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

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

June 11, 2013

Tele/Web Conference Meeting

**Connection Instructions and Meeting Agenda**

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| **Connection Instructions** |
| **Location:** Online (see the website link listed below) |
| **Time:**  Tuesday, June 11, 2013  1:00 P.M. – 5:00 P.M. Eastern Time |
| **Adobe Connect Meeting Name:** USNWG EVF&S – 11JUNE2013  **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.    [**http://nist.adobeconnect.com/usnwg-evfs-11june2013/**](http://nist.adobeconnect.com/usnwg-evfs-11june2013/)  **NOTE:** We regret that there are a limited number of login seats available 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 directly from your phone and entering the pass code listed. If you are only able to connect to the audio portion, please follow along by using the attachments that were e-mailed to you along with this agenda. |
| **Audio Connection from Adobe Connect:** After logging in, you should see a window asking 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 directly 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 electrical energy-measuring devices (including those used to measure and sell electrical energy commercially delivered as vehicle fuel and those used in submetering electrical energy 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.

**Meeting Agenda**

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| **Glossary of Acronyms** | | | |
| ANSI | American National Standards Institute | MOS | Method of Sale |
| CFR | Code of Federal Regulations | NCWM | National Conference on Weights and Measures |
| EVF&S | Electric Vehicle Fueling and Submetering | NEC | National Electrical Code |
| EVSE | Electric Vehicle Supply Equipment | NIST | National Institute of Standards and Technology |
| HB 44 | NIST Handbook 44 *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices* | OWM | Office of Weights and Measures |
| HB 130 | NIST Handbook 130 *Uniform Laws and Regulations in the Area of Legal Metrology and Engine Fuel Quality* | PEV | Plug-in Electric Vehicle |
| kW | Kilowatt | SI | International System of Units |
| kW·h | Kilowatt hour | USNWG | U.S. National Work Group |
| L&R | NCWM Laws and Regulations Committee |  |  |
| 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 Membership Roster** (File name: 1- USNWG EVF&S Member Roster) | 1 |
| 2 | **Comments on the HB 130 MOS Proposal Since January, 2013**  (File name: 2- USNWG EVF&S MOS Comments received 5-10-13) | 2 |
| 3 | **Updated HB 130 MOS Proposal**  (File name: 3- Section-IVb-12-HB 130-EVF&S 5-10-13) | 2 |

**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 member roster (Attachment 1).

## 2. HB 130 Method of Sale Regulation for Electrical Energy as Vehicle Fuel

**Background:** After reviewing and revising the HB 130 method of sale (MOS) proposal during its January 15-17, 2013 meeting, the USNWG voted 12 to 1 to recommend to the NCWM L&R Committee that the proposal was ready for voting. The USNWG recognized that some members needed time to further vet the revised proposal within their organizations, but expected this process to be complete within a few weeks of its 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 agreed (on recommendation by the USNWG) to designate the HB 130 MOS proposal from the USNWG 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.

After further vetting, several members submitted suggested changes to the MOS proposal to the Technical Advisor over the January to May time frame. The Technical Advisor has compiled the suggested changes that were submitted in writing with technical responses in Attachment 2. The Technical Advisor has further modified the draft of the HB 130 MOS proposal in Attachment 3 to incorporate the USNWG’s recommendations for minor changes to the language. The USNWG will be asked to consider these latest modifications to the draft.

In response to comments received during the review cycle and also discussion during the January 15-17, 2013 meeting, a 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 conducted further research and now recommends reverting back to the originally proposed requirement that allows the unit price to only be displayed in whole cents. Weights and measures officials have received complaints about price posting that includes tenths of one cent in other applications. 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 a 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 modification to HB 130, to include a new MOS for the Retail Sales of Hydrogen Fuel, was adopted and specifies that the unit price be displayed in terms of whole cents.

**Recommendations:**

* Members of the USNWG will be asked to consider the comments on the MOS proposal in Attachment 2.
* Members will be asked to consider the alternative NIST OWM recommendation to revise paragraph 2.XX.3.(a) in the HB 130 MOS proposal as shown below and in Attachment 3 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 approve the amendments to the January 2013 HB 130 MOS proposal that are shown in Attachment 3. If a quorum is not present during the meeting, the Technical Advisor will ballot all P‑members electronically. If the USNWG determines the HB 130 MOS proposal is not ready for NCWM adoption, the Technical advisor will notify the NCWM L&R Chair that the USNWG needs more time to complete the proposal and will request the item be changed from “Voting” to “Informational” status. Note that such an outcome will delay the possible adoption of any MOS for another full year, potentially impacting the acceptance of EVSE systems in some jurisdictions and affecting consumer confidence and understanding. Members should also be aware that any USNWG recommendations to make other than “minor” modifications may be viewed by the L&R Committee as being too extensive to allow the item to maintain its status as a “voting” item.

## 3. 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 will provide background information on the need for a MOS; describe the USNWG efforts in this area; and encourage other NCWM members to support the proposal on the L&R Committee’s agenda (Item 232-5).

**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; 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 the NCWM L&R Committee to include a new method of sale regulation in NIST Handbook 130 that recognizes retail sale of electrical energy for vehicle refueling applications. This proposal addresses: (1) method of sale; (2) unit price display; (3) identification of the service levels; (4) additional fees connected to charging; (5) device labeling; (6) street signs and other advertising; and (7) related definitions. The USNWG supports the proposal which appears in the 2013 NCWM Interim Report in L&R Committee Agenda Item 232-5: Section 2.XX. Retail Sale of Electricity/Vehicle with the following minor modifications:

* + *Insert the USNWG’s Agreed-upon June 2013 Modifications from Agenda Item 2*

The USNWG encourages NCWM members to adopt Item 232-5 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. A draft of the proposed code is already under review by the USNWG.

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

**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 will parallel the USNWG’s development of the HB 44 proposal. This work also hinges on the USNWG reaching a consensus on the method of sale for electrical energy used as vehicle fuel. 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 for the EVSE Subcommittee. The following is a list of USNWG members who volunteered to serve on the subcommittee.

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

* **Chair:** Ted Bohn (ANL)
* **Technical Advisor:** TBD
* 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)
* Tom Nelson (NIST)
* Ambler Thompson (NIST)

**Recommendation:** Members will be asked to elect a Subcommittee Technical Advisor. The Subcommittee Chair will be asked to lead a discussion on the Subcommittee’s plans.

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

**Background:** A draft HB 44 Tentative Code for Electric Vehicle Fueling and Submetering proposal was distributed to USNWG members on November 29, 2012. USNWG members submitted comments to the Technical Advisor. The Technical Advisor compiled the suggested changes that were submitted in writing together with technical responses and these were shared with USNWG on January 14, 2013 as Attachment 4 to the Meeting Agenda for the January 15-17, 2013 USNWG meeting.

**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. 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 C12.1 Electric Meters Code for Electricity Metering, ANSI C12.20 Electricity Meters - 0.2 and 0.5 Accuracy Classes) and standards that are needed for new EVSE specific meter technology.
* Identification of specific requirements in the HB 44 Tentative Code 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 and other issues that have surfaced.

## 6. Next Meeting

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