**U.S. National Work Group**

**Measuring Systems for Electric Vehicle Fueling and Submetering**

**October 30, 2013**

**Tele/Web Conference**

**DRAFT MEETING AGENDA**

**Time:** Wednesday, October 30, 2013

1:00 p.m. through 5:00 p.m. (GMT-05:00) Eastern Time (USA and Canada)

**Adobe Connect Web Conference Meeting Name:** USNWG EVF&S 30OCT2013 Meeting

**Purpose:** The U.S. National Work Group (USNWG) on Measuring Devices for Electric Vehicle Fuel and Submetering (EVF&S) will meet by tele/web conference to discuss the proposed draft NIST Handbook 44 (HB 44) device code and equipment test procedures.

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**Purpose:** The U.S. National Work Group on Measuring Systems for Electric Vehicle Fueling and Submetering was formed to develop proposed requirements for commercial electricity-measuring devices (including those used to measure and sell electricity commercially delivered as vehicle fuel and those used in submetering electricity at residential and business locations) and to ensure that the prescribed methodologies and standards facilitate measurements that are traceable to the International System of Units (SI). This work is not intended to address utility metering in the home or business where the electricity meter is used by a public utility in connection with measuring electricity subject to the jurisdiction of a Public Utilities Commission or other municipality.

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| **Glossary of Acronyms** | | | |
| ANSI | American National Standards Institute | L&R | NCWM Laws and Regulations Committee |
| CFR | Code of Federal Regulations | MOS | Method of Sale |
| CHAdeMO | CHArge de MOve | NCWM | National Conference on Weights and Measures |
| DC | Direct Current | NEC | National Electrical Code |
| EUMD | End Use Measurement Device | NEMA | National Electrical Manufacturers Association |
| EVF&S | Electric Vehicle Fueling and Submetering | NIST | National Institute of Standards and Technology |
| EVSE | Electric Vehicle Supply Equipment | OWM | Office of Weights and Measures |
| HB 44 | NIST Handbook 44 *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices* | PEV | Plug-in Electric Vehicle |
| HB 130 | NIST Handbook 130 *Uniform Laws and Regulations in the Area of Legal Metrology and Engine Fuel Quality* | SAE | Society of Automotive Engineers |
| IEEE | Institute of Electrical and Electronics Engineers | SI | International System of Units |
| kW | Kilowatt | SGIP-PAP 22 | Smart Grid Interoperability Panel - Priority Action Plan 22: “EV Fueling Submetering Requirements” |
| kW•h | Kilowatt hour | USNWG | U.S. National Work Group |
| JARI/TEPCO | Japanese Automobile Research Institute/Tokyo Electric Power Company |  | |
| This table is meant to assist the reader in the identification of acronyms used in this document and does not imply that these terms are used solely to identify these organizations or technical topics. | | | |

**1. Welcome and Roll Call**

New members of the USNWG and visitors will be welcomed. The meeting will be called to order and roll called using the June 2013 roster (see Attachment A) to establish a quorum. The scope and goals of the USNWG will be reviewed.

**2. Approval of the June 11, 2013 USNWG EVF&S Meeting Summary**

**Background:** On August 15, 2013 a summary of the June 11, 2013 USNWG tele/web conference meeting was distributed by email for review and comment. Comments were due to USNWG Chair/Acting NIST Technical Advisor Juana Williams at [juana.williams@nist.gov](mailto:juana.williams@nist.gov) by August 28, 2013. To date the Chair has not received any comments on the summary.

**Recommendation:** The USNWG is asked to approve the summary (Attachment B).

**3. Weights and Measures Standards Development Process**

**Background:** The USNWG is following the U.S. weights and measures standards development process and plans to take an approach that ensures its proposed legal metrology requirements have the greatest chance of adoption. This process promotes uniformity in U.S. weights and measures laws, regulations, and standards to achieve equity between buyers and sellers in the marketplace. Once a standard is adopted legislatively by the States, it becomes law and regulation. There are a number of steps that take place in between the initial and final stages of the process.

When a new technology or business practice is developed that is not adequately addressed by existing standards, a moderate change to a current code or a complete new code section may be required. In the case of commercial EVF systems legal metrology requirements for both a method of sale and the measuring systems are necessary.

We have completed the weights and measures standards development process for method of sale requirements. The method of sale requirements will be published in the 2014 NIST Handbook 130. Requirements are enforced by field officials after the States legislatively adopt the handbook requirements as law.

The cyclic nature of the process includes several key dates and deadlines. A proposed requirement is developed and then submitted to a technical committee by fall; the proposal must receive the support of either that committee or any one of four U.S. regional weights and measures associations by November 1st. Items may move forward to the NCWM with a recommendation that they be given either “Information,” Voting,” or “Developing” status. The appropriate NCWM technical committee considers this recommendation and may place a proposal on its January Interim Meeting Agenda. The NCWM technical committee designates the status of the item based on stakeholder input, data, etc. it receives up through the Interim Meeting. If a proposal is to be adopted at the July NCWM Annual Meeting, “Voting” status must be assigned to the proposal at the preceding January NCWM Interim Meeting. This timeline is followed to ensure due process in the adoption of a requirement.

With regard to any proposal from the USNWG on a draft device code; the NCWM would not be able to consider adopting even a tentative code until 2015 without a submission in the fall to a regional and/or technical committee where the draft device code proposal has at least developing item status. The USNWG is allowed to continue its deliberations and, when ready, to propose a final draft for consideration by the NCWM. If this can be accomplished by the USNWG in time for the January 2014 Interim Meeting, then this could possibly occur within this coming year’s cycle; this depends, of course, on the NCWM S&T Committee’s willingness to forward the proposal further. Without at least a Developing Item on the agenda, the proposal would otherwise need to wait until 2015.

Additionally, this is not just a minor change to an existing NIST Handbook 44 code, but rather an entirely new code. Introducing a draft code (even if not the final version) as soon as possible has the added advantage of allowing those in the community who will ultimately be asked to adopt it additional time to become more familiar and comfortable with the application of these requirements.

The purpose of this legal metrology standard is to eliminate the use of equipment or practices that result in false, incorrect, unreliable, or misleading measurements and associated transaction information, or that perpetrate outright fraud. Such standards when uniformly adopted and implemented throughout the entire U.S. protect both businesses and consumers. The device requirements will become the basis for policies and/or test procedures. Once those policies/procedures are developed, they are published and equipment must comply with these test criteria before being approved for commercial use. Most States require type approval of equipment through the National Type Evaluation Program (NTEP), which is administered by the NCWM. The States perform routine inspection and testing on equipment in commercial use.

Additional background information on the weights and measures standards development process is published in the news article titled “Standards Development Process and Submission of Issues” available on the NIST OWM web site at: <http://www.nist.gov/pml/wmd/pubs/upload/J_015.pdf>.

**4. Test Procedure and Test Equipment Needs for Field Inspection and Testing**

**Background:** The EVSE Meter Test Procedure and Equipment Drafting Subcommittee (herein referred to as the EVSE Subcommittee) was formed during the January 15-17, 2013 USNWG meeting to accomplish the following tasks:

• Prepare a test procedure for conducting safe, efficient, and traceable field testing of EVSE electrical energy-measuring devices that clearly addresses the point where the test connection occurs relative to the vehicle connection (for both plug-in and wireless systems).

• Prepare a list describing the fundamental test equipment that must be available to conduct safe, efficient, and traceable field testing of EVSE electrical energy-measuring devices.

• Review and further develop language for the draft HB 44 Tentative Code proposal to address field testing.

The time frame for the EVSE Subcommittee to complete a draft test procedure is planned to parallel the USNWG’s development of the HB 44 code proposal.

On June 12, 2013, at the request of the Subcommittee Chair Ted Bohn (Argonne National Laboratory) the Technical Advisor distributed a presentation prepared by Mr. Bohn titled “EUMD/Submetering for EVSEs” to the USNWG for its review. The presentation provided an overview of the direction the Subcommittee is pursuing to adapt existing technology for use as EVSE field test equipment.

The Technical Advisor has made the USNWG aware that concern was raised at the July 2013 NCWM Annual Meeting regarding the lack of field test procedures for these devices. Measuring systems would be required to comply with the design (“S” specification paragraphs), performance (“T” tolerance paragraphs), and other requirements in the code during the inspection and test of the EVSE. Official testing of devices is specified in the “N” paragraphs. These requirements are the basis for both type evaluation test procedures and routine evaluations of the commercial equipment. Guidelines for the selection of appropriate test equipment are a key element in developing a test procedure for this emerging technology.

**Recommendation:** During the USNWG’s October 30th meeting, the Subcommittee will review and provide an update on the June 2013 presentation. The USNWG will be asked to discuss the information covered and conclusions made at the Subcommittee’s October 9th meeting.

**Discussion:** A Subcommittee meeting was hosted by Subcommittee Chair Bohn on October 9, 2013. A special thanks to the Chair Bohn for stepping in to ensure the meeting took place given the unavailability of the NIST meeting service and other federal employee participants because of the October 1-17, 2013 federal government shutdown.

***Mr. Bohn provided the following summary of the one-hour October 9, 2013 Subcommittee Meeting:***

“The meeting went well with no conflicts thus far on the Subcommittee’s approach, which is to use an actual load to measure delivered energy out the end of the SAE J1772 coupler.

Next steps are to capture the comments on some of the gaps in definitions, especially a time-based energy ‘access’ method of measurement, which is also covered in HB44.

There was a follow-up question about DC energy delivery systems, and the Subcommittee was advised that the proposed resistive load and PEV communication controller/emulator can handle CHAdeMO charging station delivered out the JARI/TEPCO coupler, as well as the upcoming SAE J1772-v5 DC combo communication system.”

October 9, 2013 EVSE Subcommittee Meeting Attendees:

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| **Chair** **Ted Bohn** (ANL)\* | Don McComas (Eaton)\* | Andrei Moldoveanu (NEMA)\* |
| Jim LeClare (Maxim Integrated)\* | George Bellino (GM) | John Halliwell (EPRI) |
| Unnamed Participant |  | |
| \*EVSE Subcommittee Member | | |

**5. Gaps Between Nationally Recognized Meter Standards** **and Meter Technology Requirements**

**Recommendation:** At the conclusion of its June 2013 meeting, the USNWG agreed to identify and discuss any gaps between nationally recognized meter standards (e.g., ANSI C12.1 Electric Meters Code for Electricity Metering, ANSI C12.20 Electricity Meters - 0.2 and 0.5 Accuracy Classes) and any standards that are needed for new EVSE specific meter technology at its fall 2013 meeting.

The USNWG will work to address legal metrology requirements for EVF&S systems using good weights and measures principles while harmonizing, wherever possible, with corresponding national and international standards. The USNWG will give consideration to standards applied by other agencies that may regulate these systems to avoid conflicting requirements. The ultimate goal is to establish standards that will ensure the accuracy of measurements, enhance consumer protection, foster fair competition, and facilitate economic growth and trade.

**6. Draft NIST Handbook 44 Code for Electric Vehicle Fueling and Submetering Systems**

**Background:** A draft proposal of NIST HB 44 Requirements for Electric Vehicle Fueling and Submetering Systems was distributed by email to USNWG members on November 29, 2012. The USNWG was asked to review and provide comments on the draft design, performance, installation, and use requirements and test procedures to the Technical Advisor by January 8, 2013.

On January 14, 2013, the Technical Advisor distributed a table listing the USNWG’s comments on the draft HB 44 Tentative Code along with the Technical Advisor’s corresponding responses. An initial attempt was made to address the USNWG’s comments by either providing a response or modifying the first draft of the code. The USNWG had anticipated completing a final draft of the HB 44 proposal by the fall of 2013, which marked the start of the Weights and Measures standards development cycle for 2014.

That list of comments was redistributed to the USNWG on August 15, 2013 for its consideration in preparation for the October 2013 meeting.

**Recommendation:** The Technical Advisor will outline a suggested plan for completing the development of the draft HB 44 device code and ask for further input and suggestions from the USNWG. On October 9th NEMA provided additional input on the draft device code, in response to the Technical Advisor’s August 15th request that the USNWG review the draft code in preparation for fall 2013 meeting discussions. At its October 30th meeting deliberations, the USNWG will consider a compilation of comments (see attachment E) that were made about specific draft EVF&S code requirements. The USNWG will work to address a proposed draft of legal metrology requirements for EVF&S systems (see Attachment D) while the group also considers the 2014 NIST Handbook 44 Section 1.10 General Code and Section 5.55 Timing Devices Code requirements (see Attachments F and G, respectively) that may apply to this application.

Although the USNWG has not had an opportunity to begin its deliberations on the draft device code; the USNWG Test Procedure Subcommittee did met on October 9th. The Subcommittee’s work to specify the official EVSE tests and identify appropriate field test equipment will be important since some concern was raised at the July 2013 National Conference on Weights and Measures (NCWM) Annual Meeting about the lack of specific test procedures that apply to these devices in the draft code.

**Discussion:** The weights and measures community awaits updates from the USNWG on its work to reach a consensus on a draft device code. The USNWG has the option of finalizing the code either in January 2014 or prior to fall 2014 for submission to the 2015 weights and measures standards development cycle.

Most recently, the draft code was introduced in September 2013 and then supported as a developing item by the Western Weights and Measures Association one of four U.S. regional associations. This action gives the proposed code national exposure yet still allows the USNWG to work to reach a consensus on a fully developed draft code sometime in 2014.

Please be mindful that using this mechanism for submission of a proposal and giving it “developing” status provides an opportunity for a proposal to appear on a national agenda which is a necessary step that can sometimes expedite the process that leads to successful adoption.

In September 2013 the Technical Advisor requested the USNWG consider the following statement as its position on the proposed draft code that is before the weights and measures community:

The EVF&S USNWG will meet the last quarter of 2013, to include a meeting on October 30th, to work to fully develop the proposed new code for Measuring Devices for Electric Vehicle Fuel & Submetering. The USNWG has made one pass at reviewing the entire draft code and has identified that some requirements may require further refinement for vehicle fueling applications specifically to: (1) eliminate possible gaps between the draft and corresponding electric device codes; (2) assess if exemptions that apply for certain types of sales in other related vehicle refueling equipment applications are warranted for these devices; and (3) promote uniformity in online advertising. The USNWG has established a Test Procedure and Equipment Drafting Subcommittee which will meet in mid-October 2013. The USNWG will provide updates in January 2014 on the progress of its work and its recommendations on status of the proposed new code.

Comments were received from seven USNWG members ranging from disagreement with the proposed position statement to a member’s concerns about requirements for printers, meters, and references to ANSI C12. However, five of the seven responses received were in support of the proposed draft code as a developing item. One member also encouraged the USNWG to begin work to modify the NIST HB 130 MOS to recognize reversed transfer of electrical energy in measuring systems (see Agenda Item 8).

**7. Identification of New Requirements Needed to Promote Uniformity in Online Advertising**

**Discussion:** At the conclusion of its June 2013 meeting, the USNWG agreed to identify and discuss requirements necessary to promote uniformity in online advertising.

So that purchasers can make price and quantity comparison, advertising and marketing may take place through street signage, but may also be through the Internet (this term is all inclusive of various forms of electronic media). The Federal Trade Commission (FTC) offers tips on how to make disclosures online. The information on Internet advertising that follows was excerpted and paraphrased from the FTC:

“Rules and guidelines for advertising on the Internet are in place to protect businesses and consumers as well as the credibility of the Internet. The Federal Trade Commission (FTC) Act requires advertising to be truthful and prohibits advertising that is misleading to consumers. The Act permits the FTC to take action to prevent deceptive and unfair activities or practices. Claims about products and services must be substantiated and multiple parties such as the seller, ad agency, or website designer may be held responsible if claims are false or deceptive. Disclaimers and disclosures must be clear and conspicuous and their use alone may not be an acceptable remedy in the event of a false or deceptive claim.”1

The USNWG may wish to address both scenarios for advertisement of electric vehicle fuel sales in its October 30th discussions since similar rules may apply for advertising in both types of medium.

1 Federal Trade Commission, Bureau of Consumer Protection Business Center (business.ftc.com). ***.****com Disclosures How to Make Effective Disclosures in Digital Advertising* (March 2013). Retrieved 24 October 2013, from <http://business.ftc.gov/documents/bus41-dot-com-disclosures-information-about-online-advertising>

**8. Proposed New Modification of NIST Handbook 130 MOS Section Paragraph 2.34.1.4 Variable Service to Recognize Reversed Transfer of Electrical Energy**

**Background:** In January 2013, the USNWG agreed to defer the development of labeling requirements that would apply to a Vehicle to Grid (V2G) commercial measurement where the reverse flow of electrical energy would result in a credit. The USNWG discussed IEEE 1547 “Interconnecting Distributed Resources with Electric Power Systems,” which requires disconnection of any source to the grid under specific conditions, and the need for this standard to evolve further before commercial V2G becomes a reality. At that time the NEC was also considering changes to the definition of EVSE as it relates to V2G. However, these developments were not expected to be addressed in 2013.

**Recommendation:** Modify NIST Handbook 130 paragraph 2.34.1.4 Variable Service as follows to recognize reversed transfer of electrical energy:

**Uniform Regulation for the Method of Sale of Commodities**

Section 2. Non-food Products [***NOTE 1***, page 107]

**2.34. Retail Sales of Electrical Energy Sold as a Vehicle Fuel.**

**2.34.1. Definitions.**

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**2.34.1.4. Variable service.** – Service that may be controlled resulting in periods of reduced, **reversed** and/or interrupted transfer of electrical energy.

**Discussion:** The USNWG received a proposal from Mr. Paul Stith (Sustainable Unlimited Mobility) to revisit the 2014 NIST Handbook 130 Method of Sale (see attachment H) EVSE labeling requirements for this application. Mr. Stith indicates that he is working on related projects where bi-directional energy flow for distributed energy resources is likely in the near future. Given the annual weights and measures standards development cycle, Mr. Stith believes the USNWG would be well advised to include this proposed change to paragraph 2.34.1.4. as part of its October 30th meeting discussions to start the education process so that consumers are notified of this potential type of variable service.

**9. Next Meeting**

The USNWG will discuss the format, date, location and topics for the next meeting.