

Electrify Heartland Plan

Appendix E: Federal Highway Administration Signage Memorandum



Project title: Kansas – Missouri
Community Readiness for EV and EVSE

Funded by: US DOE DE-EE0005551

By: Metropolitan Energy Center
and Kansas City Regional Clean Cities Coalition

With: Black & Veatch





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CFDA Number 81.086



Electrify Heartland Plan

Electrify Heartland Project Abstract

Electrify Heartland is an electric vehicle planning project managed by Metropolitan Energy Center. It is a product of the Greater Kansas City Plug-In Readiness Initiative, co-chaired by Kansas City Regional Clean Cities Coalition. Our goal is to produce a regional plan to prepare public resources and secure the economic and environmental benefits of plug-in vehicles within targeted metro areas with estimated 2.7M population. The targeted metro areas include Kansas City, MO & KS; Jefferson City, MO, Wichita, KS; Salina, KS; Lawrence, KS; and Topeka, KS. (14 Counties: Cass, Clay, Cole, Douglas, Jackson, Johnson, Leavenworth, Miami, Platte, Ray, Saline, Sedgwick, Shawnee, Wyandotte).

Electrify Heartland Steering Committee

Team	Organization	Name
Charging Stations	Initiatives	Troy Carlson
Charging Stations	LilyPadEV	Larry Kinder
Charging Stations	Logios	Gustavo Collantes
Government Policy	Polsinelli Shughart PC	Alan Anderson
Government Policy	Black & Veatch	Bill Roush
Project Administration	Metropolitan Energy Center	Ruth Redenbaugh
Project Administration	Metropolitan Energy Center	Kelly Gilbert
Public Education	Nation Ranch Marketing, Inc.	Bill Patterson
Training	Kansas City Kansas Community College	Bob McGowan
Training	National Electrical Contractors Association	Jim Cianciolo
Utility Grid	Black & Veatch	Sam Scupham
Vehicle & Fleet	University of Missouri at Kansas City	Henry Marsh

Exhibit i-i. Electrify Heartland Steering Committee Members



Table of Appendices

The following appendices are in separate files on www.ElectrifyHeartland.org

- A. EV Readiness Index
- B. Greater Kansas City Plug-in Readiness Strategy
- C. Grant Proposal for Project
- D. EVSE Permitting Recommendations
- E. Federal Highway Administration Signage Memorandum
- F. EV Business Coalition
- G. Automotive Technician Curriculum
- H. Electric Vehicle Infrastructure Training Program promotion
- I. Getting started with EV
- J. Electric Vehicle Fleet Tools
- K. Electric Vehicle Hangtag
- L. EVSE Site Host Considerations
- M. Initial Website Map
- N. Air Quality
- O. EV Ready Communities
- P. Sample Presentations about EV Forecasts and Redirected Spending Potential
- Q. EVSE Corridor Analysis
- R. Blank
- S. Blank
- T. Blank
- U. Social Media
- V. Press Kit
- W. Contributors
- X. Exhibits
- Y. Glossary
- Z. Bibliography



Appendix E: Federal Highway Administration Signage Memorandum

Synopsis

This appendix to the Electrify Heartland Plan is a memorandum about standardizing highway directional signage to readily alert drivers to availability of public electric vehicle charging. In 2011, the Departments of Transportation for the States of Washington and Oregon submitted a request for the Federal Highway Administration (FHWA) to consider an EV Charging General Service symbol. The FHWA granted those states an interim approval, a copy of which is provided. Interim approval is specified for use of the sample signage also provided in this appendix that is not yet described in the *Manual of Uniform Traffic Control Devices for Streets and Highways* (MUTCD).

Section Author:

Jeffrey A. Lindley, US Department of Transportation, Federal Highway Administration



Memorandum

Subject: **INFORMATION:** MUTCD – Interim Approval for Optional Use of an Alternative Electric Vehicle Charging General Service Symbol Sign

Date: APR 1 - 2011

From: Jeffrey A. Lindley
Associate Administrator for Operations

In Reply Refer To: HOTO-1

To: Federal Lands Highway Division Engineers
Division Administrators

Purpose: The purpose of this memorandum is to issue an Interim Approval for the optional use of a General Service symbol sign that provides road users direction to electric vehicle charging facilities that are open to the public. Interim Approval allows interim use, pending official rulemaking, of a new traffic control device, a revision to the application or manner of use of an existing traffic control device, or a provision not specifically described in the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD).

Background: The Oregon and Washington departments of transportation have requested that the Federal Highway Administration (FHWA) consider alternative symbols for the current Electric Vehicle Charging General Service symbol (D9-11b) sign shown in Figure 2I-1 of the 2009 Edition of the MUTCD in anticipation of deploying electric vehicle charging facilities in these and four other states. The current symbol is a modification of the existing Gas General Service symbol (D9-7), into which the legend EV has been incorporated, similar to Alternative Fuel symbols such as diesel (D), compressed natural gas (CNG), and ethanol (E85). The request was predicated on the presumption that, for electric vehicle charging facilities, the fuel pump and hose of the Alternative Fuel symbols do not apply or could be confusing. Instead, the representation of an electrical cord was thought to be more appropriate. A new symbol was evaluated and subsequently recommended by a Traffic Control Devices Pooled-Fund Study report. However, the requesting agencies believe that the presence of a lightning bolt within this symbol suggests a risk of electrical shock, which would discourage the use of electric vehicles.

Research on the Alternative Electric Vehicle Charging Symbol Sign: In November 2010, a report of the Traffic Control Devices Pooled-Fund Study that evaluated several alternative symbols for electric vehicle charging was released. The symbol that had the greatest comprehension and legibility distance was a modification of the symbol used on the Electric Vehicle Charging (D9-11b) sign in the 2009 MUTCD, with the hose replaced by a power cord and plug and the addition of a lightning bolt within the pump window to convey an electrical charge. A similar version without the lightning bolt element was not



Exhibit E-1. Interim approval from FHWA for alternative highway signage for EVSE. Each state wishing to use it must request approval.



evaluated in the subject study. In March 2011, a comprehension evaluation was completed that evaluated the 2010 Pooled-Fund Study recommended symbol and a modified version that deleted the lightning bolt element. Comprehension was found to be similar both with and without the lightning bolt. Additional questions were asked of the test subjects regarding their perception of the relative risk of electrical shock for the new symbols with and without the lightning bolt. The responses indicated that the presence of the lightning bolt did not increase the perceived risk of electrical shock. In addition, overall, the perceived risk of electric shock at an electric vehicle charging facility was relatively low when compared with other items that could pose risks of electric shock.

The results included in the Final Report for this evaluation showed that the correct meaning of the alternative sign was identified by a sufficient percentage of the survey participants for this application. The removal of the lightning bolt element from the symbol reduces its visual complexity and this modification is expected to provide at least comparable recognition and legibility.

FHWA Evaluation of Results: The Office of Transportation Operations has reviewed the available data and considers the alternative sign (see attachment, p. IA-13-1) to be satisfactorily successful for the application of providing direction to an electric vehicle charging station. The alternative sign provides agencies with a means of directing road users to an electric vehicle charging station without the use of a word legend sign or supplemental plaque, thus reducing the informational load presented to the observer and promoting a uniform symbol for this general service.

The design of the alternative Electric Vehicle Charging symbol sign is not proprietary and can be used by any jurisdiction that requests and obtains interim approval from the FHWA to use the sign. The FHWA believes that the alternative Electric Vehicle Charging symbol sign has a low risk of safety or operational concerns.

This Interim Approval does not create a new mandate compelling the use of this new sign, but will allow agencies to install this sign, pending official MUTCD rulemaking, to provide direction to road users to electric vehicle charging stations.

Agencies may also continue to use the ELECTRIC VEHICLE CHARGING (D9-11bP) plaque as an educational message mounted below the alternative Electric Vehicle Charging symbol sign in a Directional Assembly.

Agencies may use the alternative Electric Vehicle Charging symbol in General Services (D9-18 Series) guide signs.

Conditions of Interim Approval: The FHWA will grant Interim Approval for the optional use of an alternative Electric Vehicle Charging symbol sign (see attachment, p. IA-13-1) to any jurisdiction that submits a written request to the Office of Transportation Operations. A State may request Interim Approval for all jurisdictions in that State. Jurisdictions using the sign under this Interim Approval must agree to comply with the technical conditions detailed below, to maintain an inventory list of all locations where the signs are installed, and to comply with Item D in Paragraph 18 of Section 1A.10 of the 2009 MUTCD, which requires:

Exhibit E-1. Interim approval from FHWA for alternative highway signage for EVSE. Continued.



“An agreement to restore the site(s) of the Interim Approval to a condition that complies with the provisions in this Manual within 3 months following the issuance of a Final Rule on this traffic control device; and terminate use of the device or application installed under the interim approval at any time that it determines significant safety concerns are directly or indirectly attributable to the device or application. The FHWA’s Office of Transportation Operations has the right to terminate the interim approval at any time if there is an indication of safety concerns.”

1. General Conditions:

The use of the alternative Electric Vehicle Charging symbol sign is optional. However, if an agency opts to use this sign under this Interim Approval, the following design and installation requirements shall apply and shall take precedence over any conflicting provisions of the MUTCD.

2. Allowable Uses:

Installation and use of the alternative Electric Vehicle Charging symbol sign shall conform to the general provisions for General Services signs in accordance with MUTCD Chapter 2I.

3. Sign Design and Size:

- a. The design of the alternative Electric Vehicle Charging symbol sign shall be as shown in the attached sign detail.
- b. The minimum size of the alternative Electric Vehicle Charging symbol sign shall be 24 inches in width by 24 inches in height.
- c. The size of the alternative Electric Vehicle Charging symbol sign shall otherwise be in accordance with those of other D9-11 series signs.

4. Other:

Except as otherwise provided above, all other provisions of the MUTCD applicable to signs shall apply to the alternative Electric Vehicle Charging General Service symbol sign.

Any questions concerning this Interim Approval should be directed to Mr. Kevin Sylvester at Kevin.Sylvester@dot.gov.

Attachment

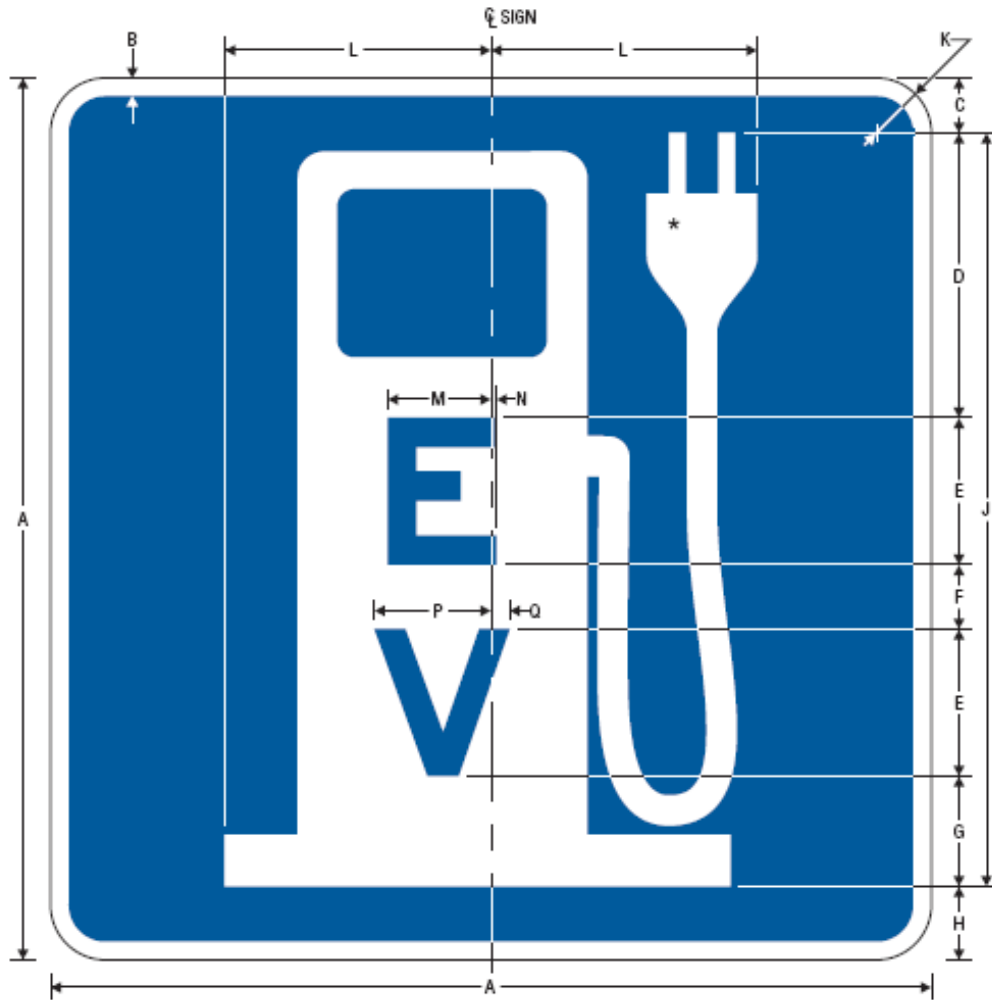
cc:

- Associate Administrators
- Chief Counsel
- Chief Financial Officer
- Directors of Field Services
- Director of Technical Services

Exhibit E-1. Interim approval from FHWA for alternative highway signage for EVSE. Continued.



D9-11b (Alternate)
Issued 4/1/2011



D9-11b (Alternate)
Electric Vehicle Charging (Alternate Symbol)

	A	B	C	D	E	F	G	H	J	K	L	M
C	24	0.5	1.5	7.75	4 E(m)	1.75	3	2	20.5	1.5	7.25	2.814
	30	0.75	1.875	9.625	5 E(m)	2	4	2.5	25.625	1.875	9.063	3.518

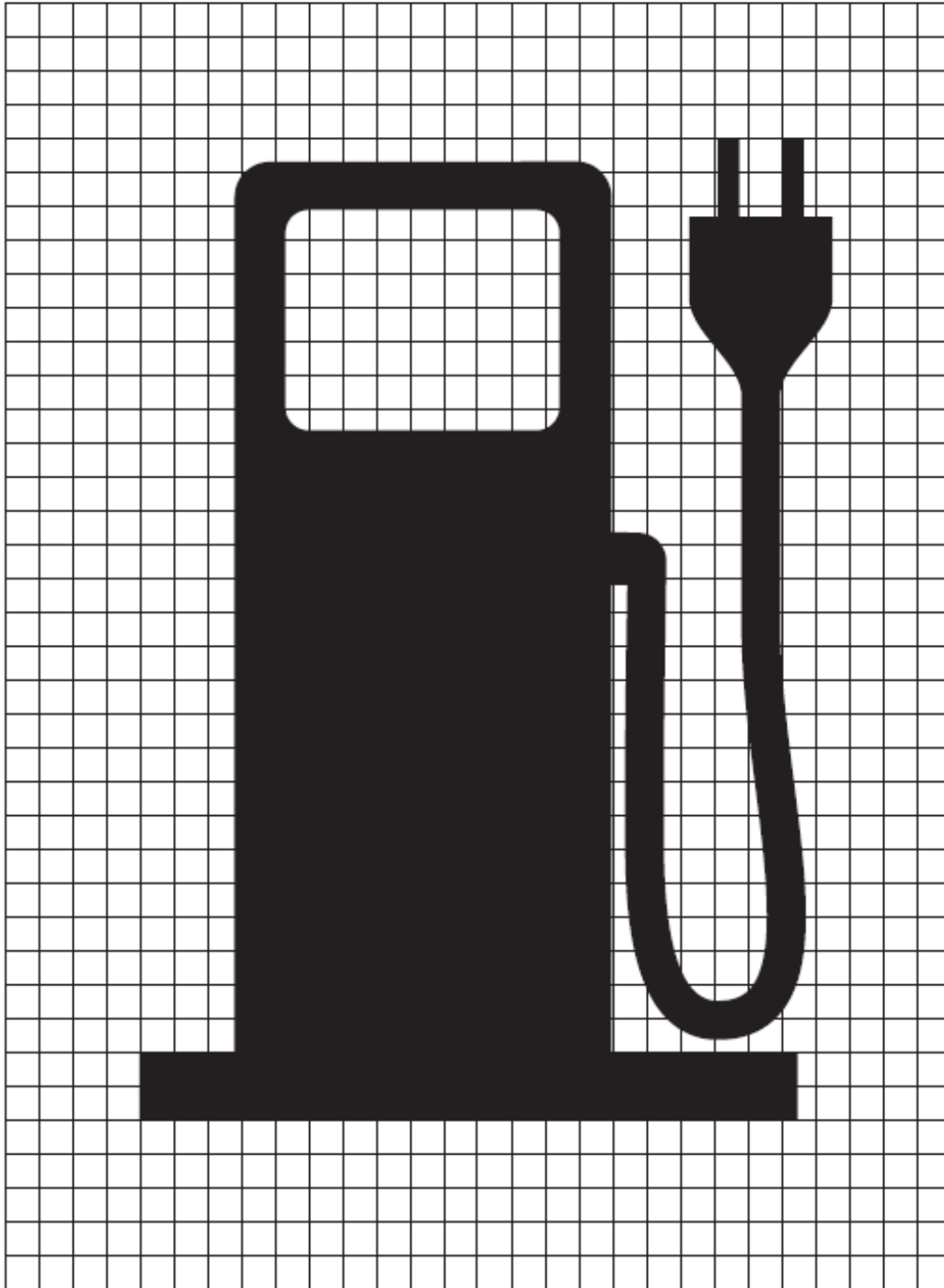
	N	P	Q
	0.148	3.174	0.507
	0.185	3.968	0.635

* See page IA-13-2 for symbol design

COLORS: LEGEND, BACKGROUND — BLUE (RETROREFLECTIVE)
SYMBOL, BORDER — WHITE (RETROREFLECTIVE)

IA-13-1

Exhibit E-2. Alternate highway sign for EVSE with usage specifications. Each state wishing to use it must request approval separately from FHWA.



IA-13-2

Exhibit E-3. Symbol design specifications for alternative highway sign for EVSE.