Federal Highway Administration

Docket No. FHWA-2023-0054

Comment in response to *Request for Information on the J3400 Connector and Potential Options for Performance-Based Charging Standards*

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On March 6, 2024, the Federal Highway Administration published its *Request for Information on the J3400 Connector and Potential Options for Performance-Based Charging Standards* (89 FR 16081). This comment responds to that Request.

Summary: It would be unwise to spend another dollar of federal funding, including National Electric Vehicle Infrastructure (NEVI) funding, on CCS charging plugs. Henceforth, federal funding for Direct Current Fast Charging (DCFC), including NEVI funding, should be spent only on J3400 (North American Charging Standard or NACS) charging plugs.

Background.

The *Infrastructure Investment and Jobs Act* was enacted on November 15, 2021, promising that $7½ billion would be spent installing electric vehicle chargers across the United States. This amount of money was estimated to provide as many as 20,000 charging plugs at as many as 5000 charging stations.

On November 29, 2021, the Federal Highway Administration published *Development of Guidance for Electric Vehicle Charging Infrastructure Deployment* (86 FR 67782). This was followed on June 22, 2022 by a Notice of Proposed Rulemaking entitled *National Electric Vehicle Infrastructure Formula Program* (87 FR 37262). In response, the FHWA received 384 submissions, nearly all of which predicted (completely wrongly, as it turns out) that CCS was the wave of the future. On February 28, 2023, the Federal Highway Administration published *National Electric Vehicle Infrastructure Standards and Requirements* (88 FR 12724), which among other things promulgated 23 CFR § 680.106(c), which says:

> Each DCFC charging port [receiving the federal funding] must be capable of charging any CCS-compliant vehicle and each DCFC charging port must have at least one permanently attached CCS Type 1 connector.

In plain language, the new Rule mandated that effective on March 30, 2023, the only way to be eligible for the billions of dollars of federal funding for DC fast charging was to provide CCS charging plugs.

As will now be described, subsequent events have made this a bad Rule. The Rule needs to be amended to say “J3400” instead of “CCS”.

During 2023, the CCS standard was abandoned by every industry participant, in favor of the J3400 standard.

On May 25, 2023, Ford announced that it was switching from CCS charging ports on its electric vehicles to J3400 charging ports. Every maker of electric vehicles for the US market followed suit, finishing on February 12, 2024 with such an announcement by the last remaining car maker that had not already done so, namely Stellantis. Over this same time period, every major provider of DC fast charging services made similar announcements about adoption of J3400 charging plugs. See *Canonical list of domino clicks for adoption of Tesla-style charging plugs* at https://tesla-s-owner.com/canonical-list-of-domino-clicks-for-adoption-of-tesla-charging-plugs/.

How things are now.

It is important to pay close attention to the consequences of these announcements. It is estimated that at the present time there are just over three million electric vehicles in the US. About one-third of these (about one million) do their DC fast charging with a CCS charging plug. About two-thirds of these (over two million) do their DC fast charging with a J3400 charging plug. How will these numbers change as time goes on?

A first part of the answer is that the number of cars that need a CCS charging plug for DC fast charging is likely near its peak, and will diminish as time goes on. Within about a year, no car maker will be manufacturing electric vehicles for the US that need CCS charging plugs.

The rest of the answer is that the number of cars that need a J3400 charging plug for fast DC charging, already past two million, will continue to increase as time goes on.

There are presently about 15000 public CCS charging plugs in the US, located at about 7300 public CCS charging stations. (See *Alternative Fueling Station Locator* provided by the US Department of Energy.) These plugs, together with the Level 2 home chargers that many EV drivers use daily at home, should suffice to serve the existing number of EVs that require CCS charging plugs. Again it must be appreciated that the number of existing EVs that require CCS charging plugs is presently near its peak and will soon cease to grow.

Many potential purchasers of EVs are well aware that every car maker in the US market has said it will stop making CCS vehicles and will start making only J3400 vehicles. This will reinforce the well-known Osborne Effect (see *The Osborne Effect and Tesla supercharging* at https://tesla-s-owner.com/2023/06/27/the-osborne-effect-and-tesla-supercharging/):

> The Osborne effect is a social phenomenon of customers canceling or deferring orders for the current, soon-to-be-obsolete product as an unexpected drawback of a company's announcing a future product prematurely.

(Wikipedia article.) The Osborne Effect will likely contribute to the above-mentioned limitation on the total number of CCS vehicles that will ever be in use. Some fraction of potential purchasers of EVs will cancel present orders for CCS EVs, and will postpone their purchases of new EVs, so as to avoid being stuck with CCS EVs for which the number of CCS charging plugs will not appreciably increase with time. Some fraction of potential purchasers of EVs will choose to limit their purchases to J3400 EVs.

Again, in plain language, the CCS charging standard is soon to be obsolete in the US. The number of EVs needing CCS charging plugs, which has already likely peaked or will soon peak at only about one million, will not grow appreciably as time goes on. There is not a need for federal funding to subsidize future installations of CCS charging plugs.

And in plain language, the number of EVs needing J3400 charging plugs is already large (well over two million). Within a year, every new EV placed into service will need a J3400 charging plug and will not need a CCS charging plug. The only sensible ongoing allocation of federal funding for DC fast charging plugs is for J3400 charging plugs.

One might nonetheless worry that if the number of public CCS charging plugs were to stagnate at its present level (as indeed it probably will), then the approximately one million drivers of CCS EV might be "orphaned" without a way to do DC fast charging. The vehicles will not, however, be "orphaned". Present drivers of CCS EVs are well aware of the gradual rollout of charging adapters and software updates which permit the driver of an EV with a CCS port to charge at a DC fast charger having a J3400 plug. As of the present day, for example, drivers of all Ford and Rivian EVs are able to "plug and charge" their EVs at Tesla supercharging stations. There is no need to tap or operate a smart phone to do such charging; the driver merely uses an adapter and plugs in the J3400 charging plug, and charging commences. (See *Canonical list of non-Tesla cars that can charge at NACS Tesla supercharging stations* at https://tesla-s-owner.com/canonical-list-of-non-tesla-cars-that-can-charge-at-nacs-tesla-supercharging-stations/.) It has already been announced that the next car makes added to this list will be General Motors, Volvo, and Polestar. All other US car makes will follow.

Assuming that the recommendation of this comment is followed, the number of public J3400 charging plugs will increase due to a rule change permitting the federal funding to be directed to J3400 charging plugs. These newly installed J3400 charging plugs will be usable with the above-mentioned charging adapters. Drivers of CCS EVs will be able to use the charging adapters to charge at the newly installed (federally funded) J3400 charging plugs.

Looking forward.

We return to the *Infrastructure Investment and Jobs Act* which was enacted on November 15, 2021, promising that $7½ billion would be spent installing electric vehicle chargers across the United States. We recall that this amount of money ought to have provided as many as 20,000 charging plugs at as many as 5000 charging stations.

As of right now in March of 2024, a mere seven open charging stations have been placed into service across the US using this federal funding, providing a total of 38 charging plugs. One the one hand one might be forgiven for thinking that these small numbers (seven charging stations out of an expected five thousand, and 38 charging plugs out of an expected 20000) count as embarrassing news or even bad news. But once one takes into account the announcements in 2023 (every car maker in the US and every DC fast charging service provider in the US announcing the migration to J3400 and away from CCS), it is in an odd way actually good news that so little of the $7½ billion of federal funding has gotten spent on soon-to-be-obsolete CCS charging plugs.

23 CFR § 680.106(c) needs to be amended to say:

Each DCFC charging port must be capable of charging any J3400-compliant vehicle and each DCFC charging port must have at least one permanently attached J3400 connector.

Sincerely,

/s/

Carl Oppedahl