NIST Status Report
[6/19/13]

Group: NIST U.S. National Work Group on Measuring Systems for Electric Vehicle Fueling and Submetering (USNWG EVF&S)

Scope and Purpose: In August 2012, NIST formed the USNWG EVF&S to develop proposed requirements for commercial electrical energy-measuring devices (including those used in submetering electrical energy at residential and business locations and those used to measure and sell electrical energy dispensed as a vehicle fuel) 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 metered electricity is consumed by the end purchaser and that falls under the authority of entities such as the local utility commission.

Membership: USNWG members include representatives from:

- vehicle charging equipment and electric meter manufacturers,
- State and local weights and measures jurisdictions,
- energy distribution companies and service providers,
- national laboratories,
- technical committees (e.g., the ANSI C12 Chair),
- standards organizations (i.e., UL and NEMA),
- NIST OWM and NIST Smart Grid Interoperability Panel.

Meetings:

The USNWG has met a total of five times.

In November 2012, NIST OWM prepared and distributed to the USNWG draft proposals for a method of sale (MOS) regulation (for inclusion in NIST HB 130) for electric vehicle refueling and a device code (for inclusion in NIST HB 44) that addresses both electric vehicle refueling and submeter applications.

At its January 15-17, 2013 meeting, the USNWG voted 12 to 1 to recommend to the NCWM L&R Committee that the proposed new HB 130 MOS regulation be presented for a vote during the July 2013 NCWM. The MOS 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.

Following the January meeting, USNWG members provided comments and suggested changes after vetting the HB 130 MOS proposal within their organizations.

At its June 11, 2013 meeting, the USNWG discussed modifications to its original HB 130 MOS proposal:

1. A modified proposal based on those comments which had been received between January 28, 2013 and May 30, 2013 that might be considered "minor" changes was prepared for the USNWG to consider during its June 2013 meeting. These suggested "minor" modifications were intended to:
    - Clarify that the MOS does not apply where no fees are associated with the delivery or distribution of electrical energy.
    - Reword the definition of the term **Electrical Energy Sold as Vehicle Fuel** to enhance clarity.

- Remove the option to display the unit price in tenths of one cent and require that the unit price be display only in units of whole cents.
- Include wording to clarify that the labeling and signage requirements for communicating the terms of "variable service" are intended to apply only to those conditions affecting service which are "under the direct control of the seller."
- Include the requirement that the display of any additional fees shall also include the basis for those fees.
- Clarify that EVSE products shall be listed with a nationally recognized test laboratory (NRTL) and shall be "installed" (instead of merely being "labeled") in accordance with the National Electric Code (NEC).
- Recognize that street signs and advertising may appear either directly on or "in close proximity to" an EVSE.

The USNWG did not vote on this version, but proceeded to discuss and vote on the amendment to the scope described in Item 2 because members disagreed on the scope of the MOS.

2. During the meeting, an alternate proposal was made to modify the scope of the MOS to allow more than one method of sale. The proposed alternative would not require disclosure of the quantity of the electrical energy delivered to a consumer, as is currently provided when purchasing electrical energy from a utility or through submetering applications. Specifically, the proposal was to add the following language to paragraph **2.XX. Retail Sales of Electrical Energy Sold as a Vehicle Fuel**:

   > This section does not apply to sales of electric vehicle charging services where the electric vehicle user is provided unlimited access to electric vehicle charging services or where the electrical energy is free, as in the case where the fee assessed is wholly independent of the quantity of electrical energy delivered.

   The amendment to modify the scope of the application of the MOS was adopted based on the results of the voting on the amendment shown below.

Voting Results on the Amendment to the June 11, 2013 Modified Proposal			
Sector	**In Favor**	**Opposed**	**Total**
Industry	**9**	**1**	**10**
National Laboratories	**2**	**0**	**2**
Consumer Advocacy	**1**	**0**	**1**
Weights and Measures Officials	**0**	**6**	**6**
Total	**12**	**7**	**19**

3. The USNWG voted on a modified version of the MOS proposal, including the revised scope as outlined in Item 2 above. This modified proposal was supported by a majority vote of the USNWG during the June 11, 2013 meeting with the following results.

Voting Results on the June 11, 2013 Modified Proposal as Amended			
Sector	**In Favor**	**Opposed**	**Total**
Industry	**9**	**2**	**11**
National Laboratories	**2**	**0**	**2**
Consumer Advocacy	**1**	**0**	**1**
Weights and Measures Officials	**0**	**6**	**6**
Total	**12**	**8**	**20**

Based on the results of this vote, the USNWG recommends that the NCWM L&R Committee replace the proposal in the 2013 Publication 16 L&R Interim Meeting Report Item 232-5 with the following prior to voting on the item at the NCWM.

B. Uniform Regulation for the Method of Sale of Commodities

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

2.XX. Retail Sales of Electrical Energy Sold as a Vehicle Fuel. This section does not apply to sales of electric vehicle charging services where the electric vehicle user is provided unlimited access to electric vehicle charging services or where the electrical energy is free, as in the case where the fee assessed is wholly independent of the quantity of electrical energy delivered.

2.XX.1. Definitions.

2.XX.1.1. Electrical Energy sold as vehicle fuel. – Electrical energy kept, offered or exposed for sale and sold at retail as a vehicle fuel and transferred to an electric vehicle primarily for the purpose of propulsion and/or energizing the vehicle.

2.XX.1.2. Electric vehicle supply equipment (EVSE). – The conductors, including the ungrounded, grounded, and equipment grounding conductors; the electric vehicle connectors; attachment plugs; and all other fittings, devices, power outlets, or apparatuses installed specifically for the purpose of measuring, delivering, and computing the price of electrical energy delivered to the electric vehicle.

2.XX.1.3. Fixed service. – Service that continuously provides the nominal power that is possible with the equipment as it is installed.

2.XX.1.4 Variable service. – Service that may be controlled resulting in periods of reduced, and/or interrupted transfer of electrical energy.

2.XX.1.5 Nominal power. – Refers to the "intended" or "named" or "stated" as opposed to "actual" rate of transfer of electrical energy (i.e., power).

2.XX.2. Method of Retail Sale. – All electrical energy kept, offered, or exposed for sale and sold at retail as a vehicle fuel shall be in units in terms of the megajoule (MJ) or kilowatt-hour (kW·h). In addition to the fee assessed for the quantity of electrical energy sold, fees may be assessed for other services; such additional fees may be based on time measurement and/or a fixed fee.

2.XX.3. Retail Electric Vehicle Supply Equipment (EVSE) Labeling.

(a) A computing EVSE shall display the unit price in whole cents (e.g., $0.12) on the basis of price per megajoule (MJ) or kilowatt-hour (kW·h).

(b) For fixed service applications, the following information shall be conspicuously displayed or posted on the face of the device:
  (1) the level of EV Service expressed as the nominal power transfer (i.e., nominal rate of electrical energy transfer), and
  (2) the type of electrical energy transfer (e.g., AC, DC, wireless, etc.).

(c) For variable service applications, the following information shall be conspicuously displayed or posted on the face of the device:
  (1) the type of service (i.e., "Variable");
  (2) the minimum and maximum power transfer that can occur during a transaction as a result of direct control by the seller, including whether service can be reduced to zero;

(3) the conditions under which variations in electrical energy transfer will occur as a result of direct control by the seller; and
(4) the type of electrical energy transfer (e.g., AC, DC, wireless, etc.).

(d) Where fees will be assessed for other services in direct connection with the fueling of the vehicle, such as fees based on time measurement and/or a fixed fee, the additional fees shall be displayed along with the basis for the fee.

(e) The EVSE shall be labeled in accordance with 16 CFR, PART 309 – FTC Labeling Requirements for Alternative Fuels and Alternative Fueled Vehicles.

(f) The EVSE shall be listed by a nationally recognized test laboratory (NRTL) and installed in accordance with the National Electric Code® (NEC) NFPA 70, Article 625 Electric Vehicle Charging Systems (**www.nfpa.org**).

2.XX.4. Street Sign Prices and Other Advertisements.

Where electrical energy unit price information is presented on street signs or in advertising other than on or in close proximity to the EVSE:

(a) The electrical energy unit price shall be in terms of price per megajoule (MJ) or kilowatt-hour (kW·h) in whole cents (e.g., $0.12).

(b) In cases where more than one electrical energy unit price may apply over the duration of a single transaction to sales to the general public, the terms and conditions that will determine each unit price and when each unit price will apply shall be clearly displayed.

(c) For fixed service applications, the following information shall be conspicuously displayed or posted:
(1) the level of EV Service expressed as the nominal power transfer (i.e., nominal rate of electrical energy transfer), and
(2) the type of electrical energy transfer (e.g., AC, DC, wireless, etc.).

(d) For variable service applications, the following information shall be conspicuously displayed or posted:
(1) the type of delivery (i.e., "Variable");
(2) the minimum and maximum power transfer that can occur during a transaction as a result of direct control by the seller, including whether service can be reduced to zero;
(3) the conditions under which variations in electrical energy transfer will occur as a result of direct control by the seller; and
(4) the type of electrical energy transfer (e.g., AC, DC, wireless, etc.).

Where fees will be assessed for other services in direct connection with the fueling of the vehicle, such as fees based on time measurement and/or a fixed fee, the additional fees shall be included on all street signs or other advertising.

(Added 20XX)

Input Needed: The USNWG requests input from the L&R Committee and NCWM members on whether a MOS proposal that would allow more than one method of sale for electrical energy would be acceptable.

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