2025

Kansas City

Regional Electric Vehicle Readiness Plan

MARC
MID-AMERICA REGIONAL COUNCIL

wsp

This report was prepared by WSP for the account of the Mid-America Regional Council, in accordance with the professional services agreement. The disclosure of any information contained in this report is the sole responsibility of the intended recipient. The material in it reflects WSP's best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. WSP accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This limitations statement is considered part of this report.

The original of the technology-based document sent herewith has been authenticated and will be retained by WSP for a minimum of ten years. Since the file transmitted is now out of WSP's control and its integrity can no longer be ensured, no guarantee may be given with regards to any modifications made to this document.

At the time of this report's conclusion, many Federal funding programs related to Electric Vehicles and associated charging infrastructure were under review for possible revision. MARC and regional stakeholders will continue to monitor these programs as potential adjustments are made and funding programs related to EVs are made available in the future.

1. EXECUTIVE SUMMARY AND INTRODUCTION

Overview

The goal of this project is to support plug-in electric vehicle (EV) readiness in the Kansas City area with a plan that provides a vision for EV readiness, identifies key partnerships and actionable strategies needed to achieve the vision, and prepares for and stimulates community adoption of electric vehicles. The Kansas City Regional Electric Vehicle Readiness Plan was developed through coordinated engagement with partners and stakeholders and is intended to complement other regional strategies aimed at decreasing greenhouse gas emissions in the transportation sector. It is also intended to inform future implementation requests made through multiple federal funding sources, such as the Charging & Fueling Infrastructure (CFI) program, by identifying specific locations in the Mid-America Regional Council (MARC) planning area that would most benefit from EV charging infrastructure.

Purpose and Approach

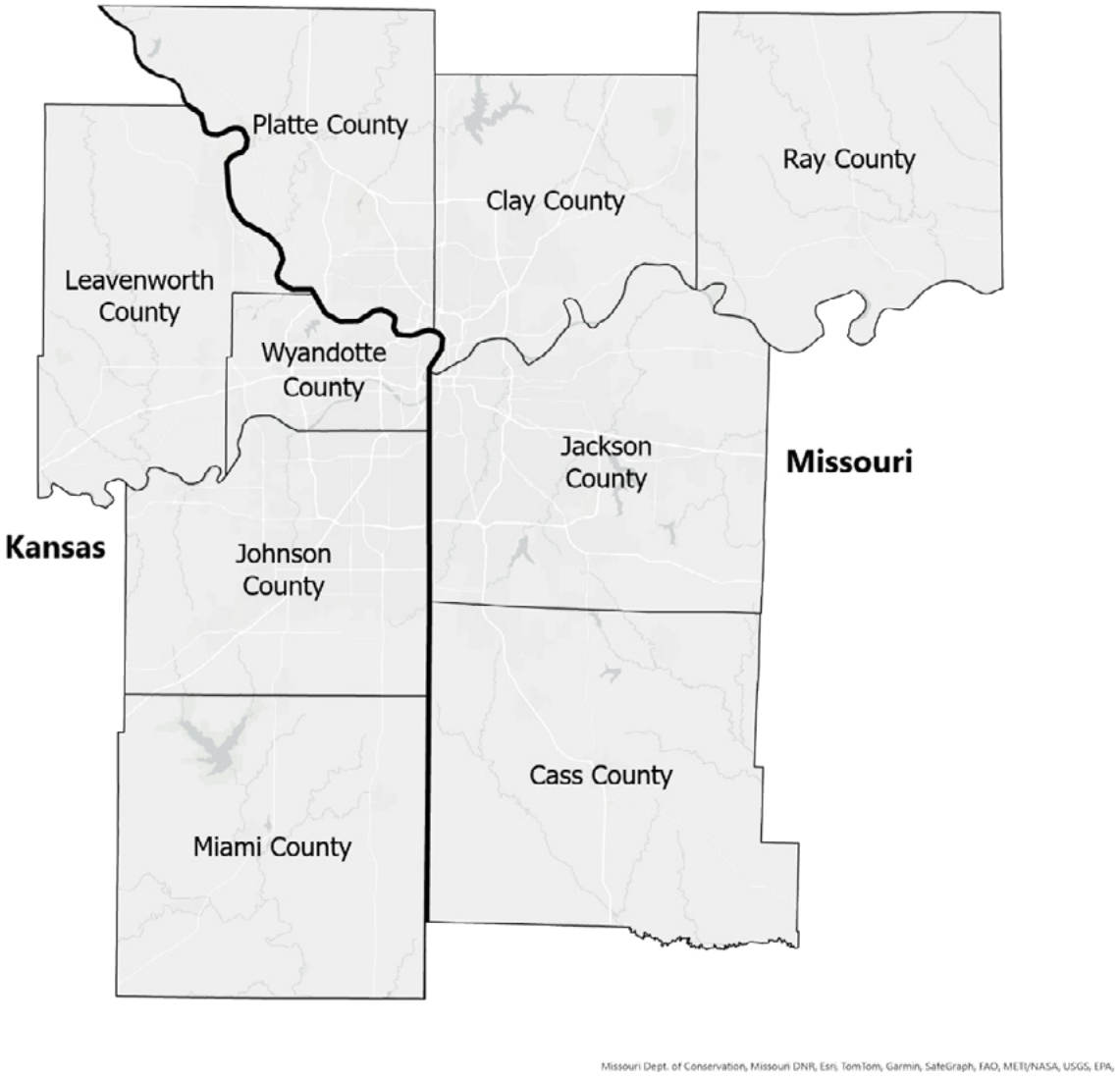
This electric vehicle readiness plan is intended to be used by planners, government officials, and other interested stakeholders to inform where to focus their resources and funding to best support EV growth in the Kansas City region. The plan consists of six parts:

1. **Assessment of Existing Conditions**
   The study reviewed existing plans and programs undertaken by public and private organizations over the last 10 years. Existing EV infrastructure was also assessed through the lens of equitable access for disadvantaged populations.
2. **Utility & Electric Grid Analysis**
   Utilities in the MARC region were studied to determine their preparedness for increased EV adoption, the reliability of their grid, their planning processes, and the cost of electricity to their customers. The multi-state regional grid planning process was also evaluated in the context of EVs.
3. **Stakeholder & Community Engagement**
   Working with a steering committee of EV stakeholders from across the region, the study team blended technical knowledge with community input to identify barriers, opportunities, and priority recommendations for EV readiness. This was complemented by two rounds of public surveys and in-person pop-up engagement events.
4. **Identification of Needs**
   The study team developed a model to predict how many drivers will purchase EVs over the next ten years and where they live in KC. It was then expanded to determine what areas in KC have the greatest need for EV charging infrastructure, with an emphasis on public fast chargers.
5. **Strategic Recommendations**
   Locations for EV chargers were prioritized according to need, with an emphasis on underserved communities. The study team also looked at various funding strategies and made suggestions for policy changes at the local level.
6. **Implementation Resources**
   An outline was provided for a Request for Proposal (RFP) intended to support a regional CFI grant application. Additionally, an online mapping tool was developed to integrate with existing MARC GIS tools for use in future planning and implementation efforts.

Background and Summary

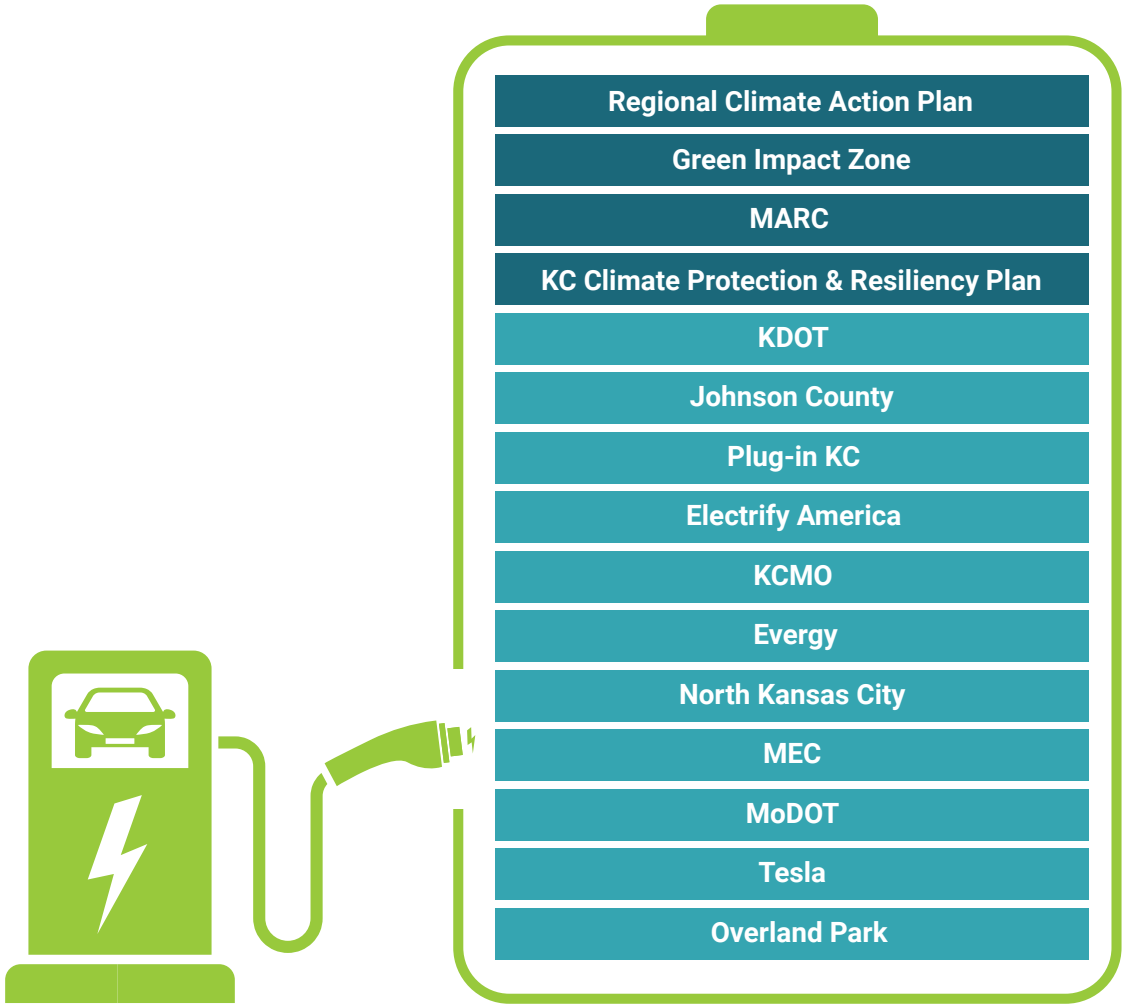
MARC serves as the association of city and county governments and as the Metropolitan Planning Organization (MPO) for the bistate Kansas City region. The MPO is made up of 9 counties: five in Missouri and four in Kansas, as shown in **Figure 1**.

Figure 1: MARC MPO Member Counties



This study builds upon the work of many dedicated individuals and organizations in Kansas City across both public and private sectors. A review of **existing plans and programs** revealed a variety of stakeholders that have made an impact on planning, funding, and building the zero-emissions infrastructure in place today –some of which are shown below.

Figure 2: Existing Plans & Programs



An investigation into existing charging infrastructure looked at both level 2 and direct current fast charging (DCFC) infrastructure. Level 2 chargers typically recharge a modern EV overnight, while DC fast chargers can recharge some vehicles in as little as 15 minutes. Kansas City has one of the most extensive Level 2 charging networks in the country, thanks primarily to Evergy's Clean Charge Network, which was spearheaded in 2015. However, much has been learned about EV driver behavior in the last 9 years, and modern EVs have much larger batteries than early models. Some charging locations have seen a high amount of use, such as those in office parking garages and hospitals, while others are rarely used at all, most likely due to their location and slow charging speeds.[1] Currently, the Kansas City metro has very few DC fast charging stations – which are much more analogous to gas stations as they can recharge a vehicle quickly. As of early 2024, the entire Kansas City metro area only had 12 modern DC fast charging stations that are open to the public[2], are compatible with any vehicle, and are designed for public use.

Most of these charging stations only have 4-6 plugs, meaning the Kansas City region has fewer than 100 fast-charging plugs for a metro region of over 2 million people. While only about 13,000 people in Kansas City drive EVs today, this study predicts that total to rise to 53,000 in 2030 and almost 100,000 people by 2035. The MARC region does not currently have the charging infrastructure in place to support the anticipated number of EVs on the road in the years ahead.

1 Clean Charge Network charger utilization data was provided by Evergy and analyzed for this study with permission. Raw data remains confidential.

2 PlugShare, locations with power levels of 100 kW and greater, excluding car dealerships and Tesla-only stations.

This study primarily focused on DC fast charging stations, which are much more convenient and can recharge far more vehicles in a given day than a Level 2 charger. This is important when providing access to drivers who are away from home or do not have access to home charging. In this respect, DC fast charging stations are similar to a traditional gas pump which is why this study focuses primarily on how to increase the deployment of DC fast chargers that would allow for more reliable and convenient charging facilities for the greatest number of EV drivers.

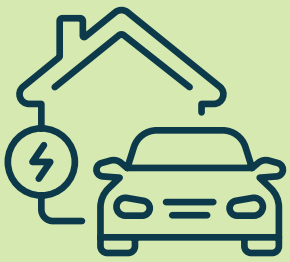
This plan includes a desktop study of the regional electric grid, including the eleven electric utilities in the MARC region. It reviewed their structure, planning processes, and rate plans. Evergy, an investor-owned utility, serves the vast majority of customers in the Kansas City area and has the most advanced electrification strategy – including a team dedicated to EVs and rate plans designed to benefit EV drivers while maintaining grid reliability. As a public company with a strong credit rating, Evergy has shown it can easily raise private capital to fund needed grid enhancements and has invested over $1 billion over the last few years.

Kansas City has fewer than 100 fast-charging plugs in a metro area of over 2 million people.

Figure 3: EVGo charger in Johnson County, KS

Utility rate plans varied widely throughout the metro – and so did the cost to charge an EV. The cost to recharge a typical vehicle at home ranged from a low of $2.38 when charging overnight to as high as $38.67 when charging during afternoon peak times. Evergy has several residential plan options to choose from, while most other utilities only offer one or two options for residential customers. Most municipalities and cooperatives haven't embraced time-of-use (TOU) rate plans currently (plans that charge different rates depending on the time of day) but some are exploring such programs.

Cost is only one factor, and this study **identified other barriers and perceived barriers** that influence buying behavior using a combination of surveys and direct engagement with stakeholders and members of the community. A steering committee was formed, made up of representatives from local governments, utilities, and other local stakeholder organizations. The project team met with the steering committee four times throughout the project and incorporated their feedback into the study methodology and analysis. Two rounds of surveys and multiple public pop-up engagement sessions helped elicit current barriers to EV adoption as well as concerns.

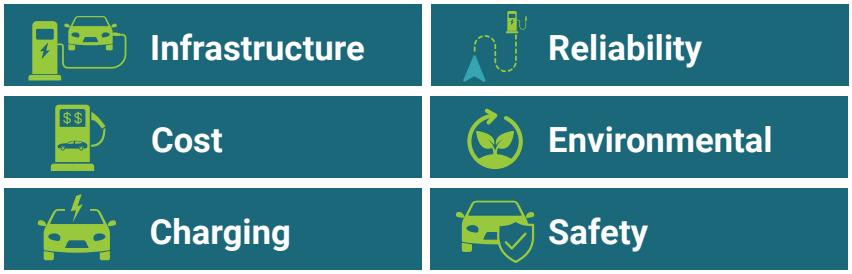


The cost to recharge a typical vehicle at home ranged from a low of $2.38 when charging overnight to as high as $38.67 when charging during afternoon peak times.

Most concerns fit into six categories – with infrastructure, cost, and charging concerns emerging as top perceived barriers identified in public outreach efforts.

Figure 4: EV Barriers to Adoption

> As a renter, I do not have the ability to modify my rental property with an EV adaptor for an electric vehicle
>
> -Survey Respondent



Two of these categories: infrastructure and charging can be directly impacted at the local level by planning and development efforts. While vehicle cost cannot be directly impacted locally without purchase subsidies, this study found that initial vehicle costs have already decreased significantly and are expected to drop further in the future. Unsubsidized price parity with gas vehicles across all vehicle classes may still be several years ahead.

Vehicle registration data provided by the states of Kansas and Missouri revealed that there were 13,736 on the road in the MARC region at the end of 2023. This study predicts that number to rise to 53,323 in 2030 and 95,475 in 2035.

Figure 5: 10-Year Estimated EV Growth in MARC Region

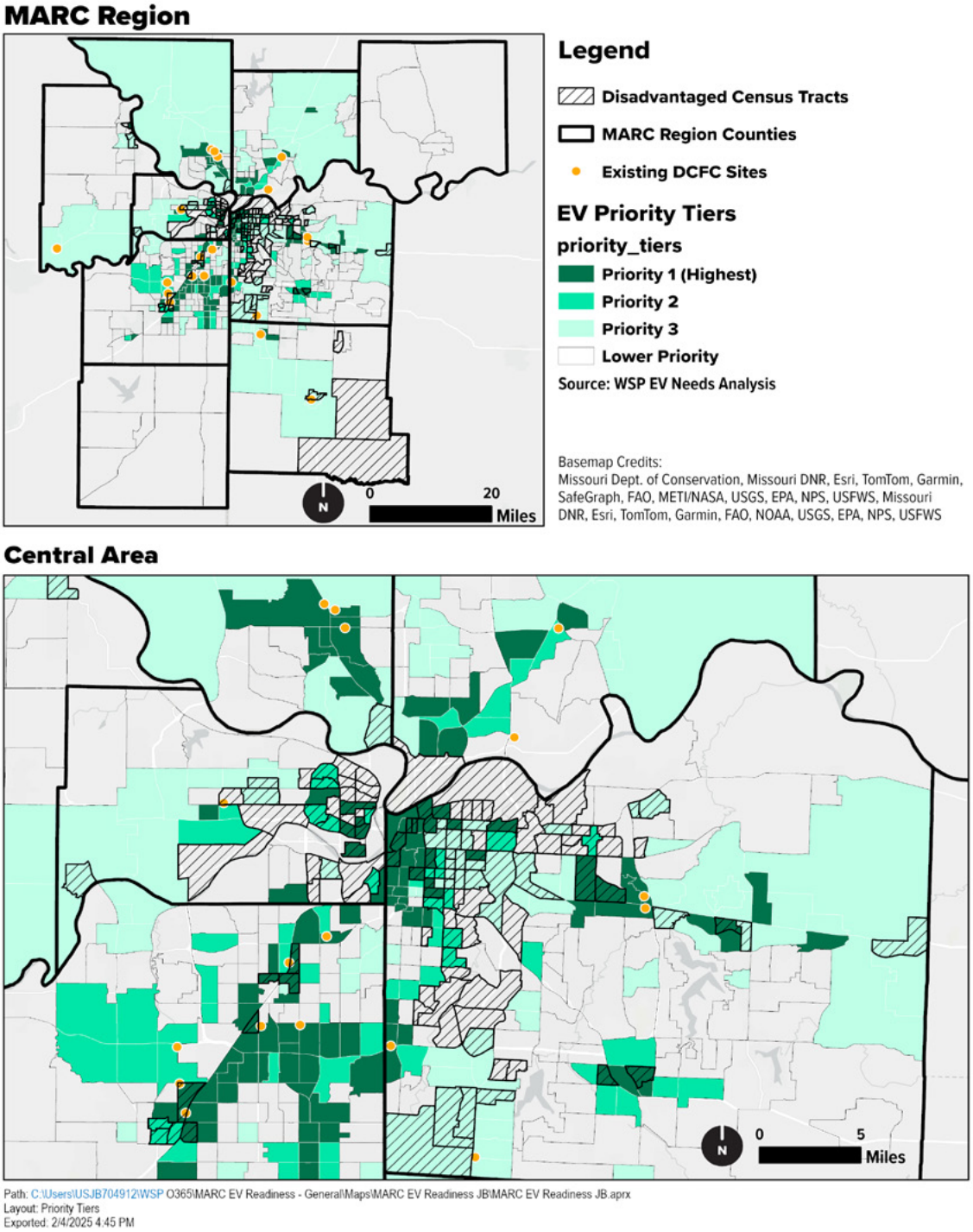
With fewer than 20 high-power charging stations in Kansas City and almost 100,000 expected EV drivers by 2035, almost every zip code in the region would benefit from additional public charging locations. However, this study is intended to identify the areas in the metro region that would benefit most from public investment in DC fast charging infrastructure over the next 10 years to make the most effective use of available federal funding opportunities.

To identify these priority locations, this study developed a needs analysis model. It blends input data from a variety of sources to answer the following questions:

1. Where do people go, especially those with long commutes or visiting KC from out of town?
2. Who is least likely to have access to EV charging at home, such as those renting their homes?
3. Where will EV drivers live, especially those in disadvantaged communities?

By initially placing DC fast chargers at locations that meet all three of these criteria, the Kansas City metro will begin building an EV fast charging network that meets the needs of current and future EV owners while also enabling disadvantaged communities to drive cleaner vehicles.

Figure 6: Identified Areas of Need



Where are chargers needed?

Priority charging areas are located in almost every county in the MARC region and are concentrated in parts of the metro where people live, work and visit.

Weight is given to areas that are near major highways and have a relatively high density of multifamily housing units.

Table 1: DCFC Priority Locations by County

MARC Member County	Number of Priority Locations
Johnson County, KS	10
Wyandotte County, KS	5
Leavenworth County, KS	0
Miami County, KS	0
Platte County, MO	2
Clay County, MO	4
Jackson County, MO	13
Cass County, MO	2
Ray County, MO	0
Total	**36**

The benefits of these fast charging locations should be multiplied by strategically expanding access to Level 2 chargers in these same areas, with particular focus given to disadvantaged communities living in rental housing or homes without access to garages. Many vehicle manufacturers subsidize home chargers for customers who purchase new vehicles, but this is not true for customers who purchase used vehicles, or for customers who do not own their own homes. Finally, recommendations are made on local policy changes, such as zoning and building codes, to encourage developers to add EV charging to their projects.