**NIST U.S. National Work Group**

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

March 26, 2013

Tele/Web Conference Meeting

**Meeting Agenda**

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| **Connection Instructions** |
| **Location:** Online (see the website link listed below) |
| **Time:**  Tuesday, March 26, 2013  1:00 P.M. – 5:00 P.M. Eastern Time |
| **Adobe Connect Meeting Name:** USNWG EVF&S - 26MAR2013  **Logging In:** Please log into the following web site before calling in. If you are unfamiliar with the Adobe Connect system for online meetings, we suggest that you log in 20 minutes early to ensure you have time to complete all the steps to join the meeting.  [**https://nist.adobeconnect.com/usnwg-evfs-26mar2013/**](https://nist.adobeconnect.com/usnwg-evfs-26mar2013/)  **NOTE:** We regret that there are a limited number of available login seats for the meeting. If you experience difficulty logging into the meeting, it may be that all available seats are occupied. In this event, you can still join the audio portion of the meeting by dialing the call-in number below from your phone and entering the pass code listed. Please follow along with the documents that were e-mailed to you with this agenda if this occurs. |
| **Audio Connection:** After logging in, you should see a window asking you how you would like to connect to the audio portion of the meeting. To open this window, if it has not automatically appeared, locate and click on the “telephone handset” icon in the menu bar at the top of the screen. Select “Dial-Out” to have the system call your telephone number. If necessary, enter your telephone number and then click on [Connect]. If that process does not work, dial the call-in number below from your phone and enter the pass code listed.  **Call-In Telephone Number:** 1-877-685-5350  **Call-In Password:** 597182#  **Audio Conference Only:** \*6 to MUTE or UNMUTE |

*This meeting is sponsored by the U.S. Department of Commerce's National Institute of Standards and Technology.*

**Purpose:**  The U.S. National Work Group on Measuring Systems for Electric Vehicle Fueling and Submetering (USNWG EVF&S) 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** | | | |
| CFR | Code of Federal Regulations | MOS | Method of Sale |
| EVF&S | Electric Vehicle Fueling and Submetering | NCWM | National Conference on Weights and Measures |
| EVSE | Electric Vehicle Supply Equipment | NEC | National Electrical Code |
| HB 44 | NIST Handbook 44 *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices* | NIST | National Institute of Standards and Technology |
| HB 130 | NIST Handbook 130 *Uniform Laws and Regulations in the Area of Legal Metrology and Engine Fuel Quality* | OWM | Office of Weights and Measures |
| kW | Kilowatt | PEV | Plug-in Electric Vehicle |
| kW·h | Kilowatt hour | SI | International System of Units |
| L&R | NCWM Laws and Regulations Committee | USNWG | U.S. National Work Group |
| 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. | | | |

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| **No.** | **Attachments** | **Agenda Item** |
| 1 | **USNWG Team Roster** (File name: 1-USNWG EVF&S Team Roster) | 1 |
| 2 | **Draft Summary of the January 15-17, 2013 USNWG Meeting** (File name: 2-USNWG EVF&S DRAFT MTG SUMMARY 15-17JAN2013) | 2 |
| 3 | **USNWG Draft Operational Guidelines** (File name: 3-USNWG EVF&S GUIDELINES Draft 2-14-13) | 3 |
| 4 | **USNWG Draft Agenda Submission Form** (File name: 4-USNWG EVF&S AGENDA SUBMISSION FORM Draft 2-14-13) | 3 |
| 5 | **NIST Handbook 130 Method of Sale for Electricity as Vehicle Fuel Proposal**  (File name: 5-Section-IVb-12-HB 130-EVF&S 3-11-13) | 4 |
| 6 | **Agenda Submission Form from Andrei Moldoveanu (NEMA)**  (File name: 6-NEMA Agenda Submission Form 3-7-13) | 4 |
| 7 | **NEMA Proposed Changes to NIST Handbook 130 Method of Sale for Electricity as Vehicle Fuel Proposal**  (File name: 7-NEMA proposed changes to Section-IVb-12-HB 130-EVF&S 3-7-13) | 4 |
| 8 | **Draft NIST Handbook 44 Device Code Requirements for Electric Vehicle Fueling and Submetering**  (File name: 8-3.XX-12-HB 44-EVF&S DRAFT 2-27-13) | 7 |
| 9 | **USNWG Combined Comments on Proposal Documents** (File name: 9-USNWG EVF&S Combined Comments) | 7 |

**Agenda Topics**

## 1. Welcome New Members and Introductions

New members of the USNWG and visitors will be welcomed. The meeting will be called to order. The scope and goals of the USNWG will be reviewed. USNWG members will be asked to provide corrections and/or additions to the team roster (Attachment 1).

## 2. Summary of January 15-17, 2013 Meeting

**Background:** The USNWG met from January 15-17, 2013 at NIST in Gaithersburg, MD. A draft summary of that meeting is attached to this agenda (Attachment 2) for USNWG members to review. Comments on the draft meeting summary should be sent directly to the Technical Advisor by close of business on March 22, 2013.

**Recommendation:** Members will be asked to approve the summary from the last meeting.

## 3. USNWG Operational Guidelines and Agenda Submission Form

**Background:** Draft copies of the USNWG Operational Guidelines and the Agenda Submission form were distributed to the USNWG at its January 15-17, 2013 meeting. Minor editorial changes have been made to these documents; updated versions are shown in Attachments 3 and 4. Comments on these draft documents should be sent directly to the Technical Advisor by close of business on March 22, 2013.

**Recommendation:** Members will be asked to approve the USNWG Operational Guidelines and the Agenda Submission Form.

## 4. HB 130 Method of Sale Regulation for Electricity as Vehicle Fuel

**Background:** After reviewing and revising the HB 130 method of sale (MOS) proposal during the January 15-17, 2013 meeting, the USNWG voted 12 to 1 to recommend to the NCWM L&R Committee that the proposal shown in Attachment 5 be presented for voting. The USNWG recognized that some members need to further vet the revised proposal within their organizations, but expected this process to be complete within a few weeks of the meeting. The Technical Advisor submitted the approved USNWG proposal and recommendation to the NCWM L&R Committee on January 23, 2013.

At the January 27-30, 2013 NCWM Interim Meeting, the L&R Committee decided to designate the HB 130 MOS proposal as a “Voting” item #232-5 on the L&R Agenda. The proposal will be presented for a vote at the 2013 NCWM Annual Meeting in Louisville, KY July 14-18, 2013.

Mr. Andrei Moldoveanu (NEMA) submitted proposed changes to the MOS proposal to the Technical Advisor on March 7, 2013 by using the draft USNWG Agenda Submission Form. The original Agenda Submission Form submitted by Mr. Moldoveanu is shown in Attachment 6. The Technical Advisor has inserted technical responses to the proposed changes from NEMA as “comments” in Attachment 7.

In response to comments received during the review cycle and also discussion during the January 15-17, 2013 meeting, the provision was added in paragraph 2.XX.3.(a) of the HB 130 MOS proposal to allow the unit price to be displayed in tenths of one cent. The Technical Advisor has since done further research and now recommends reverting back to the original requirement that allows the unit price to only be displayed in whole cents. Weights and measures officials have received complaints about price posting in other applications that includes tenths of one cent. With rising fuel costs, consumers are increasingly sensitive to pricing practices which are not transparent or are misleading. Because tenths of one cent do not exist as a cash monetary unit that can be exchanged, some consumers view this practice as misleading. Weights and measures officials in at least one state have even been asked to consider taking action to prohibit the display of tenths of one cent in unit pricing in all applications. For now, it is expected that all new method of sale proposals will require the unit price to be displayed in whole cents. As an example, a recent addition to HB 130, the MOS for the Retail Sales of Hydrogen Fuel, was adopted to include a requirements that the unit price be displayed in terms of whole cents.

**Recommendations:**

* Members of the USNWG will be asked to consider the comments submitted by NEMA and the Technical Advisor’s responses.
* Members will be asked to consider the NIST OWM recommendation to revise paragraph 2.XX.3.(a) in the HB 130 MOS proposal as shown below to require the unit price to be displayed in whole cents.

1. A computing EVSE shall display the unit price in whole cents (e.g., $0.12) ~~or tenths of one cent (e.g., $0.119)~~ on the basis of price per megajoule (MJ) or kilowatt‑hour (kW·h). In cases where the electrical energy is unlimited or free of charge, this fact shall be clearly indicated in place of the unit price.

* Members of the USNWG will be asked to share any other results of their vetting of the proposal since the January 2013 USNWG meeting.

## 5. USNWG Position Statement on the HB 130 MOS Proposal

**Background:** In order to assist NCWM members as they consider and vote on the HB 130 MOS proposal, the USNWG will develop and submit a position statement that provides background information on the need for a MOS; describes the USNWG efforts in this area; and encourages NCWM members’ support of the item.

**Recommendation:** Members of the USNWG will be asked to consider and approve the following draft USNWG Position Statement:

In August 2012, NIST formed the USNWG EVF&S in response to requests from U.S. stakeholders for uniform legal metrology (measurement) requirements to address equipment used in electric vehicle refueling applications. The USNWG includes members representing vehicle charging equipment and electric meter manufacturers; State and local weights and measures jurisdictions; energy distribution companies and service providers; national laboratories; standards organizations; technical committees (e.g., ANSI C12); industry associations; and NIST.

Establishing a method of sale for a commodity is a critical first step in the development of a fair and competitive marketplace for any commodity. History has shown that when products are introduced into the marketplace without the existence of a legally defined standard, confusion and unfair competitive practices can quickly evolve and potentially harm the consumer’s perception of the product and the business reputations of the sellers. When commercial applications arise that do not have the benefit of nationally recognized uniform standards, State and local jurisdictions often are forced to independently develop and enforce Weights and Measures requirements for the application until nationally recognized uniform standards become available.

The USNWG wishes to convey a sense of urgency for establishing a clearly defined method of sale for commercial electric vehicle refueling stations. As the number of electric vehicles and hybrid electric vehicles on the road continues to increase, the number of publicly accessible commercial systems installed for refueling these vehicles is growing. Advances in vehicle charging technology have resulted in fast charging systems that make roadside stops of 15 to 20 minutes to charge an electric vehicle a practical refueling experience for customers. These and other advances are only likely to accelerate the number of commercial systems that are installed to serve the public. Clarity on the method of sale in these applications is urgently needed to facilitate a successful and efficient deployment of the systems that will serve this industry for the long term.

In January 2013 the USNWG submitted a proposal to include a new method of sale regulation in NIST Handbook 130 that recognizes retail sale of electrical energy for vehicle refueling applications. The USNWG supports the proposal which appears in Item 232-5 in the 2013 NCWM L&R Committee Interim Report with the following minor modifications:

* + *Modifications agreed upon in Item 4*

The USNWG encourages NCWM members to adopt the item with these modifications at the July 2013 NCWM Annual Meeting. The USNWG acknowledges that not all U.S. jurisdictions adopt the NIST Handbook 130 Model Method of Sale Regulation directly. However, the USNWG believes that this proposal will promote uniformity in the rapidly growing industry of commercial electric vehicle refueling.

The USNWG also plans to fully develop and submit to the NCWM Specifications and Tolerances Committee a corresponding proposal for a new NIST Handbook 44 Tentative Code for Electrical Energy‑Measuring Systems to address legal metrology requirements for the design, performance, installation, testing, and use of this equipment. The scope of this proposed new code will include electrical energy-measuring systems used in both electric vehicle refueling and in utility-type submetering applications that fall under the authority of weights and measures jurisdictions. The scope of the proposed new code will not apply to electrical energy-measuring devices that are already regulated under the jurisdiction of Public Utility Commissions and other municipalities.

## 6. EVSE Meter Test Procedure and Equipment Drafting Subcommittee

**Background:** The EVSE Meter Test Procedure and Equipment Drafting 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 conducting 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 Meter Test Procedure and Equipment Drafting Subcommittee to complete a draft test procedure will parallel the USNWG’s development of the HB 44 proposal. The USNWG anticipates completing a final draft of the HB 44 proposal by the fall of 2013, which marks the start of the Weights and Measures standards development cycle for 2014.

The USNWG unanimously elected Ted Bohn (ANL) as the Chair and Tim Morgan (Duke Energy) as the Technical Advisor for the EVSE Meter Test Procedure and Equipment Drafting Subcommittee. The following is a list of USNWG members who volunteered to serve on the subcommittee. Some members (as noted below with an asterisk \*) stated that they were volunteering pending the approval of their organizations’ management. These volunteers will notify the Subcommittee Chair when they have approval from their management.

**EVSE Meter Test Procedure and Equipment Drafting Subcommittee**:

* **Chair:** Ted Bohn (ANL)
* **Technical Advisor:** Tim Morgan (Duke Energy)
* Richard Lowenthal (ChargePoint)
* Either Don McComas or Derrik Weeks (Eaton)
* Andrei Moldoveanu (NEMA)
* Jim LeClare (Maxim Integrated)
* Steve Brown (UL)
* Marc Buttler (NIST)
* Steve Cook\* (CA DMS)
* Jeff Mazer\* (NIST)
* Tom Nelson\* (NIST)
* Ambler Thompson\* (NIST)

The Subcommittee Chair also plans to recruit a meter manufacturer to join the Subcommittee.

**Recommendation:** Members will be asked to confirm the Subcommittee roster. The Subcommittee Chair will be asked to provide an update on the Subcommittee’s progress and plans.

## 7. Draft NIST Handbook 44 Code for Electric Vehicle Fueling and Submetering

**Background:** A draft HB 44 Tentative Code Requirements for Electric Vehicle Fueling and Submetering proposal was distributed to USNWG members on November 29, 2012. USNWG were asked to submit comments to the Technical Advisor by January 8, 2013.

The Technical Advisor distributed the table shown in Attachment 9, which lists USNWG member comments on the draft HB 44 Tentative Code proposal along with corresponding responses prepared by the Technical Advisor.

**Recommendation:** The Technical Advisor will outline a suggested plan for completing the development of the HB 44 proposal and ask for input and suggestions from the USNWG. In order to be prepared for this discussion, members are asked to review the draft HB 44 proposal (Attachment 8) and the comments (Attachment 9) prior to the meeting to identify outstanding issues that need to be resolved. Some examples of issues that have already surfaced which will need to be resolved are listed below:

* Test procedure and test equipment needs for field inspection and testing. [Note: The EVSE Meter Test Procedure and Equipment Drafting Subcommittee was established to address this issue.]
* Gaps between nationally recognized meter standards (e.g., ANSI C12) and standards that are needed for new EVSE specific meter technology.
* Identification of requirements in the HB 44 proposal as possible exceptions for systems that are used exclusively for contract sales.
* Identification of any new requirements needed to promote uniformity in online advertising.

Members will be asked to agree on a plan for addressing these issues and other issues that have surfaced.

## 8. Next Meeting

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