July 7, 2022

Mr. Brad Bachelder
Chair, Specifications and Tolerances Committee
National Conference on Weights and Measures

RE: Priority Voting Item – Make Electric Vehicle Fueling Systems Code Permanent

Dear Chair Bachelder and Members of the Specifications and Tolerances Committee:

On behalf of ABB, Alliance for Transportation Electrification, Alliance for Automotive Innovation, Electrify America, EV Connect, EVgo, FreeWire Technologies, Shell Recharge Solutions (formerly Greenlots), Rivian, Siemens, Tesla, and Tritium (the Joint EV Commenters), we are writing regarding the new priority voting item, Make Electric Vehicle Fueling Systems Code Permanent. The item was provided at the end of day June 24 to members of the National Conference on Weights and Measures (NCWM).[1] The priority voting item essentially changes the status of Section 3.40 in Handbook 44 from "tentative" to "permanent" effective January 1, 2023.

The Joint EV Commenters appreciate the need to provide more clarity on the enforceable status of Section 3.40 to states and to send a clear signal to EV charger manufacturers. We have significant concerns about the priority item in its current form. The priority voting item undercuts the deliberative process that EV charging companies and regulators have been working on in good faith for the past two years and risks stopping the deploying of public direct current (DC) fast chargers, like those specified in the National Electric Vehicle Infrastructure (NEVI) program, and taking existing public chargers out of service until the technology and tools to meet Section 3.40 become available.

The consequences of implementing the tentative code as written and in an expedited fashion are potentially quite detrimental to the continued deployment and operation of public EV charging infrastructure, and in particular DC fast charging, in the U.S. The economic impact of retrofitting the existing public EV charging infrastructure across the U.S. to meet the requirements in the tentative code will likely cost more than $650 million, as discussed further below. Finally, given unavailability – at least at present - of testing equipment to carry out accuracy testing in the field on DC fast chargers, or even of a full type evaluation process, it will also be effectively impossible to comply with the tentative code in many instances. This detrimental impact is preventable.

Working closely with NCWM and the U.S. National Work Group on Electric Vehicle Fueling, the Joint EV Commenters have proposed modifications to Section 3.40 that reflect the current and evolving state of metrology technology and provide a pathway to permanent code status that ensures consumers can charge their vehicles with confidence, convenience, and trust. Several proposals on EV charging equipment, including EVF 21.1 and EVF 21.5, pending in front of NCWM have been deemed developing items. None of these modifications are incorporated in the priority voting item.

We strongly urge the S&T Committee to amend the priority voting item. We suggest the following modifications:

[1] https://cdn.ncwm.com/userfiles/files/Meetings/Annual/Pub%2016%20Archive/2022/Priority%20Item-Permanent%20EVFS%20Code-2022.pdf

- 1) Amend the effective date to be January 1, 2024 and enable the current items on EV charging that are in development to continue to move through the process to be incorporated in the future.[2]
- 2) Amend the proposal to include specific provisions that are in line with addressing the items under EVF 21.1 and EVF 21.5 which the S&T committee voted to have in development and which items it deemed to have merit. or, at a minimum,
- 3) Amend the proposal to postpone enforcement of accuracy tolerance provisions and a particular provision about indicators, until 2028, to give time for the testing equipment to be solidly available around the country before the use of it is made obligatory.

If the S&T Committee is not able to incorporate the modifications, we urge the NCWM to reject the priority item to continue progress on the developing items and pursue a 2024 effectiveness date.

Consensus for Modifications in Section 3.40

The U.S. National Work Group on Electric Vehicle Fueling has met multiple times over the last half a year to finalize feedback on outstanding items in the tentative code that must be addressed prior to making it permanent code. Based on regulator and technical staff feedback, proposals have been modified and refined in order to ensure that there is some level of protection for existing DC equipment including a slightly different tolerance level. During the most recent Work Group meetings, the move toward potential consensus has become more apparent. In addition, the Group has identified certain features of the existing code that are impracticable or inefficient. The Work Group reached consensus on changes that need to be made to those features.

Given the expedited proposal that the Work Group was not aware of until June 24, it is important to recognize the significant amount of work the technical advisers, industry and regulators have put into the Work Group in order to refine the tentative code. We request the S&T Committee and NCWM allow the Work Group and these developing items to proceed during normal code process work, so it can be incorporated as part of a permanent code in 2024.

Lack of Consideration for Implementation Feasibility

The priority voting item does not reflect or address the implementation challenges for assessing accuracy tolerance requirements on existing EV charging infrastructure or new stations, like the lack of availability of National Type Evaluation Certification for DC charging equipment.

The impact of immediate (January 2023) full enforceability of section 3.40 will be severe. There are at least 29 states that automatically incorporate Handbook 44 by reference, to whatever the current edition is. Any amendments adopted at the NCWM annual meeting, will automatically be the law in all those states in January 2023. As such, nearly all public DC fast charging infrastructure in those states will have to be taken offline. Further, most DC fast charging infrastructure deployment will cease in those states, including the installation of 150kW chargers, as required by the NEVI program.

California is the only state that has implemented a version of Handbook 44. Even though California has implemented a version of Section 3.40, it maintained key elements that ensure that existing EV charging equipment does not have to be removed and replaced. In California, DC charging equipment installed before 2023 can continue operating and is exempt from the standards until 2033. In the Work Group,

[2] This date aligns well with NEVI-funded projects, as the vast majority will be completed in 2024 and later due to federal reviews, state grant processes, and site permitting, preparation, and interconnections.

industry has proposed a much narrower exemption for existing equipment, which would require relaxed accuracy tolerance for legacy equipment installed before 2024, as opposed to outright exemption.

Meanwhile, though California requires ordinary accuracy inspections when a newly installed DC charger is placed in service in 2023 and after, California recently acknowledged that test equipment for DC chargers is not available or ready to enforce the accuracy requirements. They recently issued a memo urging counties not to enforce the DC metering standards on January 1, 2023 given lack of appropriate test equipment.[3] For "type evaluation," i.e., certifying device models, California will be issuing provisional certificates without testing accuracy.

Given that California is furthest along in implementing Section 3.40 this paints a stark picture if the priority voting item advances without modification. At this time, we are also unaware of any testing device on the market that can carry out the field test specified in the Tentative Code for a DC fast charger, regardless of NIST traceability. When testers do become available, they will likely be limited in supply—thus not available at commercial scale in order to facilitate ease of implementation by state weights and measures officials.

While the tentative code has been around for some time, it was created at a time when high power charging at the speeds of today were not contemplated. This fact is reflected in the lack of commercially available test equipment for DC charging. Our understanding is that in certain states when there is an accuracy requirement in force, charging operators may not be able open a new device for use until it is certifiably accurate. If we cannot test them to be accurate, we cannot install them. The result will be a moratorium on installations during 2023 in many states.

Detrimental EV Charging Deployment Impact

Making Section 3.40 permanent starting in January 2023 will cost the U.S. economy at least $650 million and likely lead to a halt to installation of new public EV chargers in 2023. The California Department of Food and Agriculture (CDFA), when it adopted its regulations for charging stations, estimated that a conservative mid-range cost for retrofitting a DC charger for Section 3.40 compliance is roughly $20,000.[4] The costs arise from such tasks as replacing the existing charging cables with newer versions that enable four-wire measurements.[5] CDFA estimated the cost of retrofitting a Level 2 AC charger to be roughly $5,000.[6] Using these estimates, retrofitting the approximately 17,053 DC chargers (excluding those in California) that that are currently operating in the U.S. would cost approximately $341 million.[7] Retrofitting the 66,883 public AC chargers (excluding those in California) currently installed would cost another approximately $334 million.

The alternatives for charging station operators who wish to avoid these expensive retrofits of older equipment would be replacing the affected charging stations (even though they are still operable and well within their expected useful life); or pausing installations until fully compliant DC chargers are widely available. Replacements would cost significantly more than $20,000 per charger; a fast DC charger can

[3] https://www.cdfa.ca.gov/dms/notices/devices/2022/d-22-01_dcfc_evfs_testing_sealing_registration.pdf
[4] https://www.cdfa.ca.gov/dms/pdfs/regulations/EVSE_ISOR.pdf.
[5] For fast DC chargers, the cables are themselves complex. They include thick conductors to carry hundreds of amps of current; they are liquid-cooled, so they include conduits for the coolant along the length of the cable; they must be robust and safe for consumer use; yet they must be pliable and light enough for a customer to be able to move the cable between the charging station and the car.
[6] California has required Section 3.40 compliance for AC charging stations installed in that state since the beginning of 2021; we gather that AC charging stations meeting the standard are now available and in principle could be installed in the rest of the US as well going forward.
[7] AFDC station locator available at: https://afdc.energy.gov/stations/

cost between $80,000 and $150,000[8], for the equipment alone (leaving aside the cost of the work for the replacement). If the existing DC equipment had to be replaced it could cost the U.S. economy between $1.3B and $2.5B in hardware costs alone, not including the cost of the installation.

Addressing Safety Issues

The priority item's argument that compliance is necessary to ensure safety is spurious and disingenuous as Section 3.40 is not a safety standard. As is common knowledge, Handbook 44's primary purpose is "to eliminate from use, weights and measures and weighing and measuring devices that give readings that are false, that are of such construction that they are faulty (that is, that are not reasonably permanent in their adjustment or will not repeat their indications correctly), or that facilitate the perpetration of fraud, without prejudice to apparatus that conforms as closely as practicable to the official standards." EV charging installations comply with a number of safety standards including UL 2231, the National Electric Code, and local permitting requirements[9]. Further, the U.S. Department of Transportation issued a proposed rulemaking that outlines safety standards for the NEVI program. This includes the requirement that all EVSE "obtain certification from an Occupational Safety and Health Administration Nationally Recognized Testing Laboratory."[10]

Operating Outside the Annual Amendment Process and US National Work Group on Electric Vehicle Fueling

The Joint EV Commenters have been active participants in the US National Work Group on EV Fueling over the past two years. Many of these companies operating EV charging today did not have the opportunity to participate in the initial working group process that was launched in 2012 to develop the current tentative code as these companies either did not exist or were just starting to scale.

Currently, there are two developing items, EVF 21.1 and EVF 21.5 at the S&T Committee that were brought forward via the Form 15 process in August of 2020. As directed by the S&T Committee, the submitters have diligently worked toward refining these proposals as they are critical items that must be addressed in order to make Sec 3.40 workable and enforceable given todays and future EV charging technology. This has included countless hours engaging in the Work Group on EV Fueling run by NIST staff and ensuring that feedback continues to be incorporated. The Work Group, made up of regulators, industry, and other interested parties, is now close to providing final language to NCWM for consideration in the next code cycle. It has continued to be impressed upon the submitters that a process via Form 15 must be followed and the submitters have continued to update the S&T committee, whether at the regional meetings or during the interim and annual meetings, on the status of these items to create transparency and efficiency.

While the Joint EV Commenters are newer to the NCWM process, it has always been our understanding that in order to provide modifications for consideration to Handbook 44, an organization must follow the annual amendment cycle. Under that process, as outlined on NCWM's website, the process moves through the regional associations and is then brought to the interim in January of the following year, before a vote the following July at the soonest.[11]

[8] https://theicct.org/sites/default/files/publications/ICCT_EV_Charging_Cost_20190813.pdf
[9] Public charging stations must obtain permits for the installation and operation of those stations, which includes inspections from the local authorities having jurisdiction (AHJ) to verify installations were done properly and do not present a safety hazard.
[10] https://www.regulations.gov/document/FHWA-2022-0008-0001
[11] https://www.ncwm.com/standards-dev

The priority item does not follow the regular process. At the same time, it is unclear how it will coordinate with the existing EV charging items that maintain developing status and must be addressed prior to the removal of the tentative code to not having a chilling effect on the EV charging market and to make it a workable code from an enforcement perspective.

Consumer price transparency and accuracy is of utmost importance and the industry shares the goal of this effort. We therefore request that the priority item to remove the tentative code status effective January 1, 2023 is only approved if, modifications are made such as those presented above. Moving forward with the priority item as written will have a detrimental effect on EV charging deployment in the United States. This is impact is directly avoidable by incorporating the suggestion made by EV manufacturers and developers under the current version of Section 3.40.

We appreciate the opportunity to provide our input on the priority voting item.

Sincerely,

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