USNWG on Taximeters

October 21, 2014

Web-Conference

Draft Agenda

# Carry-over items

## Proposal to add new requirements S.1.4.1 Multiple rate taximeters, S.1.4.1.1. Manual rate changes, and S.1.4.1.2. Automatic rate changes.

This proposal would add new requirements intended to regulate how and when a change to the rate used for fare calculation could occur. The original proposal is shown below.

**S.1.4.1. Multiple rate taximeters – All rates in use for taximeters equipped to calculate fares at multiple rates must be included in the statement of rates as provided in UR.3.**

**S.1.4.1.1. Manual Rate Changes – Taximeters equipped with a means for changing the rate applied, that is not protected by a physical or other type of security seal shall be capable of manually applying rate changes of predetermined, flat rates only.**

**S.1.4.1.2. Automatic Rate Changes – Automatic rate changes may not occur between two consecutive drops and are permitted for differentials including:**

1. **trips that exceed a set distance;**
2. **trips that exceed a set time limit;**
3. **day/evening differentials;**
4. **specific days of the week; or**
5. **specific dates (e.g. holidays).**

**When a change in rate allowed under (a) and (b) occurs, the change must be identified and clearly displayed to the customer. Automatic rate changes allowed under (c), (d), and (e) above shall not occur after the meter has been set to register charges and before the meter has been cleared for that transaction (i.e., between fares).**

**(Added 20XX)**

When this item was discussed during meetings of the USNWG on Taximeters in both May and again in August of 2014, the work group identified several concerns with the draft. One problematic aspect in the initial draft was that it had been written with the presumption that all taximeters on the market today had the capability to calculate passenger fares using multiple rates. This notion was later disputed by Mr. John Roach who shared information with the work group that prompted the USNWG to alter this impression.

During the discussion regarding this item, the need for the paragraph S.1.4.1. was questioned. The work group agreed that the first sentence of this paragraph should be stricken because it created a perception that this is better suited as a user requirement. Also, the recognition that there are currently no requirements in NIST Handbook 44 (HB44) that would prohibit a taximeter from calculating fares using multiple rates created some doubt among the work group members whether this paragraph is necessary.

The proposed new paragraph S.1.4.1.1. Manual Rate Changes did not receive any substantial support from the USNWG when considered during the May and August 2014 meetings either. Concerns expressed by the participants of those meetings included reservations about predicating any requirements for manual rate changes on whether the rate changing function of the taximeter is a sealable feature or not.

Other thoughts on this paragraph included the suggestion that in some jurisdictions, manual rate changes are being inhibited or disabled unless certain parameters are met. Additionally, many taximeters that are in service are now programmed so that a change of one time/distance based rate may be manually changed to another time/distance based rate – not only to a flat rate as specified in the proposal. This type of feature is frequently one that is dependent upon the manner in which the taximeter is programmed to operate however. Mr. Byron Corcoran stated that when a taximeter is placed into service, the requirements of the jurisdiction where it will operate will be complied with through appropriate programming of the taximeter.

Regarding the proposed new paragraph S.1.4.1.2., the USNWG generally agreed that this paragraph is one that the work group would support however, there are some further changes necessary. Mr. Corcoran pointed out that there is an additional type of automatic rate change that should be included in the paragraph. He stated that in some jurisdictions the rate by which a fare is calculated may also include a change of rate based on a monetary threshold. In this type of taximeter programming, the rate change would occur when the cost of the fare reached a specific value.

In order to further develop this proposal, the work group will be asked to address the following concerns.

* Does the work group support the elimination of the proposed S.1.4.1.?
* Given that the USNWG has indicated that manual rate changes are a concern related to fraudulent use of the taximeter, what are appropriate safeguards that should be required that relate to the design of a taximeter equipped with the ability to manually change a rate?
* Should there also be requirements drafted as user requirements that would serve to appropriately limit the ability to manually change a rate?
* Are there any additional changes (other than adding a change based on a monetary threshold) to paragraph S.1.4.1.2. that the work group believes are necessary?
* Similar to the concerns expressed with paragraph S.1.4.1.1., should the requirements drafted in S.1.4.1.2., be composed in a user requirement rather than a specification requirement?

## Proposed new definitions for the terms “Flat Rate” and “Negotiated Flat Rate”

These definitions as listed below are recommended to describe terms being used in the drafting of other agenda items and therefore it has been recommended that they developed for addition to HB44, Appendix D.

**flat rate. – a predetermined, fixed fare indicated on the taximeter based on a definite and specific point of origin and a definite and specific destination point. [5.54]**

**(Added 20XX)**

**negotiated flat rate. - A fixed fare that is not predetermined and is based on a destination point that is agreed upon by both driver and passenger which is then entered into the taximeter by the taxi driver. [5.54]**

**(Added 20XX)**

During the August 2014 meeting of the USNWG, these proposed new definitions were reviewed prior to being submitted to the Regional Weights and Measures Associations for consideration. This review established that there were some in the work group who did not fully support the proposal and would recommend that further development is needed.

Among some of the concerns that were identified at that meeting include the following.

* It is believed that a negotiated flat rate in some instances can be entered into the system via Passenger Information Monitor (PIM) by the passenger. This is not what is indicated in the proposal.
* The definition proposed for “Negotiated Flat Rate” states that this type of fare is “based on a destination point that is agreed upon by both driver and passenger…” but it was pointed out that there may be other reasons for negotiation to take place

Given these concerns and other editorial-type questions that were expressed, these proposed definitions will be given further review and amended if needed.

# New Items

## Proposal to amend existing requirement S.5. Provision for Security Seals

The use of an electronic form of security seal was discussed at the USNWG initial meeting in September 2012 although there was no agreement on that issue among the members of the work group at that time. While some members supported providing the option to seal the metrological functions of a taximeter using electronic means, others opposed the use of anything other than a physical seal.

Since taximeters have evolved much in the same way as other types of commercial weighing and measuring devices, their metrological features are controlled largely through programmable software rather than through mechanical means. Many types of these other weighing and measuring devices have either replaced or supplemented the use of a physical security seal with an electronic form of security. This is usually accomplished by using an audit trail where an electronic record is maintained for any changes made to parameters that are declared as sealable parameters.

The recommendation for amending paragraph S.5. originated from a meeting of regulatory officials (both current and former) held in August 2011. This proposed change to paragraph S.5. would permit remote configuration of the taximeter provided that access to those changes is prevented unless a physical seal on the taximeter is broken. In addition, any changes made through remote configuration would be required to be recorded in an event logger within the audit trail. However, the proposal does not recommend that an electronic type of seal replace the use of a physical seal on taximeters.

Following what has been done in other specific device codes in HB44, this proposal also includes the addition of a table outlining the criteria that is to be used for devices that have the capability of remote configuration.

**S.5. Provision for Security Seals.** – Adequate provision shall be made to provide security for a taximeter. Security may be provided either by:

(a) Affixing **physical** security seals to the taximeter and to all other components required for service operation of a complete installation on a vehicle, so that no adjustments, alterations, or replacements affecting accuracy or indications of the device or the assembly can be made without mutilating the seal or seals; **~~or~~**

(b) Using a combination of security seals described in paragraph (a) and, in the case of a component that may be removed from a vehicle (e.g., slide mounting the taximeter), providing a physical or electronic link between components affecting accuracy or indications of the device to ensure that its performance is not affected and operation is permitted only with those components having the same unique properties**; or**

**(c) For taximeters that are interfaced with enhanced software driven (POS) systems and that are capable of remote configuration, the sealing of calibration and configuration parameters shall be performed through the use of a physical seal that when removed may allow remote configuration. Any changes made after the removal of this physical seal must be recorded in an event logger.**

**(Added 20XX)**

The sealing means shall be such that it is not necessary to disassemble or remove any part of the device or of the vehicle to apply or inspect the seals.

(Amended 1988, **~~and~~** 2000, **and 20XX)**

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| ***Table S.5. Categories of Device and Methods of Sealing*** | |
| ***Categories of Device*** | ***Methods of Sealing*** |
| ***Category 1:  No remote configuration capability.*** | ***Seal by physical seal or a combination of physical seals and for components that may be removed from the vehicle, a physical or electronic link as described in (b) above.*** |
| ***Category 2:  Remote configuration capability, but access is controlled by physical hardware.***  ***The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode.*** | ***The hardware enabling access for remote communication must be at the device and sealed using a physical seal and two event loggers: one for calibration parameters and one for configuration parameters.***  ***The event loggers are required in the device; they must include event counters (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter. A printed copy of the information must be available through the device. The event loggers shall have a capacity to retain records equal to 10 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)*** |
| ***[Nonretroactive as of January 1, 20XX]***  **(Table added 20XX)** | |

**[Audit trails shall use the format set forth in Table S.5. Categories of Device and Methods of Sealing]\***

**[\*Nonretroactive as of January 1, 20XX]**

During the same period of time that the USNWG was being formed, another proposal was submitted by a stakeholder in the taximeter industry. This proposal (shown below) contained a recommendation that differed from the previous proposal in that it recommended that the metrological functions of a taximeter be secured by using physical sealing methods, a combination of both physical and electronic seals or, for certain electronic components/data an electronic form of sealing only. This proposal was considered by the National Conference on Weights and Measures (NCWM) in July 2012 where a conclusion was made that the proposal needed further development. NCWM supported a recommendation that the USNWG consider this proposed change and improve upon the structure and clarity of this proposal as needed.

**S.5. Provision for Security Seals.** – Adequate provision shall be made to provide security for a taximeter. Security may be provided **~~either~~** by:

(a) Affixing security seals to the taximeter and to all other components required for service operation of a complete installation on a vehicle, so that no adjustments, alterations, or replacements affecting accuracy or indications of the device or the assembly can be made without mutilating the seal or seals; **~~or~~**

(b) Using a combination of security seals described in paragraph (a) and, in the case of a component that may be removed from a vehicle (e.g., slide mounting the taximeter), providing a physical or electronic link between components affecting accuracy or indications of the device to ensure that its performance is not affected and operation is permitted only with those components having the same unique properties**; or**

**(c) Using a combination of security seals described in paragraph (a) and, (b) and, in the case of a component that is electronic data affecting accuracy or indications of the taximeter, providing a unique electronic security seal on the electronic data that is encrypted and protected by an audited authentication and authorization mechanism, so that no adjustments, alterations, or replacements affecting the component can be made without the authentication and authorization. (Encryption algorithm for electronic seals must meet NIST AES ADVANCED ENCRYPTION STANDARD.)**

The sealing means shall be such that it is not necessary to disassemble or remove any part of the device or of the vehicle to apply or inspect the seals.

(Amended 1988, **~~and~~** 2000**, and 20XX**)

The work group will be asked to review and consider both versions of the proposed changes to S.5. Provision for Security Seals and to comment on these suggested changes.

## Proposed changes to S.3.2. Flag

This proposed amendment is intended to eliminate language that is applicable to what is considered to be obsolete technology and mechanisms used in equipment that is no longer used, and to add new language that is applicable to current technology utilized in the taximeter industry.

It was the belief of USNWG members attending that group’s meeting in September 2012 that taximeters equipped with mechanical lever arms (flags) used to place a taximeter in or out of operation are no longer found in active service. Taximeters using electronic controls (buttons, switches, keypads, etc.) have replaced the mechanical type of devices and therefore the existing requirement is no longer relevant. It is recognized however, that the intent of the existing requirement is to provide the passenger with sufficient visual evidence to determine the operational status of the taximeter. With this recognition in mind, new language is being proposed that would promote that same awareness on the part of the passenger.

**S.3.2. ~~Flag.~~ Operational Controls.** – ~~If the control for the operating condition is a lever arm and flag, the flag shall be at its highest position when the taximeter is cleared, and in this position the whole of the flag shall be above the level of the taximeter housing.~~ **The effect of all operational controls whether on the meter or on a separate input device shall be readily apparent and visible to the customer.**

**(Added 20XX)**

The USNWG will be asked to provide comments on this proposal.

# Additional Items

## USNWG GPS Subcommittee

NIST Office of Weights and Measures has recently succeeded in re-establishing a chair position for the GPS Subcommittee. After months of no activity, the activities of this subcommittee are being revived and the work towards establishing standards and policies regarding the use of the Global Positioning Satellite system and smartphone apps in the taxi industry will continue.

The USNWG will be provided with details regarding the Subcommittee’s efforts.

## USNWG Webpage

A web-page has been established within the NIST Office of Weights and Measures website. This page can be accessed using the following link and contains information about the USNWG and its efforts. <http://www.nist.gov/pml/wmd/usnwg-taximeters.cfm>

All summaries from previous meetings are available for downloading as well as some related documents. There will be postings here relating to upcoming meetings and any other relevant information. This web-page is a work in progress and it is intended that the site will continue to develop and be populated with additional material as appropriate.