



Summary of Recommendations in the Electrify Heartland EV-EVSE Plan

The purpose of this summary is to briefly categorize the recommendations that the Electrify Heartland Plan has provided. The goal is to present information specific to associated audiences that direct readers to most useful sections of the plan. Identified audiences include: [general public](#), [municipalities and utilities](#), [states and state agencies](#), [retail charging station site hosts](#), [businesses](#), [vendors](#), [fleet](#), and [trainers](#).

General Public

In our preparation to ready Kansas and Missouri for electric vehicles, citizens need to be aware of the opportunities, benefits and truths about electric vehicles. Primary sections and appendices for review by the general public are:

1. Develop Electric Vehicle Planning Team
2. Plan PEV Vehicle Deployment
3. EVSE Deployment Plan
7. EV and EVSE Communication, Education, and Training Plan
 - A. EV Readiness Index
 - B. Greater Kansas City Plug-in Readiness Strategy
 - C. Grant Proposal for Project Title: Kansas – Missouri Community Readiness for EV and EVSE
 - I. Getting started with EV
 - N. Air Quality
 - P. Sample Presentations about EV forecasts and Redirected Spending Potential
 - Y. Glossary
1. For an overview of the project, review *Section 1 – Develop Electric Vehicle Planning Team* and *Appendix C - Grant Proposal for Project Title: Kansas – Missouri Community Readiness for EV and EVSE*. See *Appendix I – Getting Started with EV* for benefits and comparisons of electricity use. See *Appendix Y – Glossary* for a list of commonly used terms and acronyms used in the plug in electric vehicle industries.
2. Visit the Department of Energy’s Alternative Fuels and Data Center (AFDC) website, www.afdc.edergy.gov/calc/, which offers a fuel savings calculator that enables you to determine the return on the higher cost of an electric vehicle compared to a traditional internal combustion engine. For sample comparisons, see *Appendix P - Sample Presentations about EV forecasts and Redirected Spending Potential*.
3. View educational videos on the Electrify Heartland website www.electrifyheartland.org and social media at www.facebook.com/ElectrifyHeartland. Online resources are described in detail in *Section 2 - Plan PEV Vehicle Deployment*, *Section 7 - EV and EVSE Communication, Education, and Training Plan*, *Appendix M – Initial Website Map*, *Appendix U – Social Media* and



Appendix V- Press Kit. These resources are also intended to assist consumer, business and economic development groups wishing to create EV planning initiatives.

4. Become familiar with the air quality legislation and trends and the potential of EV's to positively impact the air we breathe. Detailed information is presented in *Appendix N - Air Quality*.

Municipalities and Utilities

As adoption of electric vehicles (EV) becomes more prevalent, local governments face a number of new and unique regulatory issues. See *Section 3 - EVSE Deployment Plan* for a primer on electric vehicle supply equipment (EVSE) types, placement and pricing. The Electrify Heartland Government Policy Team has conducted significant research about regulatory obstacles and solutions that have arisen in other communities across the nation during design and implementation of regulatory infrastructure needed to accommodate widespread adoption of electric vehicles. Recommendations regarding EVSE placement and signage are also included.

Primary sections for consideration by municipalities are:

- 3 EVSE Deployment Plan
 - 4 Updated EVSE Building Code Plans
 - 5 Updated EVSE Permitting and Inspection Plans
 - 6 Updated EVSE Zoning and Parking Plans
 - D. Governmental Policy Team EVSE Permitting Recommendations
 - E. FHWA Signage Memorandum
 - O. EV Readiness Designation
 - P. Sample Presentations about EV forecasts and Redirected Spending Potential
1. **Codes**
 - A. The Government Policy team recommends that all communities adopt the 2011 or most recent version of the National Electric Code (NEC). NEC 2011 was the first to include provisions for electric vehicle supply equipment (EVSE). See *Section 5 - Updated EVSE Permitting and Inspection Plans* for details about the specific articles of NEC 2011 pertaining to EVSE.
 - B. Local jurisdictions should include a requirement that all new, reconstruction and renovation building codes support the future installations of EVSE. Such requirements pertain to appropriate sizing to accommodate addition of EVSE and are detailed in *Section 4 Updated EVSE Building Code Plans*

2. Permits

- A. Electrify Heartland recommends that an online permit application process be utilized to streamline and standardize information gathering. For a sample



- projection of EV adoption and redirected spending potential, see *Appendix P - Sample Presentations about EV forecasts and Redirected Spending Potential*. This sample provides benefits for dedicating staff hours to EV planning.
- B. For permitting and inspection of EVSE, Electrify Heartland recommends a multi-tiered comprehensive permit and inspection process determined by the level or voltage of charging equipment and the type of installation whether single-family residential, multi-family residential and commercial location. See *Section 5 - Updated EVSE Permitting and Inspection Plans* for recommendations.
- C. As part of the information-gathering stages of permitting EVSE installations, members of the Electrify Heartland Steering Committee conducted several meetings with public utilities located throughout Kansas and Missouri. Throughout this process, representatives of the public utilities stressed that load-planning activities are considerably aided if a notification system is built into this permitting process. Our research indicates that this is a request that is frequently raised by utilities in other jurisdictions, as utilities are seeking ways to accurately model the potential impacts on their distribution systems. To address this concern, we recommend two steps:
- i) First, it is necessary for the electrical permit form to include a statement acknowledging that the system owner agrees to release limited information about the system to the applicable public utility to be used solely for the purposes of gauging the sufficiency and efficiency of the utilities generation, transmission, and distribution services.
 - ii) Second, if an online application process has been adopted, such process should either allow the utilities to access relevant information about the permits that have been granted, or include a notification process to send the relevant information directly to the utility. The specifics of this process are being negotiated, and as the program moves into the implementation stages more formal procedures will be implemented with input from the communities and the public utilities.

3. Signage and parking

- A. After evaluating a number of alternative symbols for EVSE, Electrify Heartland recommends that the local jurisdictions petition the Missouri and Kansas Departments of Transportation to submit a request and obtain approval from the FHWA to utilize the symbols proposed by the States of Washington and Oregon and approved by the FHWA. These symbols have been thoroughly evaluated by the FHWA and were found to be highly visible and comprehensible by a large segment of the population.



Additionally, adopting a symbol that is being utilized in other jurisdictions across the country increases the effectiveness of the symbols by promoting uniformity and immediately recognizable signage. See *Appendix E - FHWA Signage Memorandum* for details about approved regulations.

- B. While the FHWA approval process is being pursued, we recommend that this signage be presented to local businesses for adoption on private property, similar to what many businesses use currently for “Pregnant Mother” parking spaces. Of course, such signage would be unofficial and entirely without the force of law, but its adoption would signal that the business recognizes and supports the needs of its EV-driving clientele. This also serves the added function of signaling to the community that EV adoption is happening and EVSE are readily available, thus providing more important social proof to facilitate further adoption in the future.
- C. We recommend that local communities consider promoting the placement of EVSE in locations that are convenient and accessible, but not necessarily in the most prominent or advantageous locations. Consider Americans with Disabilities Act and proximity to electrical supply sources. For details, see *Section 6 - Updated EVSE Zoning and Parking Plans*.
- D. If the community is considering adopting punitive actions for parking a non-EV or not actively charging EV in an EV spot, we recommend foregoing implementation or enforcement of those penalties until the level of EV adoption in the community is significant enough to ensure that the spots are filled for a significant period of time. The communities should be reasonably confident that the problem is widespread enough to justify the potential anxiety that might be created among EV drivers who may park in the spot without charging or continue parking in a spot after charging is complete.
- E. Cities and counties in the Electrify Heartland planning area are encouraged to apply for EV Readiness status, which recognizes your community’s commitment to creating energy independence for America while improving the environment at the same time. When an authorized representative completes the application, an Electrify Heartland team member will contact you to review your application. For a guide to help you complete the application see *Appendix O - EV Readiness Designation* and step by step entry of accomplishments toward EV Readiness follow this link;
<http://electrifyheartland.org/is-your-city-ev-ready/> .

States and State Agencies

In addition to recommendations listed in the Municipalities section of this summary, *Section 8 - EV Benefits/Incentives Promotion Plan*, *Section 10 - Develop Corridors*, *Section 11- Emerging Technologies* and *Appendix Q - EVSE Corridor Analysis* applies to state government.



1. Legislation

One concern is legislation in our area that allows only public utilities to sell electricity. Change legislative definition of a “public utility” to exempt third party retail recharging stations (Maryland and Virginia have passed such legislation). Retail charging stations will own, operate, control and manage equipment used to sell electricity for power and therefore, under current regulation, would arguably be required to register as public utilities. This would result in a regulatory burden that would severely impair business’ economic development.

For incentives available for alternative fuel use in Kansas and Missouri see these links,
http://www.afdc.energy.gov/laws/state_summary/KS
http://www.afdc.energy.gov/laws/state_summary/MO

No incentives are currently available for EV or EVSE in KS or MO. For an example of a state that offers incentives see Oregon http://www.afdc.energy.gov/laws/state_summary/OR

2. Travel Corridors

Refer to *Section 10 - Develop Corridors*, *Section 11- Emerging Technologies* and *Appendix Q* for an analysis of EV travel corridors in Kansas and Missouri.

3. Grid impact

See *Section 9 - Utility Grid* for detailed analysis of grid impact and preparing for EV deployment. For the EV impact modeling study, Black & Veatch used a distribution planning software called SynerGEE Electric and collaborated with the Mid-America Regional Council (MARC) to assess extensive EV user demographics in the Kansas City metropolitan area. In conclusion, no near term utility system enhancements are required at this time.

Retail charging station site hosts

For recommendations on EVSE strategies, types, costs, placement and station locator recommendations, please refer to the *Section 3 - EVSE Deployment Plan*, *Appendix B - Greater Kansas City Plug-in Readiness Strategy* and *Appendix L – EVSE Site Host Recommendations* and the municipalities section of this summary.

1. Steps

The basic flow of a project to install charging stations and upload information to the station could be described in the following steps:

- A. Purchase
- B. Permit
- C. Installation
- D. Inspection
- E. Install premise and directional signage



- F. Upload charging station information to AFDC’s Charging Station Locator
- G. AFDC Map

2. Cost

Estimated cost ranges for residential, commercial and commercial DC fast charge EVSE are available in exhibit 3-7 of the plan. *Section 3.9 - Estimate of EVSE costs and potential funding* outlines sources that include but are not limited to TIGER Grants, Ecotality, EV projects with the DOE, Coulomb Charge Program, Stimulus and other federal grants, settlements such as State of California & Nevada Geothermal Power, U.S. military, state funds, municipal funds, venture funding and state rebates.

3. Locator

After a charging station has been installed, the information about the station should be uploaded to the Alternative Fuel Data Center (AFDC) website hosted by the US Department of Energy at <http://www.afdc.energy.gov/locator/stations/places/new>. This site provides applications for web based and hand held search capabilities to find addresses, lat and long, hours, owners and plan a route of public charging sites.

Businesses

1. Consider fleet use of EV. AFDC has a tool for comparing vehicles’ cost of ownership. Here is a link to Vehicle Cost Calculator tools <http://www.afdc.energy.gov/calc> or see an example in *Appendix P - Sample Presentations about EV forecasts and Redirected Spending Potential*. Also see a case study of Lee’s Summit School District decision to purchase electric trucks and EVSE at <http://www.afdc.energy.gov/case/1009>
2. Workplace charging is the most common location for public EVSE. See *Exhibit 3-3: Number of EV charging ports shown by location type*.
3. One benefit of installing EVSE is attracting customers to your business who are charging an EV. Visit www.ecotality.com for information about opportunities to attract new business. Also see “Retail charging station site hosts” recommendations in this summary.
4. See *Appendix F - EV Business Coalition* for recommended activities of businesses wishing to join an EV Business Coalition. These recommendations originated from *Appendix B - Greater Kansas City Plug-in Readiness Strategy*
5. View educational videos on the Electrify Heartland website www.electrifyheartland.org and social media at www.facebook.com/ElectrifyHeartland. Online resources are described in detail in *Section 2 - Plan PEV Vehicle Deployment, Section 7 - EV and EVSE Communication, Education, and Training Plan, Appendix M – Initial Website Map, Appendix U – Social Media and Appendix V- Press Kit*. These resources are also intended to assist consumer, business and economic development groups wishing to create EV planning initiatives.

Vendors/Manufacturers/Dealerships

1. EV



Use hangtags on rear view mirrors of EV to promote sales. Consumers make purchase decisions based on information on the internet as much as conversations on a sales lot. A QRC is included to refer smart phone owners to a web site with numerous informative links. See the graphics in *Appendix K - Electric Vehicle Hangtag*.

2. EVSE

Single family residential, multiple family dwellings, workplace, commercial and retail are considerations for charging locations. Forecasts and recommendations are offered in *Section 3 - EVSE Deployment Plan*.

Fleet

1. Main sections for fleet decision makers are *Section 2 - Plan PEV Vehicle Deployment*, *Section 8 - EV Benefits/Incentives Promotion Plan*, *Section 9 - Utility Grid*, *Appendix I – Getting Started with EV*, and *Appendix J - Electric Vehicle Fleet Considerations*.
2. See sample fleet business cases from Lee’s Summit R-7 School District, Smith Electric Vehicles Newton and Eckhaus Fleet in *Appendix J - Electric Vehicle Fleet Considerations*.

Trainers and Educators

1. Automotive Technicians

For trainers of automotive technicians preparing to maintain EV or convert vehicles to EV, see sample hybrid electric vehicle curriculum in *Appendix G - Automotive Technician Curriculum*.

2. Electricians

For trainers of electricians becoming certified to install EVSE, see *Appendix H - EVITP Promotion*.

3. General

Section 7 - EV and EVSE Communication, Education, and Training Plan provides training concerns unique to our area. *Section 11- Emerging Technology* addresses advances with solar energy, wind energy, and wireless charging of vehicle batteries as related to EV and EVSE. *Section 12 – Other Consideration* addresses topics of transit promotion in the greater Kansas City area and educational groups at the high school and college levels. Also see recommendations in this summary under General Public.