

This letter is to present concerns to NEWMA's and CWMA's attention regarding perceived deficiencies in the proposed draft HB 44 code for Non-Utility Electricity Measuring Systems (NUEMS), as seen by the California regulators with knowledge and experience in this field.

Major Concerns

S.1.3.2. Test Output – This code section relates to the mechanisms that allow a regulator to test the accuracy of the device. The current version of this section allows for a methodology that is not currently, and has never been, allowed by any legal metrology jurisdiction. The methodology being proposed has not been tested by W&M officials.

Table S.3.2.3.a. Electronic Display – The draft code makes an allowance for a display to be connected via the internet as opposed to a direct connection between the device and the display. As an example, one could use a smartphone to go to a web address that connects the smartphone with the NUEMS. This would be a novel inclusion in HB44 and brings up security and fraud concerns. This method seems, in theory, acceptable but appropriate security provisions should be included as well.

Table S.3.2.3.a. 7.-11. – This table contains marking requirements for the main body of an ES Meter. The concern is that there are no standardized abbreviations. While not every marking requirement in HB44 has a standard abbreviation, most do. Those that do have standard abbreviations lend themselves to being easily understood without needing to have extensive expertise in a specific field. Deciphering the various markings on these devices without standard abbreviations requires a level of familiarity that most W&M officials may not have.

Table S.3.2.3.b. 6. – An idea presented early in the development of this code was to create parameters to type approve the NUEMS body and the external sensors separately. While the regulators are supportive of this idea, it never materialized and the note in Table S.3.2.3.b. 6. is a reference to that idea. Thus, including this note as currently worded causes confusion and may lead one to believe independent type approval is an option.

Table S.3.3.a. Separate Document – An early idea for providing flexibility in marking requirements was to allow a separate document to satisfy the marking requirements. This idea was explored and deemed infeasible. It was eliminated from Table S.3.2.3.a. but was overlooked in Table S.3.3.a. To follow suit, the column for a "Separate Document" should be eliminated.

Table S.3.3.a. Polarity (11) – This marking informs both the installer and regulator of the direction current must flow through an external sensor, due to some sensors being directionally sensitive. The current table allows this marking to not be a physical marking but indicated on a display. A polarity marking on a display would have no meaning and should not be allowed.

Table S.3.3.a Note ‡ - This note allows for external sensors to omit a serial number in certain circumstances. This makes it exceedingly difficult to maintain traceability of a component and should not be allowed.

Table S.3.3.a. Note † - This note also mentions the idea of a separate type approval as described in the comment for Table S.3.2.3.b. 6. The mention of having separate type approvals should not be part of the draft code until such standards are developed.

Table S.3.3.b. 6. – This follows the same logic as the previous comment for Table S.3.3.a. Note †. It is recommended that this read the same as note 5 in Table S.3.3.b.

S.3.4. Abbreviations and Symbols – This is a tie into the comment for Table S.3.2.3. 7.-11. The standardized abbreviations could be placed in this section.

T.2. No-Load Test – This section includes tolerance based upon a testing methodology that is allowed in S.1.3.2. Test Output, the first item addressed in this letter. This method is not ready for implementation and, thus, the related tolerances should not be included. The language referring to “NUEMS without a pulse output” should be eliminated.

T.3. NUEMS Starting Load Test – As with the comment for T.2., the references to register indication should be eliminated.

Moderate Concerns

General Comment – There is inconsistent terminology when referring to the main body of an ES Meter. The terms, meter, meter body, and NUEMS electronics are used throughout the document to refer to the same piece of the NUEMS. A single term should be agreed upon and used throughout.

Table S.3.2.3.b. 2. & 4. – These prefix marking requirements were separated from their corresponding items to allow for space saving at the behest of industry members. The table allows for the prefix to appear on a display if omitted from the physical device. While this is still acceptable to the regulators in the group, a small but important amendment is needed to avoid implying the prefix could be omitted entirely. The section final portion of Table S.3.2.3.b. 2. could read, “...the associated NUEMS is not required to be physically marked per General Code paragraph G-S.1. Identification (b)(1).” Table S.3.2.3.b. 4. would reference (c)(1).

Table S.3.2.3.b. 7. – The wording of this note does not seem clear enough. The wording and example terms do not make this abundantly clear. There have been times of confusion where this marking was thought to be the voltage that powers the device or the voltage that the sensor is designed to measure. While it may be discernable, it could be reworded in more widely understood terms. The lack of clarity to the regulator could cause errors in the review of the device as well as safety hazards.

Table S.3.2.3.b. 10. – This note is titled NUEMS Current Input, but the explanation refers to current and voltage. It may be better to title this note, and the corresponding section in Table S.3.2.3.a., as “NUEMS Input” or “NUEMS Current/Voltage Input” to avoid confusion. The second sentence also only refers to current and should be edited to maintain consistency. One could either omit “current” or have it read “current/voltage sensor”.

S.3.3. Device Identification and Marking Requirement – External Sensors – This section states that sensors “...shall have the following... indelibly marked on a permanent identification label...” The specific reference to a label may be too prescriptive. Some manufacturers have used laser etching to mark the device. There is no reason to require a label be used if other means can provide the same permanence.

N.3. Minimum Test Duration – The regulators feel this could be changed to 10 watthour test constants for full load tests and 1 watthour test constant for light load tests. This would be easier to track and sufficient to determine accuracy.

N.5. Test of a NUEMS (a) – The purpose of this section would be better aligned in the User Requirements as there would be capacity for enforcement with its current placement. A slight rewording is also recommended for clarity to the user. The User Requirement could read, “Each NUEMS submitted for testing shall have all necessary components assembled, connected, and configured as intended for use. Components may include, but are not limited to, meter, sensor(s), indicator(s), etc.”

UR.1.2. Submeter Required – The title of this section is a bit misleading. While the majority of watthour meters subject to W&M regulation are submeters, a watthour meter is not required to be a submeter to be under W&M authority. What is described in the body of the UR.1.2 is not necessarily a submeter. Thus, it would be better to title this code “NUEMS Required”.

UR.2.4.1. Certification – This code section may be problematic depending on a jurisdiction’s interpretation of the section. It begins with a vague requirement for “written certification... from the appropriate regulatory agency.” It then lists some very specific requirements that must be present on the certification. As an example of an issue this could present is the case of the NTEP certificate. All devices used under W&M authority are required to have an NTEP certification but the NTEP certificate does not list the majority of the information required by this section. If the intent of this section is to ensure the user obtains the necessary building permits and other authorizations, then the type of certification could be more specific. Another approach would be to describe the list of required information more broadly, pointing to their purpose instead of the specific information. It may also be possible to say that the listed information must be present in aggregate amongst all the applicable certifications acquired by the user.

Minor Concerns

S.3.2.1. Device Identification and Marking Requirements of Meter with External Sensors – The order of this and the two following sections (S.3.2.2. and S.3.2.3.) is incongruent and confusing. It goes from ES to IS and back to ES. There is no good reason for this marking requirement to float by itself and not be included in Table S.3.2.3.a.

S.3.2.3.(a) – Similar to the previous comment, this requirement seems out of place and would be best placed in Table S.3.2.3.a. It might also avoid any confusion of having a section titled S.3.2.3.(a) and Table S.3.2.3.a.

S.3.2.3.b. 13. Bi-Directional – This note refers to the use of a “Separate Document”. This option was eliminated from Table S.3.2.3.a., thus this note should be changed to explain what Bi-Directional means.

UR.1.1. Customer Indicating Element, Accessibility – The words “such as” after the comma should be deleted. Also in (c), the “through” should be deleted after the comma.

UR.1.3.1. Service Applications – The equation in the box in this code has the term “Current Class”. That is a term that is used in traditional socket style meters. In this draft code, the analogous term for meters with external sensors would be “Sensor Primary Current Rating” (Found in Table S.3.2.3.a. (11)). Either a

note connecting the two terms or the inclusion of the term in the equation should be added to avoid confusion when applying this to the two categories of NUEMS described in this draft code (ES and IS).

UR1.3.2. Maximum Quantity-Value Division – The goal of this section is to limit the quantity-value division to a scale that does not exceed the minimum increment used in billing. For example, we wouldn't want to allow a NUEMS to advance in 10 kWh increments if the bill showed 1 kWh increments. But the use of the term "Maximum" in this section may be misconstrued to limit the capability of a device as opposed to the programmed setting for a given installation. We would not want to disqualify a given NUEMS merely because it had the maximum capability to show 10 kWh increments, as long as it could be programmed for 1 kWh increments and was so programmed upon installation. It is recommended that the term "Maximum" be changed out for "Programmed", "Configured", or some other term indicating the used setting is what is being limited, not the capability. (See also S.1.1.1.)

UR.1.4. Current Sensor – It has been mentioned in other areas of the draft code that there are two types of sensors that can be utilized, current sensors and voltage sensors. If that is the case, the title and text of this section should be changed to refer to "sensors" or "Current/Voltage sensors". There is also the reference at the end of the sentence to "current input" which should be changed accordingly.

UR.2.2. Load Range – The second sentence ends with, "if necessary". It may be clearer to put that phrase at the beginning of the second sentence so that the reader know right away that the following requirement is conditional.