

Electrify Heartland Plan

Section 4: Updated EVSE Building Code Plans



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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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

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Utility Grid	Black & Veatch	Sam Scupham
Vehicle & Fleet	University of Missouri at Kansas City	Henry Marsh

Exhibit i-i. Electrify Heartland Steering Committee Members



Section 4: Updated EVSE Building Code Plans

Section Abstract

This section, along with section 5 and section 6, discusses the recommendations from the Electrify Heartland Government Policy Team regarding changes that are or will be necessary in preparation and response to the deployment of electric vehicles. In particular this section discusses the need for updates to building codes to consider EVSE installations. It is necessary that these building codes not only consider installations but also ensure that the construction of new buildings will support future installation of EVSE.

Section Author:

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4 Updated EVSE Building Code Plans

4.1 Description of updated codes for neighborhoods, cities and counties

In order to ensure the safe and reliable installation of EVSE, it is important that the local jurisdictions within the Electrify Heartland planning area consider evaluating and potentially revising their building codes to consider the impact of installing EVSE. When considering these potential revisions, the communities should strive to incorporate as much flexibility as is practicable while still maintaining the highest level of safety at all times.

As with any electrical installation, EV charging infrastructure in Kansas and Missouri is governed by various federal and local building codes and requirements. In the Electrify Heartland planning area, the various local jurisdictions possess the ultimate authority to adopt their own building codes, and many rely upon some form of the National Electrical Code (NEC). Specifically, Article 625 of the current NEC 2011 includes best practices for wiring methods, equipment construction, control and protection, and equipment locations for automotive-type vehicle charging. The NEC in its entirety can be viewed at nfpa.org, though a subscription is required.

Because there is no state-wide authority for building codes in either Kansas or Missouri, the revisions that might be necessary to safely facilitate the current and future installation of EVSE will have to be carried out at the local level. Accordingly, Electrify Heartland recommends that all local jurisdictions within its planning area mandate that all additions and/or modifications to residential or commercial premises wiring must be performed in accordance with the practices set forth in the most recent edition of the NEC.

In addition to compliance with the most recent NEC requirements, Electrify Heartland recommends that local jurisdictions include an affirmative requirement that all new, reconstruction and renovation building codes support the future installation of EVSE. Such requirements may take a number of different forms.

First, we recommend that communities adopt a requirement that the electrical room and all conduits leading to the electrical room in new multi-unit, commercial or industrial developments must be appropriately sized to accommodate future electrical equipment necessary for electric vehicle charging stations, as well as the voltage and amperage capabilities of the accompanying infrastructure.



“Electrify Heartland recommends that all local jurisdictions within its planning area mandate that all additions and/or modifications to residential or commercial premises wiring must be performed in accordance with the practices set forth in the most recent edition of the NEC.”



Additionally, we recommend that communities adopt a requirement that all new permitted construction or renovation projects install sufficient conduits, junction boxes, wall space, electrical panels and circuitry capacity in locations that could potentially serve EVSE sites in the future, such as garages and parking facilities. As an illustrative example, the first “Tier” of the California Green Building Standards Code, a voluntary code that is designed to be adopted by multiple communities, mandates that dwellings shall comply with the following requirements for the future installation of EVSE:¹

One- and two-family dwellings: Install a listed raceway to accommodate a dedicated branch circuit. The raceway shall not be less than trade size 1. The raceway shall be securely fastened at the main service or subpanel and shall terminate in close proximity to the proposed location of the charging system into a listed cabinet, box or enclosure. Raceways are required to be continuous at enclosed or concealed areas and spaces. A raceway may terminate in an attic or other approved location when it can be demonstrated that the area is accessible and no removal of materials is necessary to complete the final installation.

Multi-family dwellings: At least 3 percent of the total parking spaces, but not less than one, shall be capable of supporting future electric vehicle supply equipment.

4.2 About the Author

Alan Claus Anderson is the vice chair of the firm's national Energy practice group. He has extensive experience representing and serving as lead deal counsel and outside general counsel to public and private companies in the energy industry. He advises domestic and international oil and gas, wind and solar companies in all phases of the development and finance process. Mr. Anderson also regularly represents oil & gas companies and serves as their outside general counsel. He advises energy clients in the full range of activities including reviewing, structuring and negotiating acquisitions and development projects both domestically and internationally, and was selected for membership in the Association of International Petroleum Negotiators. A former in-house counsel at a publicly traded oil and gas company, he has led numerous successful negotiated oil and gas acquisitions and joint development projects domestically and internationally.

Mr. Anderson also represents developers, lenders, investors and suppliers in renewable energy projects throughout the country that represent more than 3,500 MW in wind and solar projects under development and more than \$2billion in wind and solar projects in operation. He also has significant experience assisting non-United States companies on their entry into the United States market; including one of the largest Germany-based solar

¹California Green Building Standards Code (CALGreen). Section A5106.5.3. Electric Vehicle Charging.



companies on its entry into the United States and successful projects throughout North America.

An active participant in the energy industry, Mr. Anderson is a frequent speaker and writer on energy issues. Mr. Anderson has also been selected to lead two U.S. Department of Energy projects related to distributed solar finance issue and electric vehicle deployment as well serving as the Chair of the Kansas City Area Development Council's Advanced Energy and Manufacturing Advisory Council. He received his undergraduate degree from Washington State University and his law degree from the University of Oklahoma.

Kansas City Regional Clean Cities Coalition Administered by Metropolitan Energy Center, the coalition is a public-private partnership among fleet managers and manufacturers, vendors and service providers in the alternative fuels and vehicle industries. It works in communities across Kansas and in western Missouri. Kansas City's coalition is a partner since 1998 with the U.S. Department of Energy's Clean Cities Program, whose mission is to advance the energy, economic, and environmental security of the United States by supporting local actions to reduce petroleum use in transportation. The coalition administers more than \$40 million in clean transportation projects in Kansas, Missouri, Iowa and Nebraska. For more information visit www.metroenergy.org/kccleancities.aspx. **About**

Metropolitan Energy Center is a nonprofit organization with a threefold mission to create resource efficiency, environmental health, and economic vitality in the Kansas City region. Over the past three decades, MEC has grown to be a recognized catalyst for regional energy partnerships that satisfy the triple-bottom-line approach. Founded in 1980, MEC is a catalyst for community partnerships focused on energy conservation. It works through a variety of educational and training programs, including Kansas City Regional Clean Cities Coalition, Home Performance, Project Living Proof and EnergyWorks KC. Every energy dollar conserved through MEC's work remains available for investment in the local economy. MEC was awarded more than \$17 million in federal funding for transportation projects in recent years and is a partner in other multi-million-dollar projects in Kansas and Missouri. MEC has been the recipient of many awards recognizing its contribution to energy conservation and was host of the national Affordable Comfort Conference in 2003 and 2009