIST is currently in the process of working with the weights and measures and electrical energy communities to collaborate on language to eliminate any perceived discrepancies between paragraphs S.3.5 and S.5.2. NIST has received some feedback and is continuing an assessment of the temperature ranges of these paragraphs.

WWMA: - 2018 Fall Annual Meeting. Ms. Tina Butcher (NIST OWM), submitter of this item commented that this proposal was brought forward as a result of a discrepancy identified by the State of California Division of Measurement Standards who noted conflicts in temperature ranges in two sections of the code. OWM is attempting to identify which of the two ranges is appropriate and is seeking input from manufacturers and others in the community on this point. She asked that the item be designated as a Developing item to allow an opportunity for OWM to identify an appropriate recommendation. Consequently, WWMA agreed to recommend this be included as a Developing item on the NCWM S&T Committee’s Agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, NEWMA heard relative discussion on this topic and Electric Vehicle Fueling (EVF) Systems in general. The general consensus was that more information on this topic is required before proceeding.

2019 Spring Annual Meeting. Mr. Mike Sikula (NY) Commented that NY owns a testing system and has brought it to the meeting. Mr. Jim Willis (NY) Shared that the device can only test alternating current, not direct current. Many new installations utilize direct current. Testing is time dependent as a special (low flow) test can take over 45 minutes. Mr. Russ Vires (MT) Questioned whether this device is considered a master meter or not. Mr. Mike Sikula (NY) Does not consider the device a master meter. The committee recommends this item remain developing on the NCWM S&T Committee agenda.

NEWMA recommends this Item be designated a Developing status on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from NIST OWM that the U.S. National Working Group was working toward a proposal to align the temperatures with ANSI requirements.

The SWMA recommends this as a developing item until a specific proposal is brought forward.

CWMA: - 2018 Fall Interim Meeting. No comments were heard regarding this item. At the WWMA Annual meeting, the submitter has requested this item remain developing. CWMA agrees and recommends this remain a developing item. 2019 Spring Annual Meeting - no additional comments were heard.

- **EVF-4 V Appendix D – Definitions: power factor (PF).**

Organization (* not submitted)	EVF - 4 – Electric Vehicle Fueling Systems (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
NCWM S&T Committee Interim	✓						

NIST OWM: OWM offers the following points for consideration.

- The Electric Watthour Meter Subgroup (EWH SG) of the USNWG on Electric Vehicle Fueling & Submetering has been meeting since the 2017 NCWM Annual Meeting to develop proposed legal metrology standards for electric watthour-type meters for inclusion in NIST HB 130 and NIST HB 44.
- The SG developed a proposed addition to NIST Handbook 130’s Uniform Regulation for the Method of Sale (MOS) of Commodities (see Item MOS-8 on the L&R Committee’s Agenda) to specify a method of sale for electrical energy sold through these systems and submitted the proposal to the four regional weights and measures association meetings in Fall 2019.
 - Three of the four regions recommend the MOS proposal on the L&R Agenda as a voting item, with the fourth abstaining due to lack of experience with these systems within the region.
- The SG is also steadily working on a proposed code for NIST Handbook 44 to address specifications, tolerances, and other requirements for metering systems and expects to have a draft Handbook 44 code ready for the 2020 NCWM cycle. (See also S&T Committee Item OTH-4 for the status of this work.)
- Included in the SG’s recommendations for the MOS requirement in HB 130 on the L&R Committee’s Agenda, is a proposed definition for “power factor.”
- In developing this proposed definition, the SG began by reviewing the definition for “power factor” that presently appears in HB 44 Section 3.40 Tentative Code for Electric Vehicle Fueling Systems.
- The SG made modifications to that definition and believe these improvements will provide clarity in the language.
- To ensure alignment between the definition proposed in the HB 130 MOS requirement and the definition included in HB 44 Section 3.40, the SG recommends modifications to the definition in Section 3.40 as outlined in this item on the S&T Committee’s Agenda.
- OWM believes these proposed changes will provide clarity to the language and ensure alignment of terminology between the two handbooks and recommends the Committee consider designating this as a “voting” item.

OWM also notes, since this is still a “tentative code” in HB 44, the definition does not yet appear in Appendix D, so it is recommended that the title of this item be modified to delete that reference.

WWMA: - 2018 Fall Annual Meeting. Ms. Tina Butcher (NIST OWM) as submitter of this item, commented that the Electric Watthour Meter Subgroup of the USNWG on Electric Vehicle Fueling and Submetering (EVFS) developed a proposal Method of Sale requirement that appears on the L&R Agenda. That proposal includes a definition that varies from what is currently in the NIST Handbook 44 EVFS Tentative Code. This proposal EVF-4 is intended to align the definition in the HB 44 code with the new definition. The new definition was viewed by the EWH SG as more concise.

WWMA heard no comments or opposition to the proposal and recommends it be designated as Voting Item on the NCWM S&T Committee’s Agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, there were no comments on this item. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. No comments were heard during the open hearing. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from NIST OWM that this was proposal consists of adding a definition of the term “power factor” since that term has been used in the code. OWM recommended SWMA to forward the item with a recommendation to be given a voting status.

The SWMA recommends this as a Voting item.

CWMA: - 2018 Fall Interim Meeting. No comments were heard regarding this item. CWMA recommends this as a voting item. 2019 Spring Annual Meeting - no additional comments were heard.

TXI – TAXIMETERS

- TXI-1 V N.1.3.2. Taximeters Using Other Measurement Data Sources.**

Organization (* not submitted)	TXI – 1 – Taximeters (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
NCWM S&T Committee Interim	✓						

NIST OWM: - OWM understands that the requirement proposed to be deleted in this item prohibits regulatory officials from conducting official examinations of taximeters using measurement data not obtained from the rotation of the vehicle’s wheels on road courses that are not publicly-owned. This would prohibit testing on measured courses that may have been established by jurisdictions in locations such as some airfields, corporate-owned lots or parking areas, or other privately-owned facilities. These types of privately-owned locations can offer the benefit of an established measured test course where the hazards and disruptions of normal road traffic can be avoided during official tests.

OWM believes the safety and efficiency in testing offered by a measured course located on other than publicly-traveled roadways to be primary considerations in any decisions made when selecting test sites. OWM also notes that some systems using location services (which may include mapping-type services that do not include information about privately-owned properties) for determining the distance traveled by a vehicle could possibly lose portions of measurement for distance traveled if the mapping services used only covers publicly-owned roadways. It is understood that this was the rationale for the creation of this requirement by the USNWG on Taximeters when addressing those types of transportation system using location services as means to measure distance traveled. OWM believes however, that it is unreasonable to presume that those types of transportation services would limit their service coverage area to only public roadways. Conversely, it seems more reasonable to believe those transportation service providers will provide transportation services (and assess fare charges) to destinations that do include distance traveled on private properties.

OWM believes this proposal is fully developed and agrees with all four regional associations that it be considered as a voting item.

WWMA: - 2018 Fall Annual Meeting. Ms. Tina Butcher (NIST OWM) explained that this item came from the USNWG on Taximeters which proposed the change to address the fact that some jurisdictions have test courses laid out on non-public roads. Mr. Kurt Floren (LA County) raised a question regarding how testing would be done on a non-public road in situations where a network system doesn't include mapping for that area. Mr. Stan Toy (Santa Clara County) noted the proposed change wouldn't create a conflict in that case. If the area wasn't covered by the system under test, a different testing location would need to be used. He noted that this issue was discussed by the WG and supports the change. Mr. Paul Jordan (Ventura County) suggested rather than deleting the language, perhaps the word "shall" could simply be changed to "may." Mr. Toy acknowledged this would be an acceptable alternative.

Based on the comments received the WWMA recommends the item be designated as a Voting item on the NCWM S&T Agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, no comments were heard on this item. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. A comment was heard from Mr. Mike Sikula (NY) NYS supports the item. Mr. John Barton (NIST) stated that when developing the code, it was originally insisted that testing be on public roads only as mapping services which determined distance could not be done on private roads. It has since been determined possible to strike testing on public roads only. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from a representative of the work group that they would like the requirement identified in this proposal deleted. SWMA believes this item is fully developed and recommends it as a Voting item.

CWMA: - 2018 Fall Interim Meeting. No comments were heard regarding this item. CWMA recommends this as a voting item. 2019 Spring Annual Meeting - no additional comments were heard.

GMA – GRAIN MOISTURE METERS 5.56 (A)

- **GMA-2 V Table S.2.5. Categories of Devices and Methods of Sealing.**

Organization (* not submitted)	GMA - 2 – Grain Moisture Meters (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓ (w/chg.)						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)	✓						
GA - NTEP Sector							✓
NCWM S&T Committee Interim	✓						

NIST OWM: The discussion of changing the sealing requirements for grain analyzers originated during the 2016 GA Sector meeting while discussing existing S&T GMA items which are currently number B3: GEN-2 and GMA-1 “Address Devices and Systems Adjusted Using a Removable digital storage Device.” Some grain analyzers (GA) have a removable storage disk that is used to change the calibration of the meter. The Grain Analyzer Sector felt that Category 3 sealing, which is specified as a device having remote configuration and the method of sealing requires an event logger, would be appropriate sealing for these devices. But, removable storage discs do not meet the definition of remotely configured. The language in B3: GEN-2 and GMA-1 were proposed to address devices with removable storage devices. During the discussion, two points were raised:

- The complexity of grain analyzers (GA) and the ability to make changes to calibrations in various ways, and
- Most NTEP grain moisture meters are category 3 devices and are equipped with an event logger as the method of sealing

The GA sector agreed that more information would be gained with an event logger as opposed to a lead and wire seal. Also, since most grain analyzers are equipment to meet category 3 sealing the GA Sector agreed to add a non-retroactive requirement to the NIST HB 44 Section 5.56(a) that NTEP GA must meet category 3 method of sealing.

In reviewing the item under consideration, OWM believes there may be confusion about how to apply the nonretroactive requirements with the current proposal and there may be an unintentional gap in the implementation dates. OWM collaborated with the original proposer and submitted proposed changes to the submitter for review. OWM recommends reformatting the proposal as follows and believes these proposed changes will clarify the implementation dates and should be forwarded as a voting item at the 2019 Interim Meeting:

S.2.5. Provision for Sealing. – ~~Provision shall be made for applying a~~**An approved means of security shall be provided security seal in a manner that requires the security seal to be broken, or for using other approved means of providing security (e.g., audit trail available at the time of inspection** as defined in ~~Table paragraphs S.2.5.1. Categories of Device and Methods of Sealing~~ **Requirements for Devices Manufactured Between 1999 and 2020 and S.2.5.2. Sealing Requirements for Devices Manufactured on or after 2020**) before any change that affects the metrological integrity of the device can be made to any mechanism.

S.2.5.1. Sealing Requirements for Devices Manufactured Between 1999 and 2020. - The appropriate sealing requirements in Table S.2.5.1. shall apply.

**Table S.2.5.1
Categories of Device and Methods of
Sealing for Devices Manufactured Between
1999 and 2020**

Categories of Device	Methods of Sealing
<p>Category 1: No remote configuration capability.</p>	<p>Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.</p>
<p>Category 2: Remote configuration capability, but access is controlled by physical hardware.</p> <p>A device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.</p>	<p>The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.</p>
<p>Category 3: Remote Configuration capability access Access may be unlimited or controlled through a software switch (e.g., password).</p> <p>When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</p>	<p>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants). A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to 25 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</p>
<p>Category 3a: No remote capability, but operator is able to make changes that affect the metrological integrity of the device (e.g., slope, bias, etc.) in normal operation.</p> <p>*When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</p>	<p>Same as Category 3</p>
<p>Category 3b: No remote capability, but access to metrological parameters is controlled through a software switch (e.g., password).</p> <p>*When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</p>	<p>Same as Category 3</p>

S.2.5.2. Sealing Requirements for Devices Manufactured on or after 2020. - An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants.)

A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to 25 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)

WWMA: - 2018 Fall Annual Meeting. Ms. Tina Butcher (NIST OWM) provided an overview of the item, noting it originated from the NTEP Grain Analyzer Sector. Hearing no additional comments and no comments in opposition to the proposal, WWMA recommends this item be designated as Voting on the NCWM S&T Committee’s Agenda.

NEWMA: - 2018 Fall Interim Meeting. During hearings, no comments were received on this item. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

A comment was heard from Mr. Russ Vires (representing the SMA) that the SMA takes no position on this item. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from a representative from Kansas that only one manufacturer still uses a physical seal for their devices and that a definite effective date should be provided for the amendments proposed in this item.

The SWMA believes the item is fully developed and recommends this as a Voting item.

CWMA: - 2018 Fall Interim Meeting. Mr. Doug Musick (KS) commented on this proposal. CWMA feels this item is fully developed and recommends this as a voting item.

2019 Spring Annual Meeting: Russ Vires, SMA, stated that SMA has no position. Diane Lee, NIST OWM, commented that the proposal may be confusing and their proposed changes were not heard at the Interim and are available on the NCWM website.

• **GMA-3 D Table T.2.1. Acceptance and Maintenance Tolerances Air Oven Method for All Grains and Oil Seeds.**

Organization (* not submitted)	GMA - 3 – Grain Moisture Meters (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM		✓					
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)		✓					
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)		✓					
GA NTEP Sector		✓					
NCWM S&T Committee Interim		✓					

NIST OWM: – The GA Sector originally forwarded this proposal to the regional weights and measures associations with a proposed voting status. All regional weights and measures associations agreed to forward the proposal as a voting item on the 2019 NCWM Interim Agenda and the Sector appreciates their review and support. However, following the regional meetings additional data was submitted to the sector which indicates a need to consider developing different tolerance for some grain types. Through a subsequent ballot, and a majority vote, the sector agreed to recommend changing the status of the item to developing to provide the Sector time to consider additional

data and changes to its original proposal. OWM agrees with the Grain Analyzer (GA) Sector's revised decision to change the status of this item to "developing."

History

This proposal to change the air-oven method tolerances was developed during the 2018 GA Sector meeting. During the 2018 GA Sector Meeting, Dr. Charlie Hurburgh provided the Sector with an analysis of data for 2-corn and 1-soybeans samples which included the average error for UGMA grain moisture meter technology and the average error of 2 MHz grain moisture meter technology from Iowa State weights and measures inspection data for years 2014-2017. Based on the Sectors review of the data, discussion of new tolerances, and the ability of the technologies to meet the new tolerances the Sector agreed to change the tolerances based on the data provided.

During additional discussion of what tolerances to apply to other grains, it was proposed that the same tolerances could apply to all grains, because corn is one of the more difficult grains to test and would likely have one of the largest variation when testing. No objections from States or meter manufacturers were provided during the discussion and voting to forward the item to the State regional weights and measures associations. Following the Sector meeting one State noted that there may be an issue with applying the tolerance to some grain types, specifically long grain rough rice. The GA Sector's technical advisor requested that the State forward field data to review the grain moisture meter results for LGRR and other grains. After review of the data with the proposed tolerances it was determined that a high meter failure rate could result with a change to the tolerances for some grain types.

After the Sector's Technical Advisor discussed the findings with the NTEP laboratory and the Sector members that originally proposed the tolerance change and they agreed with proposing a developing status for this item, the Sector was officially balloted and also agreed to change the originally proposed voting status to Developing to allow the Sector time to review additional data and make changes to its original proposal.

WWMA: - 2018 Fall Annual Meeting. Ms. Tina Butcher (NIST OWM) provided an overview of the item, noting it originated from the NTEP Grain Analyzer Sector. Hearing no additional comments and no comments in opposition to the proposal, WWMA recommends this item be designated as Voting on the NCWM S&T Committee's Agenda.

NEWMA: - 2018 Fall Interim Meeting. During hearings, no comments were received on this item. Hearing no opposition or discussion on this item, NEWMA believes this item is fully developed and recommends this Item be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. A comment was heard from Mr. Russ Vires (representing the SMA) that the SMA takes no position on this item and looks forward to more analysis. The committee recommends that this item remains developing on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard that the tolerance table currently in use was obsolete and that the tolerances needed to change to match new technology. SWMA recommends this as a Voting item.

CWMA: - 2018 Fall Interim Meeting. Mr. Doug Musick (KS) commented on this proposal. CWMA feels this item is fully developed and recommends this as a voting item.

2019 Spring Annual Meeting: Russ Vires, SMA, stated that SMA takes no position. Doug Musick, Kansas W&M, commented that new technology is capable of more strict tolerances. Diane Lee, NIST OWM, commented that the proposed tolerances were based on tests of corn and wheat, and that Arkansas was concerned that other grains may not meet these tolerances.

MDM – MULTIPLE DIMENSION MEASURING DEVICES

- **MDM-2 W S.1.7. Minimum Measurement**

The S&T Committee has withdrawn this item from the agenda.

TNS – TRANSPORTATION NETWORK SYSTEMS

- TNS-1 D A.4. Type Evaluation.

Organization (* not submitted)	TNS – 1 – Transportation Network Systems (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM	✓						
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)		✓					
NEWMA Interim (Fall)	✓						
NEWMA Annual (Spring)		✓					
NCWM S&T Committee Interim		✓					

NIST OWM: – OWM agrees with comments heard at the 2019 NEWMA Annual Meeting stating that this item should have remained as voting status and that it should be reinstated as a voting item as quickly as possible. OWM recognizes that the Transportation Network Measurement Systems (TNMS) Code has been adopted as a tentative code and that the intent of this status is to apply these requirements on a trial basis until such time that it is determined the code should be made permanent. OWM has also been advised that to facilitate the process for submitting applications for NTEP evaluations of this type of device, the addition of the proposed new paragraph A.4. “Type Evaluation” is needed. The addition of the proposed paragraph will provide notification to device manufacturers/developers that their device/system must comply with all requirements included in the TNMS Code for the application to be NTEP evaluated is accepted. This will serve to narrow the scope and limit the devices that NTEP will accept applications for.

OWM notes that comments heard at some regional weights and measures association meetings have suggested potential amendments to the language used however, this same requirement is found in other Handbook 44 codes and OWM believes that this language is appropriate recommends its addition to amend the tentative TNMS Code.

WWMA: - 2018 Fall Annual Meeting. Ms. Tina Butcher (NIST OWM), provided an overview of the item’s purpose, noting that NTEP had identified this paragraph (which appears in a number of other codes) is missing from the TNMS code and noted it is needed to assist in the evaluation of devices submitted for NTEP evaluation. In its work session, WWMA noted the language could use some improvement since it appears contradictory in nature; however, such changes should be recommended (in a separate proposal) across all codes that include this paragraph. WWMA acknowledged the paragraph is intended to assist NTEP in applying the provisions of a tentative code when companies challenge the application of the code to their equipment. WWMA heard no other comments on this item and recommends the item be designated as a Voting Item on the NCWM S&T Committee Agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, NEWMA received a comment from Mike Sikula (New York) strongly supporting this item. NEWMA believes this item is fully developed and recommends this it be designated a Voting status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. Mr. John Barton (NIST) Commented that this language has been confusing to some people even though it is the same language used in other codes for other devices. Mr. Mike Sikula (NY) believes this item should have been voting status and recommends it be upgraded as such at the next opportunity. The committee recommends this item as developing on the NCWM S&T Committee agenda but that it be upgraded to voting status at the next available opportunity.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from NIST OWM that this item would facilitate these types of devices/systems to be evaluated by NTEP using the tentative code. Mr. Richard Suiter commented that the language is confusing and should be clarified. SWMA understands that this language is used throughout the handbook in tentative codes and understands it facilitates the submission of devices for NTEP evaluation and recommends it move forward as a Voting item.

CWMA: - 2018 Fall Interim Meeting. CWMA thinks the language may need to be reviewed for improvement, but recommends this item be voting based on its inclusion in other codes. 2019 Spring Annual Meeting - no additional comments were received

OTH – OTHER ITEMS

- **OTH-4 D Electric Watthour Meters Code under Development**

Organization (* not submitted)	OTH – 4 - Other Items (1 Items), Initial Status – D 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM		✓					
WWMA		✓					
SWMA		✓					
CWMA Interim (Fall)		✓					
CWMA Annual (Spring)		✓					
NEWMA Interim (Fall)		✓					
NEWMA Annual (Spring)		✓					
NCWM S&T Committee Interim		✓					

NIST OWM: OWM submits the following points for consideration.

- The Electric Watthour Meter Subgroup (EWH SG) of the USNWG on Electric Vehicle Fueling & Submetering has held multiple in-person and web meetings since the 2017 NCWM Annual Meeting.
- The SG met in September 2017, November 2017, May 2018, and August 2018. All meetings included web-conferencing to allow those not able to attend in person to participate.
- The SG developed a proposed addition to NIST Handbook 130’s Uniform Regulation for the Method of Sale (MOS) of Commodities (see Item MOS-8 on the L&R Committee’s Agenda) to specify a method of sale for electrical energy sold through these systems and submitted the proposal to the four regional weights and measures association meetings in Fall 2019.
 - Three of the four regions recommend the MOS proposal on the L&R Agenda as a voting item, with the fourth abstaining due to lack of experience with these systems within the region.
- The SG continues work on a proposed code for EWH-type meters for NIST Handbook 44 and expects to have a draft ready for the 2020 NCWM cycle.
- OWM requests this item be maintained on the S&T Committee’s agenda as a Developing Item while the SG finalizes its proposed HB 44 draft. OWM will continue to apprise the Committee of progress.
- At their Fall 2019 meetings, all four regional associations indicated support for maintaining this as a Developing item on the Committee’s agenda.
- The SG will hold its next in-person meeting in February 2019 in Sacramento, CA.
- Those interested in participating in this work please contact:
 - Subgroup Chairman, Ms. Lisa Warfield, (OWM)
 - Email (lisa.warfield@nist.gov) or phone (301-975-3308)
 - Technical Advisor, Mrs. Tina Butcher, (OWM)

- Email (tbutcher@nist.gov) or phone (301-975-2196).

WWMA: - 2018 Fall Annual Meeting. Ms. Tina Butcher (NIST OWM) provided a status report on the work of the USNWG on Electric Vehicle Fueling and Submetering Electric Watthour (EWH) Meter Work Group, noting that the EWH hopes to have a draft code on EWHs for consideration by the weights and measures community in fall 2019. This item is included to keep the community apprised of this work; the EWH welcomes input and participation in this work. WWMA recommends this be maintained as a Developing item on the NCWM S&T Committee’s agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, no comments were received. Referring to comments from NIST OWM at the WWMA, the Electric Watthour Meter Workgroup hopes to have a draft code for consideration for fall of 2019. NEWMA recognizes that there is work currently being done on this item and recommends a Developing status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. Comments on this item were heard in the L&R open hearing under MOS-8. Please see the NEWMA L&R report for any comments. The committee recommends that this item remain developing on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard from a representative of the work group and they expected a tentative code by the 2020 cycle. SWMA encourages keeping it as a Developmental item until a code is developed.

CWMA: - 2018 Fall Interim Meeting. No comments were received. CWMA recommends this item be developing and appreciates the work of NIST OWM in developing this item.

2019 Spring Annual Meeting: Charlie Stutesman, Kansas W&M, asked for an update from USNWG. Lisa Warfield, NIST OWM, commented that there should be an update available in the Fall.

• **OTH-5 V Appendix D – Definitions: Batch (Batching)**

Organization (* not submitted)	OTH – 5 – Other Items (1 Items), Initial Status – New Item 2019 S&T Recommendations						
	V	D	W	A	I	Opposed	Support
OWM			✓				
WWMA	✓						
SWMA	✓						
CWMA Interim (Fall)	✓						
CWMA Annual (Spring)	✓						
NEWMA Interim (Fall)		✓					
NEWMA Annual (Spring)	✓						
NCWM S&T Committee Interim	✓						

NIST OWM: OWM believes that the definition proposed in this item is an appropriate description of the process of batching and we appreciate the submitter’s efforts in its development. This process however, is not dependent on any particular type of weighing/measuring device and in many batching operations, generic weighing/measuring devices are incorporated that may also be used in a variety of other applications. The design or available features offered by a particular device may be a factor in determining whether that device is suitable for use in any particular application. However, OWM believes that the weighing/measuring device performance should be evaluated using existing requirements and tolerances that are not dependent on the device’s use in a batching system. OWM agrees with comments made by the SMA at the 2019 NEWMA Annual meeting pointing out the batching is not a type of device but rather an application for a device.

The submitter of this item has stated that establishing a definition for batch/batching will promote consistency in the manner in which devices used in that application are evaluated. OWM notes however, that any weighing device used in a batching operation would be appropriately evaluated based upon existing requirements and procedures that have already been accepted and adopted into NIST HB 44. The definition of the term “batching” does not define any particular type or design of device and OWM questions how this definition will promote consistency in the way these generic devices are evaluated.

As part of the justification for adding this definition, the submitter cites two sections of the NIST HB44 Scales Code that explicitly address batching scales and specify requirements and tolerances for scales that are used for this purpose. OWM views these two paragraphs in HB44 Scales Code as archaic requirements that address particular types of weighing devices that are generally considered outmoded and possibly obsolete.

OWM acknowledges that the definition proposed in this item would be viewed by some to accurately describe the batching process. What isn't understood is how the definition will assist regulators and others in consistently evaluating these systems. OWM also questions the benefit of the definition as purported by the submitter stating that it will "help manufacturers, users, and regulators determine when batching is metrologically significant." OWM also would point out that one of the resolutions of the 2018 NCWM Annual Meeting was to add a new definition for "batching system" to HB 44 Appendix D. OWM questions the need and usefulness of adding the definition for this very similar terminology describing the same concept as this proposal suggests. To ensure that OWM's analysis is complete and no technical points have been overlooked, OWM would ask for a more detailed explanation of the purpose of this proposal. A final point OWM will make is there are no references to device code(s) (i.e., device code numbers in brackets) attached to this definition which leads to the question, in which codes is this proposed definition intended to apply?

WWMA: - 2018 Fall Annual Meeting. During its open hearings, WWMA heard comments from Mr. Loren Minnich (KS), submitter of the item who reviewed the history and intent of the item. Mr. Dick Suiter (Richard Suiter Consulting) spoke in support of the proposal. Mr. Lou Straub (Fairbanks), speaking on behalf of the Scale Manufacturers Association (SMA) commented that SMA does not support the item because these are not commercial devices. During its work session the WWMA discussed the item and acknowledged different jurisdictions treat devices used in these applications in different ways. The WWMA recommends the item be designated as a Voting item on the NCWM S&T Committee's agenda.

NEWMA: - 2018 Fall Interim Meeting. During open hearings, no comments were received on this item however, it was noted that the Scale Manufacturers Association (SMA) provided written comments in opposition of this item. NEWMA believes that as written, there will not be agreement between the SMA and submitter of the item. NEWMA would like to see if this item could be further developed to gain a more general agreement on its usefulness and recommends a Developing status on the NCWM S&T Committee agenda.

2019 Spring Annual Meeting. A single comment was heard from Mr. Russ Vires (representing the SMA) that the SMA opposes this item on the basis that batching is an application and not a device type. The committee recommends this as a Voting item on the NCWM S&T Committee agenda.

SWMA: – 2018 Fall Annual Meeting. The SWMA heard comment from the Scale Manufacturers Association (SMA) that these were not commercial devices. Mr. Richard Suiter echoed his comments from earlier meetings that the devices were commercial, and he supported the items. A representative of Kansas stated the devices should be considered commercial and believed it was fully developed. SWMA believes this item to be fully developed and recommends it as a Voting item.

CWMA: - 2018 Fall Interim Meeting. Mr. Loren Minnich (KS, the submitter) stated this item is fully developed and ready for voting. Mr. Richard Suiter agrees with the submitter. CWMA feels this item is fully developed and recommends this as a voting item.

2019 Spring Annual Meeting: Russ Vires, SMA, stated that SMA opposes this item.

SMA: - 2018 Fall Meeting. The SMA takes no position on this item.