

Eastern Iowa Electric Vehicle Readiness Plan



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Acronyms

AC: alternating current
ADA: Americans with Disabilities Act
AFDC: Alternative Fuels Data Center
BEV: battery electric vehicle
DC: direct current
DOT: Department of Transportation
EV: electric vehicle
EVSE: electric vehicle supply equipment
GHG: greenhouse gas
ICE: internal combustion engine
IEDA: Iowa Economic Development Authority
KPI: key performance indicators
kWh: kilowatt-hour
MPO: metropolitan planning organization
MPGE: miles per gallon equivalent
MUD: multi-unit dwelling (alternate name for multi-family units or multi-family housing)
NEC: National Electric Code
NREL: National Renewable Energy Laboratory
PHEV: plug-in hybrid electric vehicle
REC: rural electric cooperative
TOU: time-of-use
ZEV: zero-emission vehicle

Key Definitions

Charging station: Device that transfers power to an EV. A charging station can contain more than one charging port (also called outlets or plugs).

Electric vehicles (EVs): The term used to collectively describe plug-in electric vehicles, including battery electric and plug-in hybrid electric vehicles.

Electric vehicle supply equipment (EVSE): The industry term for electric vehicle charging infrastructure, commonly called charging station.

Plug-in hybrid electric vehicles (PHEV): Vehicles powered by an internal combustion engine and an electric motor that uses energy stored in a battery. The battery is charged by plugging in to an electric power source. Most PHEVs can travel between 20 and 40 miles on all-electric battery mode, before switching back to the combustion engine.

Battery electric vehicles (BEV): Vehicles that only operate in all-electric battery mode. BEVs have typical driving ranges from 150 to 300 miles, depending on the size of the electric battery.

Executive Summary

Purpose of the Eastern Iowa Electric Vehicles Readiness Plan

Electric vehicle (EV) technology and deployment have advanced dramatically in recent years, creating opportunities to directly reduce emissions from the transportation sector while providing additional economic and energy security benefits. Recognizing the role that local and regional governments can take in enabling an electrified transportation future, an increasing number of communities across the United States are defining strategies to achieve a greater level of readiness for EVs, with a focus on charging infrastructure to support these vehicles.

The Eastern Iowa Electric Vehicle Readiness Plan (EVRP) is a collective effort that cities, counties, and metropolitan planning organizations (MPOs) of Eastern Iowa¹ are taking towards the goal of increasing zero-emission vehicles as one of the available solutions leading to lower transportation emissions, while ensuring that the mobility needs of the region and the target carbon reductions are met equitably.

As part of the process, the City of Iowa City commissioned ICF to evaluate the existing EV market, charging infrastructure, incentives, and characterized barriers to greater EV adoption as well as the policy and educational opportunities to overcome such barriers. To date, the deployment of EVs in the region has been modest but growing steadily. The deployment of publicly available charging infrastructure has also been on the rise. Key local stakeholders (e.g., utilities and private businesses) have indicated interest in funding opportunities for EV charging. However, achieving a much greater level of EV adoption requires a set of *coordinated* strategies and actions that encompass infrastructure planning and deployment, local policies, consumer education, and partnership creation.

The EVRP is primarily intended as a guide to implement the recommended EV readiness actions prioritized by the Steering Committee and community stakeholders. It should be also used as a complementary tool to other transportation planning efforts that the region has and will be undertaking in coming years to address broader mobility and sustainability needs. While the EVRP identifies the key stakeholders that will be vital to its successful implementation, the strategies and actions are designed to be primarily within the control of, and led by, the local and regional government entities represented by the Steering Committee.

Vision and Goals

The Steering Committee defined a regional vision statement and a set of specific goals that provide the foundation for the EVRP. The vision statement reflects the Committee's role and intent to support communities across Eastern Iowa to further EV adoption in a way that is equitable, improves air quality, and generates economic benefits.

Regional Vision Statement

"The communities of Eastern Iowa will be leaders in supporting the increased use of electric vehicles (EVs) and improving access to charging infrastructure. We will empower our residents, businesses, and visitors through policies, partnerships, and initiatives that encourage adoption of EVs."

¹ The cities, counties, and MPOs participating in these efforts are represented on the EVRP Steering Committee. Other communities, organizations, and individuals have also participated in this effort through stakeholder engagement sessions.

Regional Goals

- Increase EV use
- Increase EV charger availability
- Increase equitable access to EVs and charging
- Reduce emissions
- Improve air quality
- Generate economic benefits
- Establish regional collaboration to leverage resources and share learnings

Summary of Key Readiness Strategies and Actions

Key Readiness Strategy	Priority Action
Invest in EV Charging Infrastructure	Quantify the need for new publicly available charging equipment to fill gaps at both local and regional level, including direct current (DC) fast chargers to enable long-distance travel along corridors.
Expand Access to EV Charging Infrastructure	Amend local zoning/land use codes to require EV charging as a permitted accessory use, and to include requirements or incentives (e.g., density bonuses) for the installation of charging infrastructure in new construction and major renovations.
Adoption of and Access to EVs	Coordinate with dealers to facilitate point-of-sale rebates for EVs.
Increase Education and Awareness of EVs and EV Charging	Develop and maintain a comprehensive EV resources website to educate all Eastern Iowa consumers on the environmental, financial, and other benefits of EVs. The website should include information on logistics of buying EVs (including available incentives), installing charging (including the local permitting process), finding charging, etc. Link to other reputable and well-maintained resources as appropriate.
Coordinate Regionally to Implement Actions and Strategies	Integrate EV readiness into regional planning efforts, including regional transportation plans and sustainable communities' strategies.
Lead by Example	Educate municipal/county employees about EVs and EV charging and encourage EV adoption through the development of workplace charging programs.

Plan Structure

The EVRP is organized as follows:

- The **Introduction** provides background information on EVs and charging infrastructure. It also summarizes the existing conditions in Eastern Iowa in terms of EV adoption, charging station deployment, available funding at the federal and state level, and EV-related efforts to date. This section can be used to provide City staff, partners, and community members with a basic understanding of these topics.
- The **EV Readiness Strategies and Actions** are the primary focus of this plan and present recommended strategies as well as corresponding implementation actions. Each readiness strategy identifies lead and additional stakeholders and provides examples for implementation, and best practices.
- The **Key Next Steps** provide guidelines and suggestions for near-term action.
- The **Appendices** provide additional details, including a deeper dive into multifamily charging, the overview of the stakeholder engagement process, the full list of strategies and actions considered, results of Steering Committee prioritization, and additional resources.

Introduction

Electric Vehicles and Charging Infrastructure Overview

This section provides basic information about EVs and charging infrastructure as well as general considerations about costs and benefits of EV driving and infrastructure development.

What is an Electric Vehicle?

An EV is a vehicle that is entirely or partially propelled by an electric motor powered by a battery. There are two types of EVs:

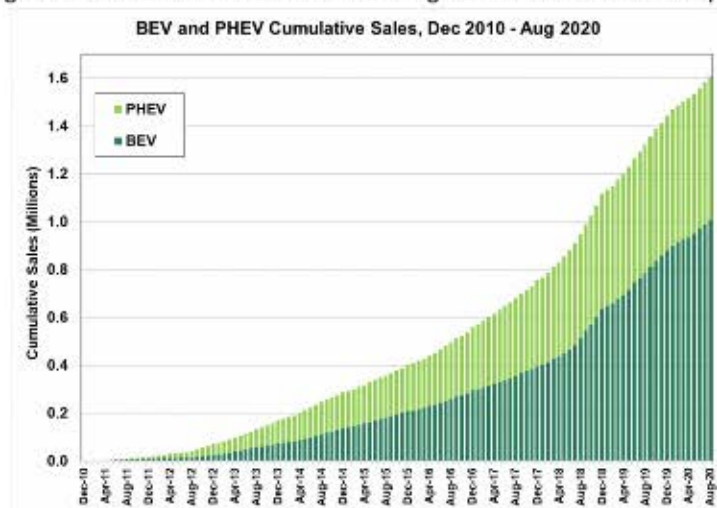
- **Plug-in electric vehicles (PHEV):** Vehicles powered by an internal combustion engine and an electric motor that uses energy stored in a battery. The battery is charged by plugging in to an electric power source. Most PHEVs can travel between 20 and 40 miles on the electric battery before switching back to the combustion engine. An example of a PHEV is the Toyota Prius Prime.
- **Battery electric vehicles (BEV):** Vehicles that only operate in all-electric battery mode. BEVs have typical driving ranges from 150 to 300 miles, depending on the size of the electric battery. The most popular BEV is the Tesla Model 3.

Current Electric Vehicle Market

To date, EVs represent 3% of all light-duty vehicles on the road in the United States. Upfront purchase costs have been a barrier to widespread EV adoption, but vehicle prices have decreased dramatically due to the falling costs of lithium ion battery packs (\$137 per kilowatt-hour (kWh) in 2020, a ten-fold decrease since 2010). Current forecasts suggest that EVs will reach cost parity with internal combustion engine (ICE) vehicles by 2025, or when battery manufacturing costs will fall below \$80 per kWh.²

The growing trend in light-duty EV adoption³ (Figure 1) reflects such declining prices and an increasing variety of EV makes and models with higher vehicle range and overall performance to satisfy consumers' needs and preferences. As of January 2021, there were 19 passenger style BEV models (26 including model variants)⁴ and 30 PHEV models available on the U.S. market,⁵ with BEVs emerging as the preferred technology nationally. The EV market is also rapidly changing in the medium- and heavy-duty sectors. Electric transit

Figure 1: Cumulative EV sales. Source: Argonne National Laboratory



² Bloomberg NEF, 2020. Electric Vehicle Outlook Report. Available at <https://about.bnef.com/electric-vehicle-outlook/>

³ Green Car Congress, 2020. Argonne: Cumulative PEV sales in the US reach 1.6 million units; BEVs outpace PHEVs. Available at <https://www.greencarcongress.com/2020/09/20200929-anl.html>

⁴ EV Adoption, 2021. BEV Models. Available at <https://evadoption.com/ev-models/bev-models-currently-available-in-the-us/>

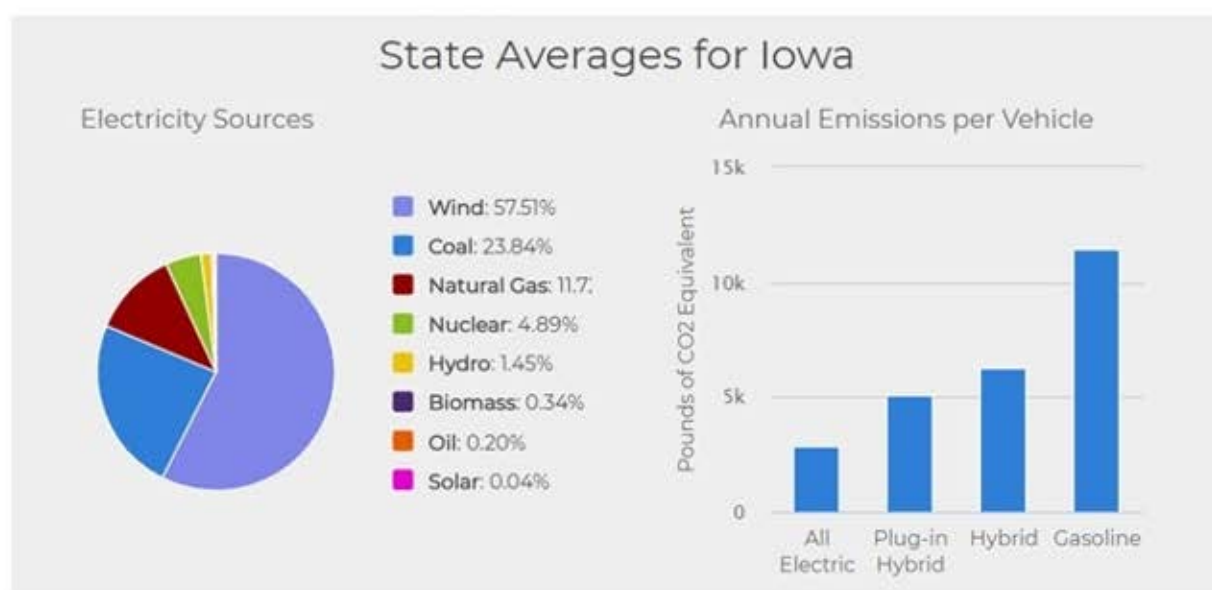
⁵ EV Adoption, 2021. PHEV Models. Available at <https://evadoption.com/ev-models/available-phevs/>

buses are now being deployed in most states, thanks in part to grant support from the Federal Transit Administration,⁶ and the market is expected to grow more than 18% per year until 2024.⁷ Applications of zero-emission medium-duty vehicles as delivery vans and shuttles are also increasing, and up to 10 new electric pickup truck models are expected by 2023.⁸

Benefits of Electric Vehicles

EVs significantly reduce greenhouse gas (GHG) emissions. For instance, a BEV charged in Iowa reduces carbon dioxide (CO₂) emissions by about 75% compared to an ICE car (Figure 2). For a PHEV, the emissions reductions are approximately 55%. This is despite the significant presence of coal in the electricity generation mix of the Midwest Reliability Organization West region, of which Iowa is a part. As the region shifts to even higher percentages of clean electricity sources such as wind power, the emissions associated with EV use will decrease further.

Figure 2. Annual emissions (in pounds per CO₂ equivalent) of conventional and alternative fuel vehicles. Source: Alternative Fuel Data Center⁹



EVs also reduce or eliminate other tailpipe pollutants such as nitrogen oxides (NO_x), volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM), thereby improving air quality and reducing the local negative health impacts of pollution.¹⁰

⁶ Federal Transit Administration, Fiscal Year 2020 Low or No-Emission (Low-No) Bus Program Projects. Available at <https://www.transit.dot.gov/funding/grants/fiscal-year-2020-low-or-no-emission-low-no-bus-program-projects>

⁷ Sustainable Bus, 2019. U.S. Bus market to grow 18.5% yearly til 2024. Available at <https://www.sustainable-bus.com/news/u-s-electric-bus-market-to-grow-18-5-yearly-till-2024/>

⁸ Autoweek, 2020. Check Out All the Electric Pickup Trucks Coming Down the Pike. Available at <https://www.autoweek.com/news/green-cars/g33459525/check-out-all-the-electric-pickup-trucks-coming-down-the-pike/>

⁹ U.S. Department of Energy, Alternative Fuels Data Center, 2021. Emissions from Hybrid and Plug-In Electric Vehicles. Available at https://afdc.energy.gov/vehicles/electric_emissions.html

¹⁰ American Lung Association, 2020. The Road to Clean Air. Available at <https://www.lung.org/getmedia/99cc945c-47f2-4ba9-ba59-14c311ca332a/electric-vehicle-report.pdf>

In addition to zero or significantly reduced tailpipe emissions, EVs offer:

- **Fuel savings:** EVs are more efficient and require less energy to drive the same distance. In addition, electricity prices are more stable than oil. According to a study by Consumer Reports, a typical EV owner who does most of their charging at home can expect to save an average of \$1,000 a year on fuel costs when compared to an equivalent gasoline-powered car.¹¹
- **Maintenance savings:** EVs greatly reduce or eliminate the need for oil changes, tune ups, and emissions tests. The average BEV owner spends roughly half as much on repair and maintenance costs over the lifetime of their vehicle compared to owners of gas-powered vehicles, saving up to \$4,600 over the lifetime of the vehicle.³
- **Comfortable driving experience and performance:** EVs offer a quiet yet powerful drive due to the instant acceleration of the electric motor. For this reason, EVs perform well on hilly terrain. Additionally, EVs have enhanced stability due to the positioning of the battery allowing them to perform well on snow and ice, and to be less likely to roll over during crashes.
- **Resilience:** EVs can be a valuable distributed energy resource. Technology is advancing to use the power stored in an EV's electric battery to be utilized in case of emergency¹² or to manage grid load through utility programs.¹³

Electric Vehicle Challenges

While the industry has advanced in the last decade, concerns about EV adoption still exist among consumers. In addition to upfront vehicle costs, typical concerns include the following:

- **Cold weather operations:** EVs lose range in cold and hot ambient temperatures, as the EV battery thermal management system is designed to keep the battery warmed (or cooled) to an optimum temperature range (55-75°F). EV drivers can work around these impacts by 'preconditioning' the vehicle before driving, e.g., by heating (or cooling) the vehicle cabin while the EV is still plugged in, to avoid using the battery charge.¹⁴
- **Range anxiety:** While most BEVs can drive over 100 miles with a charge, range anxiety can be a deterrent for EV adoption, especially if charging at home is not possible. Workplace charging helps increase the option of driving electric for employees. Similarly, access to charging is a key factor in decreasing range anxiety and increasing consumers' confidence in EVs. Many public and private stakeholders, including electric utilities, are focusing on expanding the availability of charging stations both in urban areas and along major highway corridors, while working on improving interoperability and standardization of the existing equipment.¹⁵
- **Sustainability:** EV manufacturing requires extraction and processing of rare minerals needed for electric batteries. Although there are non-zero impacts, environmental life-cycle assessment indicates that over the vehicle lifetime, an EV is more sustainable than a gasoline-fueled

¹¹ Consumer Report, 2020. Electric Vehicle Ownership Cost. Available at <https://advocacy.consumerreports.org/wp-content/uploads/2020/10/EV-Ownership-Cost-Final-Report-1.pdf>

¹² National Association of State Energy Officials, 2016. Initiative for Resiliency and Energy through Vehicles. Available at <http://www.naseo.org/irev>

¹³ MJ Bradley & A., 2017. State-Wide Costs and Benefits of Plug-in Vehicles in Five Northeast and Mid-Atlantic States. Available at <http://www.mjbradley.com/reports/mjba-analyzes-state-wide-costs-and-benefits-plug-vehicles-five-northeast-and-mid-atlantic>

¹⁴ Union of Concerned Scientists, 2016. Do Electric Cars Work in Cold Weather? Available at <https://blog.ucsusa.org/dave-reichmuth/electric-cars-cold-weather-temperatures>






¹⁵ Fuels Institute, 2020. Electric Vehicle Adoption: Focus on Charging. Available at <https://www.fuelsinstitute.org/Research/Reports/Electric-Vehicle-Adoption-Focus-on-Charging/EV-Adoption-Report.pdf>

vehicle.¹⁶ Further, research and development of new methods to recycle batteries more efficiently and sustainably is increasing, along with applications for battery reuse after they are removed from an EV.^{17, 18}

Charging Infrastructure

EV charging infrastructure (also called electric vehicle supply equipment, or EVSE) is typically classified based on the maximum amount of power that can be delivered to the vehicle's battery. EV charging units from over 60 manufacturers are available in the United States, although they vary by offering and connectivity.¹⁹ A summary of the three types of charging levels, including connector types, technical specifications, and typical applications (residential, commercial, public²⁰ or fleets) is available in Table 1.

Table 1. Electric vehicle charging equipment, classified by the maximum amount of power that can be delivered and the rate at which the batteries are charged. V=voltage; A=amperage.

	Level 1	Level 2	DC Fast Charging		
Description	120 volt (V) alternating current (AC) plug, single phase service 15-20 amp (A)	208/240V AC plug, split phase service 20-50A	208/480V AC circuit, three-phase service connection 50-200A		
Connector Type(s)					
	J1772 charge port	J1772 charge port	J1772 Combo (CCS)	CHAdeMO	Tesla combo
Typical Use Cases	Light-duty EVs; residential, workplace	Light and medium-duty EVs; residential, workplace, public charging, fleets	Light, medium and heavy-duty EVs; public charging, fleets		
Charge Time (for light-duty EVs, depending on battery size)	2-5-miles/1 hour of charging PHEVs can be fully charged in 2-7 hours; BEVs in 14-20+ hours.	10-20 miles/1 hour of charging PHEVs can be fully charged in 1-3 hours; BEVs in 4-8 hours.	60-80-miles/20 min of charging BEVs can be fully charged in 30-60 minutes.		

Passenger EV drivers typically have three main charging options, namely:

- **Residential charging:** Occurs at home, typically at night, through Level 1 or 2 equipment.
- **Workplace charging:** Occurs during the daytime on weekdays, most commonly through Level 2 equipment.

¹⁶ Kukreja, B., 2018. Life cycle analysis of electric vehicles. Available at https://sustain.ubc.ca/sites/default/files/2018-63%20Lifecycle%20Analysis%20of%20Electric%20Vehicles_Kukreja.pdf

¹⁷ Argonne National Laboratory, 2019. DOE launches its first lithium ion battery recycling R&D center. Available at <https://www.anl.gov/article/doe-launches-its-first-lithiumion-battery-recycling-rd-center-recell>

¹⁸ Alternative Fuel Data Center, 2020. Battery second life. Available at https://afdc.energy.gov/files/u/publication/battery_second_life_faq.pdf

¹⁹ GoElectricDrive, 2021. EVSE Products, Charging Networks and Service Providers. Available at GoElectricDrive.org

²⁰ The expression 'public EV charging station' is typically used to indicate publicly available charging points. These include both publicly and privately-owned stations.

- **Opportunity charging:** Captures non-residential and non-workplace charging (retail locations, high-traffic corridors) usually through public Level 2 and DC fast charging equipment.

Several factors influence the cost of EV charging infrastructure, namely the charging level, the type of equipment (wall mounted vs pedestal), the need for electrical upgrades, and additional features such as networking and communication capabilities.²¹ Before incentives and installation costs, the price of Level 2 equipment can range from \$400-\$700 (for residential) and \$2,500-\$5,000 (for commercial) and DC fast infrastructure can range from \$20,000-\$150,000. Installation, grid upgrades, permitting, accessibility compliance, and data contracts can add to the final project costs and vary by site characteristics and equipment features (Table 2).

Table 2. Cost ranges for EV charging for residential and non-residential applications, \$/charge port.

Cost Element	Level 1		Level 2		DC Fast Charge	
	Low	High	Low	High	Low	High
Hardware	\$200	\$500	\$400	\$5,000	\$20,000	\$150,000
Permitting	\$100	\$500	\$100	\$1,000	\$500	\$1,000
Installation	\$100	\$3,500	\$600	\$12,700	\$50,00	\$90,000
Total	\$500	\$5,500	\$1,100	\$20,200	\$70,500	\$241,000
Data Sources:						
-U.S. Department of Energy, 2015. Costs Associated With Non-Residential Electric Vehicle Supply Equipment						
-New York State Energy Research and Development Authority, 2019. Benefit Cost Analysis of Electric Vehicle Deployment in New York State						
-Rocky Mountain Institute, 2020. Reducing EV Charging Infrastructure Costs						

Likewise, operation and maintenance (O&M) costs vary depending on the type and quantity of charging equipment, station utilization, and ownership structure but are typically low for residential applications.

In analyzing EV uptake in the 50 most populous U.S. metropolitan areas in 48 states, the International Council of Clean Transportation (ICCT) found a strong correlation between the amount of public Level 2 and DC fast charging infrastructure and higher EV adoption.²² The study also notes that other factors (EV availability at dealers, incentives, local policies, and consumer awareness) also influence EV adoption.

²¹ Non-networked stations are stand-alone equipment with no hardware or software to be managed remotely; these are the least expensive options. Networked ("smart") chargers connect with a network service provider's and access a "dashboard" to allow real-time monitoring of energy use, up-time, and maintenance needs. Smart charging strategies can alleviate demand charges (fees based on the maximum energy load drawn during the billing period) or limit charging when rates are highest.

²² ICCT, 2020. EV Update U.S. Cities. Available at <https://theicct.org/publications/ev-update-us-cities-aug2020>

Existing Conditions in Eastern Iowa

The Eastern Iowa region (Figure 3) is home to several of the state's main population centers, such as Iowa City, Cedar Rapids, Dubuque, Cedar Falls, Waterloo, and the Quad Cities area, which includes Davenport and Bettendorf. According to the 2017 Eastern Central Iowa Council of Governments Comprehensive Regional Development Strategy 2040 report,²³ much of the region has experienced population growth, especially along the I-380 corridor between Iowa City and Cedar Rapids. As of 2018, Cedar Rapids was the second largest city in Iowa with approximately 133,500 residents, while Davenport and Iowa City ranked third and fifth with 101,500 and 75,000, respectively.²⁴

Figure 3: The Eastern Iowa region of interest for this EV Readiness Plan is highlighted by the square.



²³ Eastern Central Iowa Council of Governments, Comprehensive Regional Development Strategy 2040. Available at https://www.ecicog.org/uploads/2/6/9/0/26907680/crds_2040.pdf

²⁴ U.S. Census Bureau, City and Town Population Totals: 2010-2019. Available at <https://www.census.gov/data/tables/time-series/demo/popest/2010s-total-cities-and-towns.html>

In 2016, the Iowa Economic Development Authority (IEDA) in collaboration with the Iowa Clean Cities coalition published *Advancing Iowa's EV Market*, a state-wide assessment of EV adoption and consumer awareness that indicated potential for EVs to “provide a variety of benefits to Iowans.”²⁵

The follow-up 2019 study *Charging Forward: Iowa's Opportunity for Electric Vehicle Infrastructure*, pointed out that advancing the development of charging infrastructure in the regions is necessary, and identified outdated policies and procedures regarding EV charging stations while providing key recommendations for policymakers.²⁶

Charging Forward: Iowa's Opportunity for EV Infrastructure

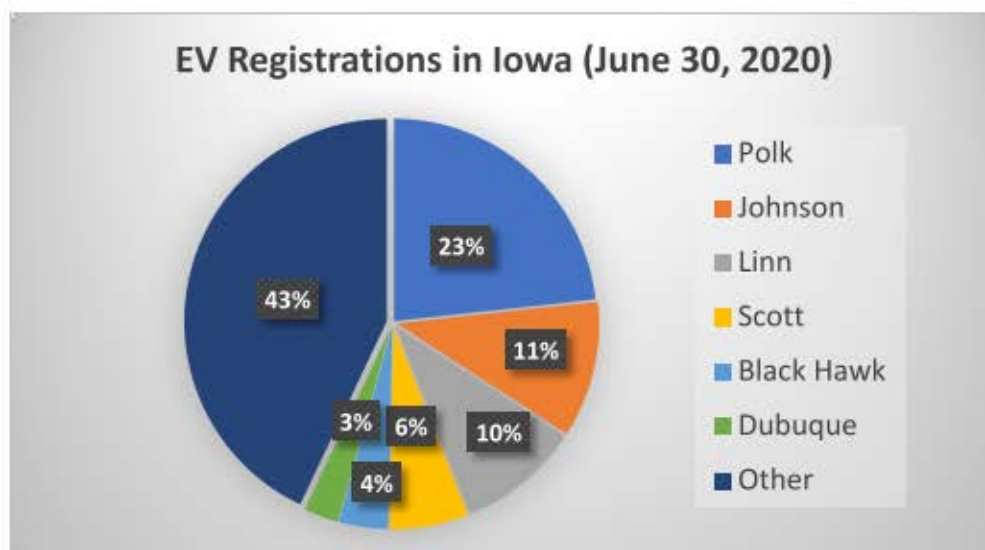
The *Charging Forward* report outlined the following key strategies to accelerate EV adoption in Iowa:

1. Clarify and update state policies and procedures
2. Advance planning and development of charging stations
3. Maximize benefits for consumers

Electric Vehicle Adoption

As of June 30, 2020, the Iowa Department of Transportation (Iowa DOT) reported 5,391 registered EVs in the state (2,556 BEV and 2,966 PHEV), a statewide fivefold growth since 2016. Approximately 34% of those EVs were registered in the five Eastern Iowa counties partnering in this project (Figure 4).

Figure 4: EV registrations in Iowa as of June 30, 2020. 34% all EVs registered in Iowa are in the five Eastern Iowa counties considered in this analysis (Johnson, Linn, Scott, Dubuque and Black Hawk).



²⁵ Iowa Economic Development Authority, 2016. *Advancing Iowa's EV Market*. Available at <https://www.iowaeconomicdevelopment.com/userdocs/documents/ieda/AdvancingIowasElectricVehicleMarketReport.pdf>

²⁶ Iowa Economic Development Authority, 2019. *Charging Forward: Iowa's Opportunity for Electric Vehicle Infrastructure Support*. Available at https://www.iowaeconomicdevelopment.com/userdocs/news/IEDA_EVRpt_022019.pdf

Charging Infrastructure

According to the U.S. Department of Energy's Alternative Fuel Data Center (AFDC), there were 219 public and private EV charging stations in Iowa for a total of 450 charging ports in March of 2021. Most stations are public Level 2 (169 stations, for a total of 310 charging ports).²⁷ Much of the EV charging infrastructure in the state has been funded by the Volkswagen Settlement Environmental Mitigation Trust program, administered by the Iowa DOT.²⁸ In February 2020 a total sum of \$900,000 was disbursed to six DC fast charger installation projects, and \$198,000 to fifteen Level 2 community charging installation projects.

Among the funded DC fast project awardees was the Iowa 80 Truckstop in Walcott, the largest truck stop in the world²⁹, and the Kum & Go convenience store and gas station in Coralville.

(Photo: DC fast EV chargers at the Iowa 80 Truckstop, I-80 and exit 284, Walcott, Iowa. Source: Delia Meier, Iowa 80 Truckstop)



Table 3 indicates the numbers of public EV charge points in the major cities of the Eastern Iowa region analyzed for EV readiness, along with the number of charge points per million population. Most Eastern Iowa cities align with or are even above the U.S. average of approximately 210 charging ports per million population, although others are significantly below.

Table 3: Number of EV charging locations for major cities in the Eastern Iowa EV Readiness plan project area, and the charge points per million population. Source: Alternative Fuels Data Center, ICF analysis

City	Population (2019)	Public EV charge points	Charge Points Per Million Population
Cedar Rapids	133,562	26	195
Davenport	101,590	11	108
Iowa City	75,130	29	386
Waterloo	67,328	6	89
Dubuque	57,882	13	225
Cedar Falls	40,536	10	247
Bettendorf	36,543	2	55

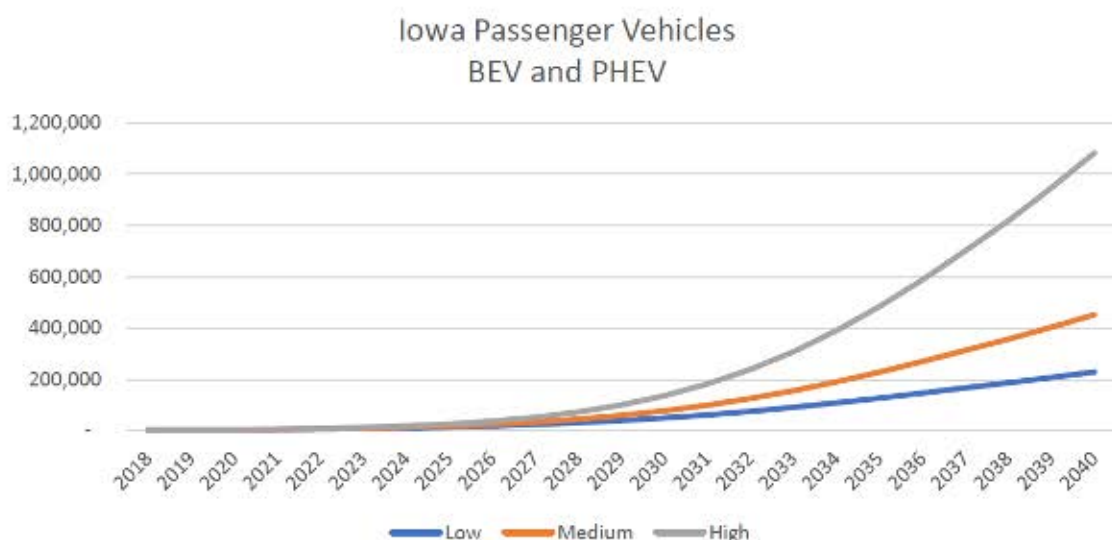
²⁷ U.S. Department of Energy Alternative Fuel Data Center, 2021. Alternative Fueling Station Locator. Available at https://afdc.energy.gov/stations/#/analyze?region=US-IA&country=US&fuel=ELEC&ev_levels=all

²⁸ State of Iowa Department of Transportation, 2021. Volkswagen Clean Air Partial Settlements. Available at <https://iowadot.gov/vwsettlement/default.aspx>

²⁹ Iowa 80 Truckstop Installs EV Charging Stations, 2021. Available at <https://www.truckinginfo.com/10142437/iowa-80-truckstop-installs-ev-charging-stations>

A 2018 study by the Iowa DOT projected that the Iowa EV market is expected to reach nearly 450,000 EVs in 2040 based on a medium EV adoption scenario, 1.4 million EVs under a high adoption case, and more than 200,000 in a low adoption case (Figure 5).³⁰

Figure 5: Low, medium and high EV adoption scenarios in the state of Iowa as projected by the Iowa DOT.



These statewide EV adoption projections can be used to estimate EV infrastructure needs for Eastern Iowa, assuming the region will continue to represent 35% of the state's EVs population.

The Electric Vehicle Infrastructure Projection (EVI-Pro) Lite tool³¹ developed by the National Renewable Energy Laboratory (NREL) can be used to project the amount of workplace and public charging infrastructure needed to support the projected EV adoption numbers, as shown in Table 4. Using the assumptions noted below the table, a medium EV adoption scenario would require at least 22,000 Level 2 workplace charging ports, nearly 16,000 public Level 2 ports, and over public 2,000 DC fast ports. This is a significant increase from the amount of public charging infrastructure currently available in Eastern Iowa, indicating a need for the stakeholders of Eastern Iowa to develop policies and plans to support the deployment of additional charging infrastructure.

Table 4: Eastern Iowa EV adoption scenarios and charging infrastructure needs based on EVI-Pro Lite. Source: NREL, ICF analysis

	Low Adoption (70,000 EVs)	Medium Adoption (157,000 EVs)	High Adoption (490,000 EVs)
Workplace Level 2 Ports	10,425	22,577	79,700
Public Level 2 Ports	7,550	15,980	48,500
Public DC Fast Ports	1,225	2,300	6,850

³⁰ Iowa Department of Transportation, 2018 Report on the Impact of Electric Vehicles to the Road Use Tax Fund, Available at <http://publications.iowa.gov/29142/1/EV%20RUT%20Impact%20Report%20123118.pdf>

³¹ Alternative Fuels Data Center, Electric Vehicle Infrastructure Projection Tool (EV-Pro) Lite. Available at <https://afdc.energy.gov/evi-pro-lite>

Assumptions for the EVI-Pro Lite analysis:

- Vehicle mix: Uses the EVI-Pro Lite default assumptions of 35% BEVs with a 250+ mile range, 35% PHEVs with an electric range of 50+ miles, 15% BEVs with a 100+ mile range, and 15% PHEVs with an electric range of 20+ miles.
- PHEV support: Projects public chargers necessary so that most PHEV drivers would not need to use gasoline on a typical day.
- Residential charging: Assumes that 50% of Eastern Iowa residents have access to residential charging.

Community Greenhouse Gas Inventories, Transportation Plans, and Relevant Policies

This section reviews the existing climate and transportation plans, EV-related policies and proposed EV charging station deployments for cities, counties, and MPOs in the Eastern Iowa region. It also provides an overview of the current state EV policies.

Cedar Falls

In 2016, the City of Cedar Falls completed the Community and Government Operations GHG Inventory that projected a significant increase of transportation emissions in the coming decade based on estimated population growth. By 2030, it is estimated that transportation will represent 27% of the total GHG budget at the community level, surpassing residential, commercial, and industrial energy use. The City is developing emission reduction targets and a resilience and sustainability plan that will likely include vehicle electrification as a strategy for GHG reduction from transportation. Further, the City's Future Transportation Plan mentions a Downtown Cedar Falls revitalization project that could represent an opportunity to align existing and future GHG goals with EV charging infrastructure development.

Cedar Rapids and Corridor MPO

On February 25, 2020, the Cedar Rapids City Council passed a resolution recognizing the urgency for community climate action. Consequently, City staff will develop a community-wide GHG inventory for the year 2010 as a baseline and a community-wide Climate Action and Adaptation Plan. The Corridor MPO 2045 Long Range Transportation Plan (LRTP)³² does not directly cover EV initiatives or strategies to curb GHG emissions from transportation; however, the results of a community survey indicate that several stakeholders expressed interest in electric transit buses. In addition, the City of Cedar Rapids has adopted provisions specific to EV charging infrastructure in their zoning ordinance to define specific uses and safety standards.³³

Consideration: Equitable Access to Home Charging

Charging at home is the most convenient and cheapest way to fuel an EV. However, residents of multi-family housing often face logistical challenges, such as access to reliable parking or lack of home ownership, that prevent easy access to EV charging. Efforts to eliminate such challenges and promote equitable EV adoption are taking shape in communities across the country.

³² Corridor Metropolitan Planning Organization, 2020. Corridor MPO 2040, Long-Range Transportation Plan. Available at https://cms8.revize.com/revize/cedarrapids/Community%20Development/MPO/Corridor%202045%20LRTP_FINAL.pdf

³³ Cedar Rapids, Chapter 32: Zoning Ordinance, 2020. Available at https://cms.revize.com/revize/cedarrapids/Chapter%2032%20-%20Zoning%20Ordinance_6.8.2020.pdf

Dubuque

The City of Dubuque developed its first GHG inventory in 2010 for municipal emissions only and released an updated inventory in 2019 that also included community-wide emissions from 2014 to 2018.³⁴ The City updated its Community Climate Action and Resiliency Plan in 2020³⁵ and identified opportunities to achieve 50% community wide GHG reduction below 2003 levels by 2030 and to be the first Net Carbon Neutral community in Iowa. The plan sets a target of 45% emission reduction from the transportation and land use sectors by 2030 using a combination of strategies that include supporting alternative fuels, with a goal of 20% of alternative fuel vehicles (hybrid or electric) sold by 2030. The plan also calls for transitioning both the City fleet and private business fleets to electric. Dubuque anticipates that 4,100 residents will own EVs by 2030 and predicts the need for 175 public Level 2 charging ports, 264 workplace Level 2 charging ports and 21 public DC fast charging ports. One of the quoted strategies is to work with the local utility (Alliant Energy) to implement outreach and education campaigns to help residents understand the benefits of EVs, and to leverage Alliant Energy programs to facilitate EV purchase and EV charging installation. Finally, under the Imagine Dubuque 2037 initiative, the city has also adopted a community-led comprehensive plan with the intent to guide the community's physical, social, and economic and mobility development in a sustainable and equitable way.³⁶ While the plan is focused on equitable access to mobility options and the increase in public transit, electric micro-mobility as well as electric ride-sharing could be opportunities for the City of Dubuque to explore EV adoption beyond private vehicles and public transit.

Iowa City

In 2016, Iowa City set GHG emission reduction goals for 2025 and 2050. The Iowa City Climate Action and Adaptation Plan³⁷ released in 2018 indicated that while the bulk of community-wide emissions in the 2015 GHG inventory came from building-related sources, the relative share of transportation emissions – 15% as of 2017 – is projected to grow as the electric grid becomes cleaner as a result of coal displacement in power generation. To achieve the 2050 GHG targets, Iowa City plans to “replace 55% of passenger vehicle trips with sustainable transportation options (walking, biking and zero emission transit), convert 50% of the municipal vehicle fleet to cleaner fuel vehicles and increase community wide adoption of electric and alternative fuel vehicles.” Among the proposed actions, increasing the deployment of electric and alternative fuel vehicles is indicated as a medium-cost and high-impact strategy across all sectors (home, work, government). Furthermore, the City's plan sets a goal to embed equity and environmental justice in all their GHG reduction actions and indicates the need to increase affordable and reliable mobility choices for disadvantaged and low-income populations.

³⁴ City of Dubuque, 2020. Inventory of Community Greenhouse Gas Emissions 2014-2018. Available at https://www.cityofdubuque.org/DocumentCenter/View/43458/Dubuque-GHG-Inventory-Report-6419_Final

³⁵ City of Dubuque, 2020. Climate Action Plan 2020. Available at https://www.cityofdubuque.org/DocumentCenter/View/46662/Dubuque-Climate-Action-Plan-2020_Full-Report_FINAL

³⁶ City of Dubuque, 2017. Imagine Dubuque 2037: A Call to Action, The City of Dubuque Comprehensive Plan. Available at <https://imaginedubuque.com/help-implement-imagine-dubuque/adopted-plan/>

³⁷ City of Iowa City, 2018. Climate Action and Adaptation Plan. Available at <https://www8.iowa-city.org/weblink/0/edoc/1803121/Climate%20Action%20Plan.pdf>

Quad Cities

The Quad Cities area includes communities both in Iowa and Illinois. The 2016 Quad Cities Metro 2045 L RTP³⁸ reviewed mobility trends and the transportation system of the region and identified several environmental goals to be embedded in the area's transportation planning to reduce both emissions and congestion at river crossing. Some solutions include developing bus rapid transit corridors by leveraging the already existing network of urban fixed-route transit services provided by Bettendorf Transit, Davenport CitiBus, Rock Island County, and Illinois Metropolitan Transit District (MetroLINK). Air quality and the need to maintain attainment status for National Ambient Air Quality Standards have also been outstanding concerns for planning agencies of the Quad Cities area, as highlighted by the Bi-State Region Air Quality Task Force 2014 'Make Outdoor Air Quality Visible' report.³⁹ The Air Quality Task Force indicates the adoption of EVs and the development of charging infrastructure as key strategies for ensuring that emissions do not increase in the future. To this effect, the City of Davenport's municipal code has been modified to include EV charging stations as an accessory use within parking garages and gas stations, and to allow their use for public and private purposes. The code also requires signage and maintenance for EV infrastructure.⁴⁰ Establishing these clear guidelines prevents uncertainty that could otherwise discourage the development of EV charging stations in private parking spaces.

Building and Zoning Codes

Numerous U.S. cities and at least four states have adopted EV infrastructure requirements in their building codes and zoning codes. These provisions require a minimum number or percentage of parking spaces for new residential or commercial construction to be "EV-capable," "EV-ready" or "EV-installed."⁴¹ "EV-capable" means there is electrical panel capacity and conduit to accommodate the build out of a charging station at a parking space. "EV-ready" means there is a full circuit and receptacle installed, ready for a charging station to plug in. "EV-installed" means there is a charging station installed at the parking space. These requirements are intended to minimize costs of installing EV charging at the new construction phase rather than as later retrofits while increasing the speed at which future EV chargers can be deployed.^{42, 43} According to the Iowa Department of Public Safety, Iowa municipalities may not legally adopt energy codes more stringent than the Iowa Code. The Iowa Code references the International Code Council's 2012 International Energy Conservation Code, which has no provisions for EVs or EV chargers. Iowa municipalities may not adopt energy codes more stringent than the Iowa Code, but can leverage municipal codes, specifically zoning and land use, as well as parking and zoning bylaws, to encourage the installation of EV charging infrastructure.

³⁸ Bi-state Regional Commission, 2012. Quad Cities Metro Long Range Transportation Plan. Available at <https://bistateonline.org/transportation/quad-cities-metro-planning/2012-11-13-20-19-45/quad-cities-metro-lrtp-long-range-transportation-plan.html>

³⁹ Bi-State Region Clean Air Partnership, 2012. Make Outdoor Air Quality Visible. Available at <https://bistateonline.org/2012-11-14-00-30-56/2013-04-11-14-50-40/bi-state-region-clean-air-partnership.html>

⁴⁰ City of Davenport, n.d. Municipal Code, Site Development Standards, Chapter 17.09. Available at <https://www.ecode360.com/35579226>

⁴¹ South West Energy Efficiency Project, 2021. Who Has Adopted EV Infrastructure Building Codes?. Available at <https://docs.google.com/spreadsheets/d/1lgppSv7HvU4ExH8TJarE23o8-Y-q9oLV0TaBPBMKaiE/edit#gid=27292754>

⁴² California Air Quality Board, 2018. 2018 PEV Charging Infrastructure: Multifamily Building Standards. Available at <https://www.dgs.ca.gov/-/media/Divisions/BSC/03-Rulemaking/18MonthCodeAdoption>

⁴³ California Air Resources Board, 2020. 2019-2020 PEV Charging Infrastructure: Nonresidential Building Standards. Available at https://ww2.arb.ca.gov/sites/default/files/2020-09/CARB_Technical_Analysis_EV_Charging_Nonresidential_CALGreen_2019_2020_Intervening_Code.pdf

Utility Programs and Incentives

There are two large investor-owned utilities operating in Iowa (MidAmerican Energy and Alliant Energy), serving over 70% of Iowa customers. In addition, there are 136 municipal electric utilities and 43 rural electric cooperatives serving each 10-15% of the remaining customers.⁴⁴

- MidAmerican Energy provides electric services to several communities in Eastern Iowa, including Cedar Falls, Waterloo, Iowa City, Davenport and Bettendorf. The utility currently offers both a residential EV rebate of \$500 for the purchase of a new EV and a business rebate of \$1,500 for the purchase of Level 2 chargers.⁴⁵ MidAmerican also has a program to build a DC fast charging network;⁴⁶ under this program, Waterloo, Davenport, and Iowa City have or are receiving DC fast charging locations by the end of 2021.
- Alliant Energy provides electric services in Cedar Rapids and Dubuque. Alliant Energy previously offered rebates to customers who purchase and install Level 2 EV chargers through December 31, 2020, both for residential applications (\$250 for non-networked and \$500 for networked equipment) and up to \$1,500 to non-residential customers.
- Cedar Falls Utilities is a community-owned utility currently offering a \$50 incentive to qualifying residential and business who own or lease an EV.⁴⁷

Cedar Falls Downtown Public EV Charging Station

Cedar Falls Utilities has worked with the City of Cedar Falls to support the installation of a dual-port Level 2 public charging station near downtown.

Source: [Cedar Falls Utilities](#)



⁴⁴ Iowa Utility Board, 2019. Iowa's Electric Profile. Available at <https://iub.iowa.gov/iowas-electric-profile>

⁴⁵ MidAmerican Energy, Electric Vehicle Rebates. Available at <https://www.midamericanenergy.com/electric-vehicles-rebates>

⁴⁶ MidAmerican Energy Company, DC Fast Charging Network, Available at <https://www.midamericanenergy.com/electric-vehicle-fast-charging-network>

⁴⁷ Cedar Falls Utilities, Electric Vehicles. Available at <https://www.cfu.net/save-energy/electric-vehicles/>

Electric Vehicle Readiness Plan

Several EV readiness strategies and implementation actions were developed based on the input received by the Eastern Iowa community through the stakeholder engagement process and prioritized with additional insight of the Steering Committee members. A brief description of the methodology for strategy creation and implementation is reported below.

Stakeholder Input

A focus on inclusivity among a variety of stakeholders is essential to a community's ability to support residents in the developing EV market. Accordingly, the Steering Committee sought feedback from the stakeholder community as a critical component of the readiness planning process to help accomplish the following:

- Identify barriers to EV adoption and potential opportunities to overcome these barriers;
- Frame challenges in a way that reflects the direct experience of the community; and
- Create a level of common understanding, consensus and acceptance around the proposed strategies and actions.

As part of the outreach effort to external stakeholders, Steering Committee members leveraged their knowledge of the local communities to provide information about key entities in the region. A wide range of stakeholders within three main categories – Government, Industry and Community – was identified with the goal of having a diverse group and maximize the benefits of community wide planning.

Government	Industry	Community
<ul style="list-style-type: none">• Local departments and representatives (e.g., city clerks, county officials, mayors)• City building and zoning departments• Iowa Economic Development Authority• Iowa Dept of Transportation• Iowa Utility Board	<ul style="list-style-type: none">• Local electric utilities• EV charging service providers• Auto dealers• Local electrical workers associations• Local real estate agents and developers	<ul style="list-style-type: none">• Community-based organizations• Climate and environmental organizations• Local EV owners and enthusiasts• Private businesses and workplaces• Educational institutions

The engagement process included an informational webinar covering the project at glance and a virtual engagement session intended to capture the communities' input on several key aspects for EV readiness planning such as:

- Existing barriers to EV adoption;
- EV readiness strategies to overcome such barriers; and
- Actions to implement the EV readiness strategies.

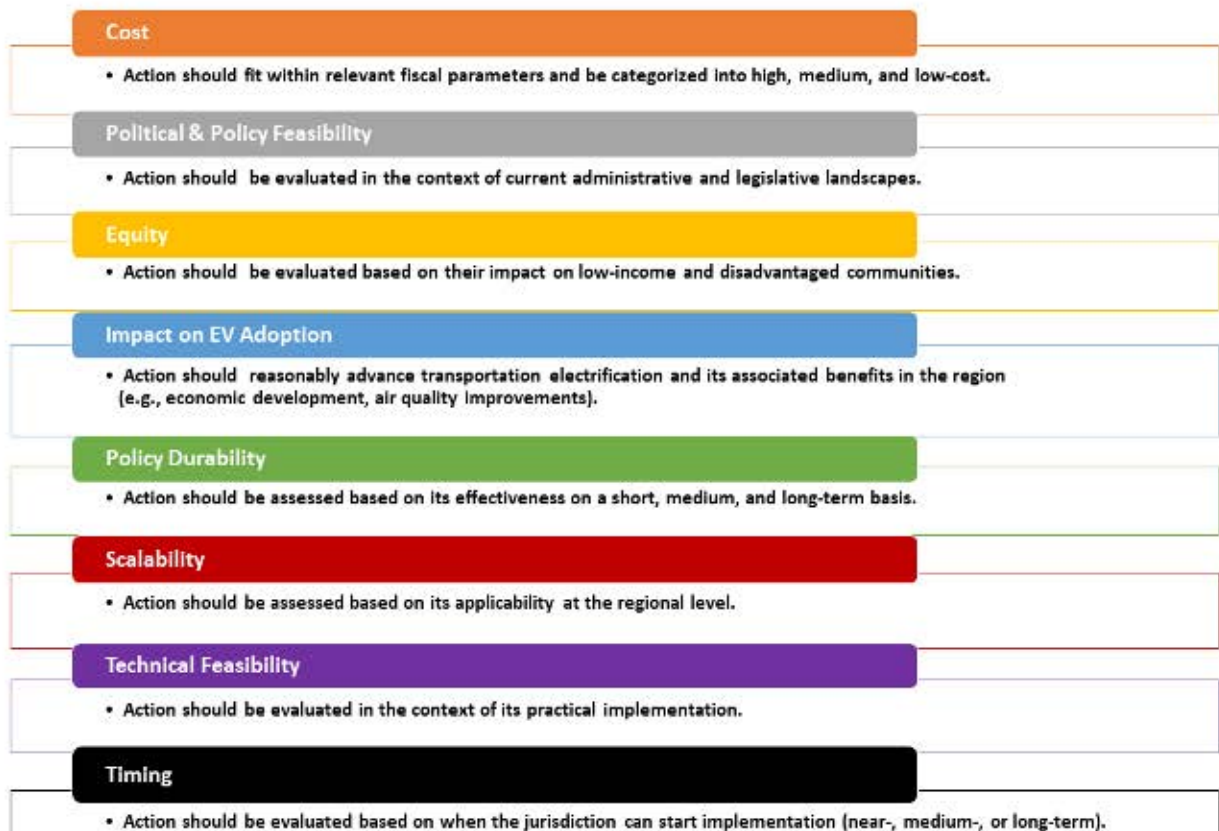
Strategies to Promote Electric Vehicles Readiness in Eastern Iowa

The Steering Committee and Project Team collected stakeholder input through a series of questions followed by voting exercises to gain further insights into priorities (see Appendix B for details). Using community stakeholders' input, the Steering Committee reviewed implementation strategies and actions specific to each of the following areas of intervention:

- Availability and access to EV charging infrastructure
- Availability and access to EVs
- Education and outreach
- Regional coordination
- Leadership

The Steering Committee considered a set of evaluation metrics (Figure 6) to prioritize EV readiness strategies. These metrics are intended to account for the effectiveness and the feasibility of the proposed actions while considering the overall implementation costs and anticipated equity outcomes.

Figure 6: Evaluation metrics to prioritize actions and EV readiness strategies proposed for Eastern Iowa.



The strategies that were considered to achieve EV readiness in Eastern Iowa are organized as follows:

- Invest in EV Charging Infrastructure
- Expand Access to EV Charging Infrastructure
- Promote Adoption of and Access to EVs

- Increase Education and Awareness of EVs and EV Charging
- Coordinate Regionally to Implement Actions and Strategies
- Lead by Example

Each readiness strategy addressed below includes the following:

- **Description** introduces the strategy, covering background information.
- **List of Actions** provides the suite of actions that can be carried out to implement the strategy, organized by priority level.
- **Priority Level** indicates the overall strategy prioritization based on the evaluation metrics.
- **Implementation Timing** indicates when the strategy could be pursued. For the purpose of the EVRP, short-term means within 1 to 2 years, medium-term means within 3 to 5 years, and long-term means within 10 years.
- **Lead Stakeholder(s)** lists the entities primarily responsible for initiating and leading the strategy.
- **Additional Stakeholders** lists the partners that will need to be involved in the strategy's implementation.
- **Strategy Implementation** provides examples and recommendations to implement the strategy.
- **Best Practices** summarizes the best practices related to strategy implementation.

Within each strategy, the actions are ordered and presented according to the outcome of the prioritization exercise. Table 5 gives an overview of the final prioritization results along with the Lead and Supporting stakeholders for strategy implementation as identified by the Steering Committee. Appendix C includes additional details, with the prioritization result provided for every action

Table 5: Summary of Priority Level, Implementation Timing and Lead and Supporting stakeholders by strategy

Strategy	Invest in EV Charging Infrastructure	Expand Access to EV Charging Infrastructure	Promote Adoption of and Access to EVs	Increase Education, Awareness of EVs and EV Charging	Coordinate Regionally	Lead by Example
Priority Level	Medium	Medium ⁴⁸	Medium-low	Low	Medium	Medium
Implementation Timing	Medium term	Medium term	Medium term	Medium term	Medium term	Medium term
Stakeholders						
Local Governments	Lead	Lead	Support	Lead	Support	Lead
State Agencies	Support				Support	
Regional Planners		Support			Lead	Lead
Utilities	Lead	Support	Lead			
Auto dealers			Lead			Support
Economic Development Entities	Support				Support	Support
Real Estate Developers		Support				
EV Owners			Support	Lead		

⁴⁸ The prioritization level of this strategy was raised from Low to Medium priority after the Steering Committee discussed their responses together during the final Working Session of the EVRP process.

Invest in EV Charging Infrastructure

Convenient access to EV charging opportunities is a key strategy to advance EV readiness in the Eastern Iowa region. The goal of having a robust charging network along major travel routes aligns with the sentiment expressed by the stakeholder community, which indicated investments in EV charging infrastructure as a high priority and range anxiety as the number one barrier to EV adoption. Recognizing that eliminating significant gaps in EV charging infrastructure is key for EV adoption at scale, several states across major U.S. regions have come together to create corridor programs to build EV charging infrastructure along major interstates, including efforts in the Northeast,⁴⁹ on the West coast⁵⁰ and across eight Western states.⁵¹

Actions:

High Priority

- Quantify the need for new publicly available charging equipment to fill gaps at both local and regional level, including DC fast chargers to enable long-distance travel along corridors.

Medium Priority

- Identify and pursue opportunities to fund city-owned and operated charging infrastructure (available for employee and public use) in high-traffic locations such as parking lots nearby major roadways, retail, and recreational areas.
- Collaborate with external entities (e.g., other government agencies, chambers of commerce, workplaces, businesses) to track and pursue grants for public and workplace charging infrastructure.
- Promote existing utility programs offering rebates for EV charging.

Low Priority

- Encourage coordination between utilities and potential private EV charging hosts to leverage existing utility funding/incentives (e.g., VW settlement).

Strategy Priority Level: Medium

Strategy Implementation Timing: Medium-term

Lead Stakeholders: Local governments and utilities. These stakeholders have a role for the planning, coordinating, and securing existing funding for EV infrastructure projects.

Additional Stakeholders: State agencies and economic development entities. State agencies (e.g., Iowa DOT) and economic entities (private businesses and Chambers of Commerce) have a role to play to make sure that additional funds can be made available in the future through legislative action. As noted by the stakeholder community, advocacy organizations and the Clean Cities coalition can have a supportive role for this strategy. Multi-state organizations like the National Association of State Energy Officials (NASEO) can also have an important role for further coordination when seeking Alternative Fuel Corridor designation.

⁴⁹ NESCAUM, 2018. Northeast Corridor Regional Strategy for Electric Vehicle Charging Infrastructure 2018 – 2021. Available at <https://www.nescaum.org/documents/northeast-regional-charging-strategy-2018.pdf/view>

⁵⁰ West Coast Green Highway, 2014. West Coast Electric Highway. Available at <http://www.westcoastgreenhighway.com/electrichighway.htm>

⁵¹ NASEO, 2020. REV West. Available at <https://www.naseo.org/issues/transportation/rev-west>

Strategy Implementation: There are complementary pathways to effectively implement this strategy. While cities can pursue their own funding to install and operate EV charging stations, a network of publicly available EV chargers can be realized by using different funding sources and ownership models. For example, large investor-owned utilities are best suited to address the task of building a DC fast charging network along major travel routes (if approved by the regulatory agency). In this case, utilities and the Steering Committee can actively collaborate to find ideal candidates for DC fast charging sites in different areas of Eastern Iowa. Of note, four of the 18 DC fast charging sites recently installed by MidAmerican Energy⁴⁶ resulted from a partnership with the City of Waterloo and Hy-Vee.

Examples of possible best candidates include key locations along major travel routes such as truck stops and the hospitality sector, selected large shopping and retail areas as well as public buildings, libraries, hospitals, colleges, parks and libraries as recommended by IEDA in the *Advancing Iowa's EV Market* report. In addition, gathering and sharing information about completed charging projects can also be useful to inform the Steering Committee on issues or educational gaps that site hosts might experience during different phases of the project, thus enabling the formulation of lessons learned and the development of best practices to be applied in the future.



(Photo: DC fast EV chargers in Waterloo, Iowa.
Source: Kyle Durant, City of Waterloo)

While a robust DC fast charging infrastructure network is key to advance EV readiness regionally, developing Level 2 charging is equally critical. Those can workplace or public locations that are closer to downtown centers and are likely to have high utilization rates such as retail and recreational areas.

The Steering Committee can leverage collaborations with additional stakeholders to make sure that existing funding to advance EV charging infrastructure (e.g., VW Settlement funding administered by the Iowa DOT) is secured while available. The installation of safety-tested, energy efficient EV chargers that have earned the ENERGY STAR® label should be also be encouraged and incentivized whenever possible.

ENERGY STAR® CERTIFIED CHARGERS

The U.S. Environmental Protection Agency (EPA) ENERGY STAR label recognize the most energy efficient appliances, including EV chargers. ENERGY STAR certified Level 1 and Level 2 EV chargers use 40% less energy when in standby, reducing energy use and electricity costs. For certified DC fast chargers, the anticipated savings amount to hundreds kW/year. Further, all ENERGY STAR EVSE are safety certified according to the highest standards by a Nationally Recognized Testing Laboratory. Recognizing the advantages of safe and energy efficient chargers, several utilities and state agencies now require the procurement of ENERGY STAR certified chargers. Learn more at [ENERGY STAR Electric Vehicle Chargers](#)

The quality of user experience with the existing charging network is also critical. User experience depends on a variety of factors including the maintenance status of charging infrastructure and payment models. Those can include:

- **Prepaid model:** EV owners prepay a fixed amount for unlimited access to charging within network.
- **Gas station model:** EV owners who are not in a network are charged a per session fee. Pricing structure can be a flat fee per hour, fee per kWh, differential fee per hour or fee per session. A flat fee per hour is common among private charging stations and municipalities because it is simple and provides stronger incentives against overstaying. Variable pricing can also be developed to account for length of stay and demand charges that the site host could incur.
- **Hybrid model:** A partnership exists between network operators and site owners. Network operators lease parking spaces from the site owner and incur operating costs. The operator also retains the revenue collected.

The Steering Committee can work with utilities and advocacy organizations to make sure that this information is made available to relevant stakeholders, for example by including business models and fee structures in educational materials when promoting existing utility programs.

Best Practices: Stakeholders should follow these best practices when implementing this strategy:

- **Track** open funding opportunities available to partners such as MPOs and Federal land management agencies to build out EV chargers along the National Highway System, as well as Alternative Fuel Corridor Designations.
- **Collaborate** with additional stakeholders and key partners such as Iowa DOT, relevant state agencies, as well as key DC fast charger providers such as [Electrify America](#). Whenever possible, work with local organizations that have the understanding and the trust of a community.
- **Incorporate equity** when discussing or proposing potential locations for public EV chargers, by prioritizing rural areas with gaps and urban neighborhoods with higher density of multifamily housing to ensure that the benefits of public EV charging infrastructure are distributed equitably across the territory according to known needs and desire of host chargers. These could also include providers of transportation and mobility services, such as transportation network company drivers.

Expand Access to EV Charging Infrastructure

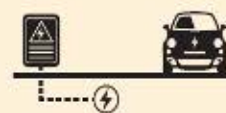
Local governments have a key role in creating favorable conditions to enable EV charging investments. As such, the use of local planning tools such as the zoning and/or land use codes is becoming a common practice to advance EV readiness through e.g., EV readiness tailored to respond to the specific desires of a community to advance EV charging infrastructure. Typically, an EV readiness ordinance established requirements for EV charging infrastructure to be incorporated in new residential and commercial constructions (and sometimes in major renovations); in doing so, local EV-ready codes are considered one of the most practical and cost-effective strategy for local governments to further EV adoption.

The main advantage of incorporating EV-ready infrastructure into a new building is avoiding retrofitting costs.^{52, 53} Making EV charging a requirement also advances equity towards residents of multifamily housings, a segment that has been largely left out from early EV adoption due to parking logistics and housing ownership constraints. There are now over 30 counties or cities that have adopted some version of an EV-ready code, with different percentages of required EV-capable, EV-ready, or EV-installed parking spaces. In February 2021, St. Louis, MO, became the first major midwestern city to pass an EV ordinance that mandates EV-ready and EV-installed only spaces in new single family, multifamily, and non-residential buildings.⁵⁴

1. EV-CAPABLE

Install electrical panel capacity with a dedicated branch circuit and a continuous raceway from the panel to the future EV parking spot.

Aspen, CO: 3% of parking is EV-Capable (IBC)
Atlanta, GA: 20% is EV-Capable (Ordinance)



2. EVSE-READY OUTLET

Install electrical panel capacity and raceway with conduit to terminate in a junction box or 240-volt charging outlet (typical clothing dryer outlet).

Boulder, CO: 10% of parking is EV-Ready Outlet



3. EVSE-INSTALLED

Install a minimum number of Level 2 EV charging stations.

Palo Alto, CA: 5 to 10% of parking is EV-Installed



SOUTHWEST ENERGY EFFICIENCY PROJECT

Actions:

High Priority

- Amend local zoning/land use codes to require EV charging as a permitted accessory use, and to include requirements and/or incentives (e.g., density bonuses) for the installation of charging infrastructure in new construction and major renovations.

Medium Priority

- Implement tailored local policies to streamline and clarify EV charging permitting and inspection processes at private and public locations.

Low Priority

- Specify definitions and design guidelines (e.g., safety, accessibility) for EV parking spaces for both on- and off-street parking.

⁵² California Air Quality Board, 2018. 2018 PEV Charging Infrastructure: Multifamily Building Standards. Available at <https://www.dgs.ca.gov/-/media/Divisions/BSC/03-Rulemaking/18MonthCodeAdoption>

⁵³ California Air Resources Board, 2020. 2019-2020 PEV Charging Infrastructure: Nonresidential Building Standards. Available at https://ww2.arb.ca.gov/sites/default/files/2020-09/CARB_Technical_Analysis_EV_Charging_Nonresidential_CALGreen_2019_2020_Intervening_Code.pdf

⁵⁴ St. Louis Electric Vehicle Ordinance Fact Sheet. Available at <https://www.stlouis-mo.gov/government/departments/planning/sustainability/documents/electric-vehicle-readiness.cfm>

- Develop and adopt regulations and enforcement policies for proper use of EV parking spaces by both EV and non-EV users.
- Ensure, to the extent possible, that local regulations/policies specific to EV parking and charging are consistent with neighboring jurisdictions.
- Include EV chargers in road design criteria and complete street policies.

Strategy Priority Level: Medium

Strategy Implementation Timing: Medium-term

Lead Stakeholders: Local governments. City planners and other key municipal departments (such as offices of sustainability, and departments handling public works, planning, parking, and permitting processes) have a key role to advance EV readiness at the municipal level through the amendment and modifications of zoning, land use and other relevant codes and regulations.

Additional Stakeholders: Regional planners (e.g., MPOs), real estate developers, and utilities. These stakeholders have an important decision-making role for the success of this strategy, and they can be resourceful partners to make sure that codes and ordinances are implemented in an actionable, cost-effective way. Homeowner associations, industry groups, and trade organizations (e.g., electrical contractors, local labor union chapters) should be considered key partners to support this strategy.

Strategy Implementation: There are two complementary elements that the lead stakeholders need to consider when amending codes through an EV readiness ordinance. The first one is an information gathering and knowledge-building process to explore technical aspects and cost-effective solutions when mandating EV charging installations. For instance, the number of EV ready parking spaces can be adjusted based on the housing type (single vs. multifamily vs. non-residential buildings) and parking arrangements. Requirements can be also made flexible based on the estimated utility infrastructure upgrades. In drafting the technical aspects of the ordinance, the lead stakeholders should work with the local utility and key municipal departments, while leveraging existing information and model ordinances. A few recent examples of major cities' EV readiness ordinances include [St. Louis, MO](#); [Madison, WI](#); [Chicago, IL](#); [Seattle, WA](#), and [Summit County, CO](#), which has adopted an EV readiness ordinance at the county level.

The second element to consider is the educational and consensus-building process. As an implementation best practice, the City of Seattle carried out a full year of stakeholder outreach prior to drafting the EV readiness ordinance, focusing on the developer community and property managers. This process clarified concerns, incorporated feedback, answered questions, and secured broad stakeholder approval before City Council took up the ordinance for approval.

In addition to advance an EV-ready buildings ordinance, the jurisdictions participating in the Steering Committee can also work to streamline permitting, inspection and installation process of



Installation of Electric Vehicle (EV) Charger for Single-Family and Multifamily Homes

Updated June 26, 2019

This Tip is designed to help guide you through the process of installing an electric vehicle charging infrastructure for your home. It provides general information on what you need to know before purchasing an electric vehicle, the type of equipment required to support an electric vehicle, and how to apply for a permit to install.

Things to Consider

You will need to evaluate the electrical service in your residence before purchasing an electric vehicle. We recommend using a state-licensed and bonded electrical contractor.

Another factor to consider is where you intend to park the vehicle and the location of your charging station. Installing it may be a simple task, or it may be complicated and expensive depending on the location of your charging station. Some auto manufacturers will include the cost of this installation in the overall cost of the vehicle. Check with your dealership to determine if they are offering this service. Car chargers cannot be located in the public right of way.

EV charging. The City of Seattle Department of Construction and Inspections, for example, has created dedicated fact sheets outlining procedures for the installation of EV chargers for single and multifamily homes.⁵⁵

Finally, it is also critical to establish rules and codes to optimize the use of public EV-designated spaces and make EV charging a more equitable process by incorporating design elements that are ADA compliant. Cedar Rapids and Davenport already adopted EV parking design and use requirements,^{33, 56} and Waterloo's City code include provisions for dedicated EV parking spaces along with ADA requirements.⁵⁷

Best Practices: The lead stakeholders, under coordination of the Steering Committee, are recommended to follow these best practices when implementing this strategy:

- **Learn** about model EV readiness ordinances that have been adopted by other cities, and existing incentives for EV charging especially at multifamily housing.
- **Work** across departments to make sure there is a goal alignment and common understanding of objectives and procedures.
- **Engage** with local officials, utilities, and the real estate developer community (developers, property managers, and homeowner associations) about the advantages of EV-ready buildings and build consensus by educating stakeholders, addressing concerns and incorporating suggestions to the extent possible.
- **Leverage** municipal planning tools as appropriate to incorporate design guidelines for EV parking spaces and other enforcement tools.
- **Ensure** that local regulations/policies specific to EV parking and charging are consistent with neighboring jurisdictions.
- **Incorporate equity** to make sure that adding EV charging to new buildings does not have an impact on housing affordability. Guarantee fair charging prices for multi-family unit residents by preventing additional charging fees that can create affordability disparities.

⁵⁵ Seattle Department of Construction and Inspections, 2019. Installation of Electric Vehicle (EV) Charger for Single-Family and Multifamily Homes. Available at <http://www.seattle.gov/DPD/Publications/CAM/cam132.pdf>

⁵⁶ City of Davenport, Municipal Code. Available at <https://www.ecode360.com/DA4058>

⁵⁷ City of Waterloo, Code of Ordinances, Title 9: Building Regulations. Available at https://codelibrary.amlegal.com/codes/waterlooia/latest/waterloo_ia/0-0-0-1

Promote Adoption of and Access to EVs

Knowledge about EV offerings and existing programs that facilitate adoption and access to EVs by lowering costs are an important component to advance EV readiness. Typically, EV promotion relies on state financial incentives, including tax credits, rebates, and fee reductions. There are, however, other opportunities that stakeholders can explore to create new initiatives that address specific financial and logistical EV adoption barriers. Strategic partnerships between public and private stakeholders, often funded by government grants and led by nonprofit organizations, are becoming a common way to initiate pilot projects to explore solutions at the local level. Many pilots work at the nexus of EV availability, cost, and access to charging, and are often tailored to addressing the needs of specific communities while exploring ways to scale up beyond municipal level.

Actions:

High Priority

- Coordinate with dealers to facilitate future point-of-sale rebates for EVs.

Medium Priority

- Work with local financial institutions to make low interest EV and EV charging loans available to small businesses, income-qualified candidates, disadvantaged communities, and others.

Low Priority

- Promote utility programs offering specially designed residential and commercial EV rates (e.g., time-of-use, subscription rates), and off-peak charging programs to lower EV operational costs and shift load to off-peak periods.
- Engage in partnerships with the private sector and other organizations that provide opportunities for funding (e.g., grants, financing) and promote innovation or pilot projects to advance electric transportation across modes (e.g., car-sharing, ridesharing, and micro-mobility, including e-bikes).
- Create local or regional EV group buy/purchase programs to increase EV availability at auto dealerships.
- Prioritize and incentivize projects that demonstrate local economic benefits for low-income residents such as job creation, training opportunities, youth engagement, and workforce development.

Strategy Prioritization Level: Medium-low

Strategy Implementation Timing: Medium-term

Lead Stakeholders: Auto dealers and utilities. These stakeholders have an important role for the success of this strategy. Utilities are becoming an increasingly important player in implementing programs to lower charging costs for consumers and rolling out pilots often through strategic partnerships with community and nonprofit organizations.

Additional Stakeholders: Nonprofit organizations (Iowa Clean Cities), EV owners and ambassadors, and local governments. These stakeholders can be resourceful partners to promote EVs and effectively engage with decision makers. Consumer groups and community organizations should be included in the list of key partners to support this strategy.

Strategy Implementation: This strategy relies on collaboration to create new opportunities to make EV adoption a seamless experience for all consumers. For example, engaging with local dealerships – either directly or with the help of local consumer advocacy organizations – is a necessary step to establish relationships, create the conditions that can meet consumer demand for EVs and learn barriers that dealers might face for EV sales. While the creation of point-of-sale rebates would require action at the state level, dealerships that are motivated to be part of the regional EV readiness effort could work with the Steering Committee to find mutually beneficial solutions.

A strategic way to engage with dealers is by coordinating with the consumer-based organization Plug In America to offer EV training and certification for dealers via the platform PlugStar.⁵⁸ The training is provided at a cost, and the Steering Committee in partnership with the local Chambers of Commerce could partially or entirely subsidize it for participating dealers. Participating dealers would gain knowledge about EVs and be more prepared to work in a changing auto market.

Utilities can also have a role in incentivizing dealers to sell more EVs. For example, Madison Gas and Electric (MGE) has established a Preferred EV Dealership Network⁵⁹ that rewards local EV dealerships and provides leads from MGE customers in their service territory who are interested in purchasing an EV. Similarly, Austin Energy works closely with a network of local certified dealers to provide a successful EV shopping experience to its customers.⁶⁰ Further, the jurisdictions represented by the Steering Committee can also look at examples noted here of partnerships and collaborations with local credit unions in other parts of the country to create low interest EV loans.

PlugStar Electric Vehicle Training

Plug In America staff teach auto dealers the fundamentals of EVs, charging basics, local utility programs, EV sales best practices and more. Plug In America can also coordinate a ride & drive for local customers to experience driving electric, directly linking the customer to the trained dealer. A 1-800 support line, online shopping assistant, customized websites for the auto dealer, and additional resources are also available. Learn more at [PlugStar Electric Vehicle Dealer Training](#).

Finally, Group buying programs have been successfully implemented at the city, county, and regional level in other parts of the country to engage with dealers and address some of the barriers of early EV adoption, such as the limited EV inventory. Through group buying, dealers have a more predictable profit margin and buyers can purchase EVs locally without going out of state. According to a report from late 2018,⁶¹ dealership sales have been boosted up to 10 times the monthly average by some of these programs.

⁵⁸ Plug In America. PlugStar Electric Vehicle Dealer Training. Available at <https://pluginamerica.org/about-us/evtraining/#dealers>

⁵⁹ Madison Gas and Electric (MGE). Preferred EV Dealership Network. Available at <https://www.mge.com/our-environment/electric-vehicles/dealership-rewards>

⁶⁰ Austin Energy EV Buyer's Guide. OEM Certified Dealers. Available at <https://ev.austinenenergy.com/dealers>

⁶¹ South West Energy Efficiency Project, 2018. Electric vehicle buying program: handbook & case studies. Available at www.swenergy.org/Data/Sites/1/media/documents/transportation/sweep-group-buy-report-2018-07-25.pdf

Appendix D lists examples of past and current group buying programs.

Among those, the Drive Green program in New England is an example of a continuously rolling program that also offers a web platform for consumers to select EVs and participating dealers to book test drives with trained salespeople. While voted as a low priority action, the

Steering Committee can learn about group buying programs and explore this action in the medium long-term.

The Steering Committee should also consider the existing [Linn and Johnson Counties' Grow Solar](#) group buy program to learn educational and programmatic strategies that have been successful at engaging with the local communities and solar providers, and apply them to an EV group buy initiative.

Best Practices: The Lead Stakeholders, under coordination of the Steering Committee, are recommended to follow these best practices when implementing this strategy:

- **Learn** about federal, state and local incentives, as well as utility programs, to lower the upfront cost of purchasing EVs, and explore legislative pathways to create a state-led Car Allowance Rebate System (CARS) – commonly known as ‘cash for clunkers’⁶²; could be combined with point-of-sale vouchers to reduce the upfront cost of EVs at the time of purchase.
- **Leverage** community groups and advocacy organizations to engage with dealerships and explore ways to expand access to EVs in ways that are mutually beneficial for consumers and dealers alike.
- **Collaborate** with utilities and other stakeholders to evaluate the implementation of bike sharing and carshare/rideshare programs utilizing EVs through ad-hoc pilots.
- **Incorporate Equity** by working with financial institutions to lower barriers to EV adoption through fair financing and streamlined program applications.

REV UP WISCONSIN

REV UP ran between 2016 and 2017 and was coordinated by Wisconsin Clean Cities in partnership with Nissan. During that time, Wisconsin Clean Cities hosted more than a dozen ride-and-drive events to promote the program, resulting in the purchase of more than 100 new Nissan LEAFs. The program covered a large geographic region and was available to all Wisconsin-based employees and customers of several utilities in the region including Alliant and Xcel Energy.

Example: Low Interest EV Loans

North Carolina based Electel is a cooperative federal credit union that serves members of electric co-ops across the state and offers a low-interest loan for EVs. [ElecTel Cooperative Federal Credit Union EV Loan](#)

Vermont Credit Union designed the Green Vehicle Loan to offer lower rates and extended terms to help make financing easy for alternative fuel vehicles. VSECU also works with dealers and electric utilities to simplify applications and maximize savings. [Green Vehicle Loans | A Credit Union for Vermonters](#)

Seattle's Express Credit Union (ECU) created an EV fair financing program to overcome discriminatory loan practices towards potential EV buyers who have poor or no credit. [EV Loans | Express Credit Union](#)

⁶² See the California Bureau of Automotive Repair's (BAR) Consumer Assistance Program (CAP) as an example of a state-led program offering vehicle retirement options. Available at https://www.bar.ca.gov/consumer/Consumer_Assistance_Program/

Increase Education and Awareness of EVs and EV Charging

While most consumers have heard of EVs, there are still knowledge gaps about the technology and charging options. This is true despite federal and state government agencies, private utilities, EV charging providers, large nonprofit organizations, and many local consumer associations providing extensive online resources. However, the average consumer does not typically have the time to search through these sources to find the most reliable and reputable sources, or the specific information that answers a question or applies to a unique situation. Educational efforts that increase awareness about EVs and provide practical information remain a key element to advance EV readiness.

Actions:

High Priority

- Develop and maintain a comprehensive EV resources website to educate all Eastern Iowa consumers on the environmental, financial, and other benefits of EVs. The website should include information on logistics of buying EVs (including available incentives), installing charging (including the local permitting process), finding charging, and more. Link to other reputable and well-maintained resources (e.g., AFDC) as appropriate.

Medium Priority

- Develop outreach plans targeting specific audiences, with customized messaging that speaks directly to those end-users (e.g., community webinars, legislative briefings to educate public officials).

Low Priority

- Target education and outreach efforts based on demand, tailoring messages accordingly (residents, businesses, dealerships, developers, employers, etc.). Also target low-income and underrepresented populations.
- Work with local community colleges, and trade schools to incorporate vocational programs for electrician and EV maintenance jobs into their curriculum (or STEM programs).
- Engage with advocacy organizations to create educational toolkits about EVs (costs, range) and EV charging (infrastructures, best practices at workplaces, multifamily housing).
- Connect the public with EV ambassadors, such as driver groups and EV enthusiasts; organize ride & drive events (in-person and virtual); create marketing campaigns featuring personal stories.
- Leverage connections with the Iowa Clean Cities Coalition to showcase local success stories (for example, public charging installations).
- Engage and partner with community-based organizations to understand opportunities, challenges to expand EV adoption and access in rural areas.
- Provide educational resources to employers and fleet managers regarding EV use and charging station deployment. Inclusive of technical assistance and training.
- Create a program to recognize dealers and other businesses that do the most to champion EVs.

Strategy Prioritization Level: Low

Strategy Implementation Timing: Medium-term

Lead Stakeholders: Local governments and EV owners. Local governments and EV owners were identified as lead stakeholders for the strategy.

Additional Stakeholders: Nonprofit organizations (Iowa Clean Cities), environmental organizations. These stakeholders can be resourceful partners to promote EVs and effectively engage with decision makers.

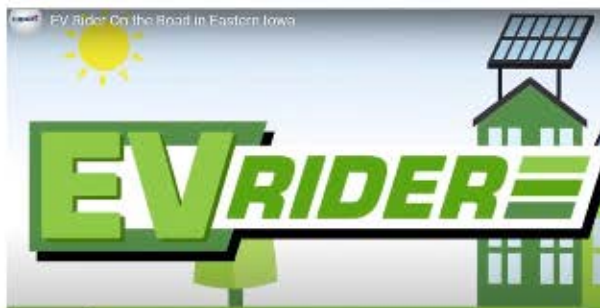
Strategy Implementation: Advancing EV knowledge in a cost and time effective way can be achieved by creating a comprehensive repository of resources to educate all consumers on the environmental (e.g., air quality), financial, and other benefits of EVs. The lead stakeholders could develop a webpage or equivalent online platform for the Eastern Iowa region that could act as a “one stop shop” repository of relevant information. This could include EV models, residential and public EV charging options, links to municipal resources such as permitting, existing incentives, EV dealers and utility programs. Having one platform has the advantage of leveraging information that is applicable across jurisdictions without duplicating efforts. However, it might be more difficult to maintain an up to date repository for the entire region, and the stakeholders leading this effort would need to have the staffing capacity to track and capture all relevant information across local jurisdictions in addition to state and regional. To overcome some of these possible obstacles, the Steering Committee could leverage existing resources and information by partnering with the IEDA and Iowa Clean Cities to implement this action. There are several resources and examples of websites that the Steering Committee and stakeholders can consult for both format and content. For general resources, the [Alternative Fuel Data Center’s electricity web page](#) provides comprehensive, high-quality content based on research performed by National Laboratories or other academic and private research entities.

Examples of community-oriented platforms include:

- [Maryland EV](#), an electric vehicle education and outreach resource supported by a broad coalition of State agencies, local and county governments, Clean Cities, utilities, universities, students and EV enthusiasts.
- [Smart Columbus Drive Electric website](#) is easy to navigate and includes eye-catching, interesting graphics and branding.
- [Madison Gas & Electric’s \(MGE\) LoveEV website](#) provides basic information on key issues such as cost consideration and driving an EV compared to internal combustion engine vehicles.
- [Plug In America](#) provides comprehensive information in a user-friendly format about available EV models along with a state-by-state map of existing EV policies and incentives.
- [Normal Now](#) offers information about EV models as well as common consumer concerns about EV driving, such as range, maintenance and charging.

Until a regional website can be built, communities could link their individual municipal websites to one or more of these resources.

The Eastern Iowa jurisdictions should also leverage existing resources developed by local organizations such as the Central Iowa Power Cooperative’s EV Rider videos,⁶³ and integrate them with materials tailored to each community.



(Source: Central Iowa Power Cooperative EV Rider)

⁶³Central Iowa Power Cooperative (CIPCO). EV rider videos. Available at <https://www.cipco.net/cipco-ev-rider-videos>

To complement the online platform, the jurisdictions in the Steering Committee should also develop a comprehensive outreach plan incorporating direct outreach elements to accommodate the diversity of target audiences:

- Marketing objectives and key messages
- Key audiences and appropriate engagement strategies and tactics for each audience
- Special considerations that may exist (e.g., seasonality)
- Engagement channels (e.g., online and in person, such as lunch & learn webinars, coffee hours and peer-to-peer interactions such as ride & drive events)
- Program content/collateral/products that exist or need to be developed, including those intended for stakeholder use such as handouts and fact sheets.

Education and outreach efforts could cover specific topics (for example, EV performance in cold weather) and include engagement action to businesses and employers about workplace charging.

Consideration: Weather and EV Performance

Extreme temperatures as well as hilly terrain can affect the performance of EVs, contributing to range anxiety. In cold weather, for example, it is recommended to warm up the vehicle cabin while the EV is still plugged in to avoid using the battery. Extreme heat can also reduce range, and it is always recommended to keep the battery as cool as possible and park in the shade on hot days. EV manufacturers are constantly improving battery insulation or ventilation. In heavy duty vehicles, auxiliary heating/cooling systems running on fuel or using heat pump technologies are also common.

Another educational area of interest is the development of vocational programs for electrician and EV maintenance jobs at local community colleges and trade schools. Appendix D lists examples of colleges that have incorporate programs to prepare a dedicated workforce for the EV industry. It is also worth noting that the [Electrical Industry Training Center](#) in St. Louis, MO, offers a curriculum developed by the International Brotherhood of Electrical Workers Local 1 and the St. Louis chapter of the National Electrical Contractors Association dedicated to train workers for installing EV charging stations.

Best Practices: The lead stakeholders, under coordination of the Steering Committee, are recommended to follow these best practices when implementing this strategy:

- **Understand** the concerns of your community regarding EVs and create tailored messaging. Possible ways to engage with the community and gather information about EV awareness include online surveys distributed through newsletters, and virtual or in-person events such as EV trivia.
- **Leverage** community groups and advocacy organizations to engage with key stakeholders. Take advantage of state or nationwide EV awareness initiatives such as National Drive Electric Week. To date, Cedar Rapids, Dubuque, Iowa City, and Davenport have each hosted one or more events as part of National Drive Electric Week.
- **Educate** the community about the opportunities that EV readiness at regional scale has to offer in developing a local workforce for EV charging infrastructure, including electrical work in buildings, and EV charging installation, maintenance, and repair.

- **Incorporate Equity** by educating communities through outreach programs that partner with trusted local environmental and social justice associations. Public libraries are also useful to reach disadvantaged communities. Information should be available in multiple languages as necessary.

Coordinate Regionally to Implement Actions and Strategies

Regional coordination is a central component for the success of the EVRP. Coordinating regionally can accelerate the advancement of EV readiness at both local and regional level if the jurisdictions of the Steering Committee are successful in leveraging resources, sharing knowledge, and pooling together different expertise. Regional coordination is also useful to engage with state legislators and other state organizations to advocate for incentives and laws that support EV adoption and EV applications across sectors. Finally, a coordinated group elevates the profile of individual municipalities while strengthening the standing of regional agencies to the eyes of state regulators, state entities and other relevant stakeholders such as Chambers of Commerce and large employers. It also sends a message that the Eastern Iowa region is determined to implement solutions to advance EV readiness at scale, and helps building consensus among policymakers at the local, regional, and state level.

Actions:

High Priority

- Integrate EV readiness into regional planning efforts, including regional transportation plans and sustainable communities' strategies.

Medium Priority

- Engage in state, regional, and national advocacy efforts to support laws, incentives and policies that further EV adoption (e.g., zero-emission vehicle or ZEV mandates, low-income rebates, point of sale vouchers), aligning with other leading cities and complementary regional initiatives.
- Create a regional working group or steering committee to share lessons learned, monitor emerging EV applications and track progress toward EV readiness at the regional level.
- Develop common metrics to track progress on EV readiness at the local and regional level. Monitor and report progress toward EV readiness at the municipal/county level.

Low Priority

- Encourage local partners (Chambers of Commerce, retail businesses, etc.) to develop non-monetary incentives to e.g., reward EV ownership with access to premium parking spaces.

Strategy Prioritization Level: Medium

Strategy Implementation Timing: Medium-term

Lead Stakeholders: Regional planners (MPOs)

Additional Stakeholders: State agencies and local governments. The Iowa Clean Cities Coalition, the Iowa American Planning Association (APA), the IEDA, and the Iowa Business for Clean Energy were also proposed as additional key stakeholders. These entities could coordinate efforts to promote legislation, policies and funding programs at the regional and state level to advance EV readiness and adoption.

Strategy Implementation: The Steering Committee can leverage the MPOs that are present in the Eastern Iowa territory to ensure that EV readiness actions are carried out in a coordinated way. For example, the MPOs represented in the Steering Committee can notify jurisdictions about funding opportunities or planning initiatives that could be shared across jurisdictions to align decision-making criteria for e.g., siting EV charging infrastructure. MPOs could also collaborate to host bi-annual conferences or other gatherings like the 2018 Bi-State Alternative Fuels Vehicle Summit to share current information and benchmark regional EV programs. Similarly, jurisdictions can coordinate (as some already are) to share resources and ideas for events like National Drive Electric Week. More broadly, regional coordination offers additional opportunities for sharing resources, lessons learned and best practices on a variety of mobility topics such as the implementation of electric transit buses (underway in Iowa City and on the Illinois side of the Quad City area), or other municipal fleet electrification initiatives.



(Photo: Battery electric transit bus in Iowa City, Iowa.
Source: Sarah Gardner, City of Iowa City)

The creation of one regional working group or several sub-working groups that focus on targeted topics and initiatives will help ensure that goals stay aligned and progress on objectives is measured based on key metric and key performance indicators (KPIs). The working groups could organize their activities around the following target areas:

- EV Infrastructure
- EV Policy and Incentives
- EV Education and Awareness

Specific KPIs are relevant to track progress in those areas, with examples outlined in Table 6.

Table 6: Objectives and Key Performance Indicators (KPI) track the goals of the Eastern Iowa EVRP.

Objective	Key Performance Indicators
Build Charging Infrastructure	Number of charging stations, with detail about type (Level 2, DC fast)
Enact Local EV Readiness Policies	Number of EV readiness ordinances or other policies enacted at the municipal level
Educate Communities	Number of ride and drives, number of website visits and inquiries
Engage Dealers	Number of dealers engaged in EV sales, total EVs sold in the region
Support EV Readiness Regionally	Number of regional initiatives (e.g., collaborative funding applications)
Engage Government Employees	Number of charging stations installed at government buildings, number of electric vehicles in government fleets, number of educational events, number of workplace charging programs and participation levels

There are a few notable examples of regional vehicle electrification initiatives. For example, [Plug-In North Carolina](#), an initiative established in 2011, “strives to provide a collaborative opportunity for stakeholders to work together to ensure seamless integration of electric vehicles into local communities.”

Likewise, the [Southeast Regional EV Information Exchange](#) leverages collaboration to foster EV adoption within the region by “sharing information and best practices as well as identify potential areas for collaboration on topics including EV infrastructure planning (siting and securing of site hosts, permitting, pricing, signage, minimum operating standards, accessibility, ownership models, etc.), education and outreach, policy development, and program implementation.”

Finally, [Electrify Heartland](#), which encompasses the statewide initiatives Electrify Kansas and Electrify Missouri, is dedicated to advancing EV adoption by leveraging volunteers and EV ambassadors to educate consumers; connecting with businesses, developers, and EV dealers; and working with electricity providers and policymakers to create incentives and legislation that supports EV adoption.

Regional coordination can also be useful when engaging in state advocacy efforts to support policies and incentives that further EV adoption (e.g., ZEV mandates, low-income rebates, point-of-sale vouchers). Of note, the need to address legislative barriers at the state level (e.g., lack of state incentives, both monetary and non-monetary; high EV registration costs) was one of the priorities highlighted by the community. Tax credits, incentives and rebates still play a major role in stimulating consumer demand. An early study by NREL concluded that every \$1,000 in tax credit value is associated with a 5.8% increase in EV registrations.⁶⁴ Consumers in all states can access the federal EV tax credit, which offers \$2,500 to \$7,500 for every new EV, based on vehicle size, battery capacity, and number of EV models sold. Other states offer additional rebates; in California, for example, rebates are scaled according to household income.

[Drive Electric Tennessee](#) brings together state agencies, universities, cities, utilities, EV manufacturers, advocacy groups, and private businesses to promote EV adoption and facilitate communication among the entities of a given geographic area. The participants formed four working groups on **EV Infrastructure, Awareness Policies and Programs** and **Availability**, and engage with the community through ride & drives, webinars and other outreach activities.

ADOPTING ZEV STANDARDS

The [Zero-Emission Vehicle \(ZEV\) program](#) requires certain automakers to supply a specific percentage of ZEVs in a state or purchase credits from other automakers to meet the state requirements. In March 2021, Virginia became the 15th state to join the Multistate ZEV Taskforce. Adoption of the ZEV standards increases the availability and inventory of EVs, giving consumers more choice. ZEV states have also adopted the [Advanced Clean Truck Rule \(ACT\)](#) to facilitate the conversion of medium and heavy-duty vehicles (MHDV) to ZEV. States have already started drafting rules to enact the ACT, while providing incentives for the purchase of MHDV ZEV including commercial vans, shuttles, trucks, and buses.

⁶⁴ National Renewable Energy Laboratory, 2015. Impact of Direct Financial Incentives in the Emerging Battery Electric Vehicle Market: A Preliminary Analysis. Available at <https://www.nrel.gov/docs/fy15osti/63263.pdf>

Other states enacted policies to further EV adoption through incentive programs including low-income. For instance, [Maine](#) is expanding its EV program with more rebates for low-income residents, selected non-profits and tribal governments, and [Connecticut](#) is revising its Electric Vehicle Roadmap to add EV incentives for low income and other disadvantaged communities, and for the purchase of used EVs.

Best Practices: The lead stakeholders, under coordination of the Steering Committee, are recommended to follow these best practices when implementing this strategy:

- **Foster collaboration** among the jurisdiction of the Steering Committee by finding common goals and priorities. Select a system of checks to make sure that progress is tracked regularly.
- **Facilitate information sharing** and promote peer-to-peer learning by partnering with the Iowa Clean Cities Coalition to organize listening sessions on a specific topic. For example, the Louisiana Clean Fuels Coalition in 2020 hosted several sessions for medium and heavy-duty EV fleets, and EV 101 workshops for local leaders to prepare for an electrified future. Denver Metro Clean Cities also hosts listening sessions on a variety of topics.⁶⁵
- **Incorporate equity** by connecting with communities that are rural and/or low-income, and by incorporating electric transportation solutions that are specific to address the needs of those communities.

⁶⁵ Denver Metro Clean Cities Coalition. Listening Sessions. Available at <https://denvermetrocleancities.org/programs/listening-sessions/>

Lead by Example

Taking direct actions towards EV readiness at the municipal level is an opportunity for the jurisdictions on the Steering Committee to demonstrate a commitment to their communities. There are several ways municipality can lead by example. First, by investing in EV education and facilitating EV adoption by providing EV charging opportunities for municipal employees. Second, by introducing EVs into the municipal fleet (including transit and heavy-duty vehicles, when possible) and reducing the carbon footprint of municipal activities. These actions increase EV visibility in the community, make individuals more confident about EV capabilities and more willing to support EV policies put forward by the city.

Actions

High Priority

- Educate municipal/county employees about EVs and EV charging and encourage EV adoption through the development of workplace charging programs.

Medium Priority

- Assess the existing municipal/county fleet, develop a fleet management plan, and explore opportunities to incorporate EVs.
- Incorporate a low-income lens/component in any program or activity that is carried forward.

Low Priority

- Monitor and look for opportunities for projects to address emerging trends and technologies including battery storage, battery second-life applications, vehicle-to-grid and vehicle-to-building, wireless charging, and autonomous vehicles.

Strategy Prioritization Level: Medium

Strategy Implementation Timing: Near-term

Lead Stakeholders: Local governments and regional planners (e.g., MPOs)

Additional Stakeholders: Economic development entities (e.g., IEDA and businesses), auto dealers.

Community organizations and utilities also have a support role to the various efforts.

Strategy Implementation: Developing workplace charging for municipal employees and implementing EVs into the municipal fleet are two actions that the jurisdictions could start implementing in parallel to take advantage of resources, and lessons learned. Jurisdictions that have already started the municipal fleet electrification process are well positioned for implementing workplace charging but should nonetheless dedicate time for an internal educational and outreach effort towards employees - including developing guidelines and factsheets about workplace charging can be useful. See Appendix D with examples of workplace charging guides

For jurisdiction that have not started the municipal fleet electrification yet, it is useful to know that cities around the country have been able to take advantage of cooperative purchasing mechanisms and to leverage the buying power of local governments. The most notable example of aggregated procurement program is the [Climate Mayors EV Purchasing Collaborative](#). The Collaborative launched in January 2017 and has grown to include over 160 cities, counties, public transit agencies, and port authorities. The Collaborative offers resources for a streamlined procurement experience and discounts for light, medium and heavy-duty vehicles – including school buses – as well as charging infrastructure, policy,

and some social media advertising. Discounts are available to purchase or lease EVs, as well as for EV charging.⁶⁶ In Iowa, both Des Moines and Iowa City have used the Collaborative in the past.

Finally, the [AFDC Case Studies](#) can be a good resource of information for municipalities to learn about initiatives and programs that other jurisdictions are implementing to reduce emissions and fuel costs through EV adoption across sectors, including transit and school buses.

Best Practices: The lead stakeholders, under coordination of the Steering Committee, are recommended to follow these best practices when implementing this strategy:

- **Engage** with and educate employees across city departments on the benefit of EVs while empowering each city department to be a key player to advancing EV readiness.
- **Take initiative** at the municipal level to incorporate practices that reduce vehicle emissions through the adoption of EVs and other zero-emission solutions for municipal operations such as electric lawn mowers and leaf blowers. Showcase these initiatives and solutions to city employees and the community.
- **Incorporate equity** by creating an inclusive process principles and metrics (affordability, access, economic empowerment, inclusion) in EV programs.



Seattle Case Study

Seattle's transportation electrification journey started in 2010, when federal funding allowed for the installation of 46 EV charging stations for the city's municipal fleet and the creation of a [three-year pilot program](#) to provide public access to EV charging in city-owned or city-managed parking garages. The program provided an opportunity for the city to learn about the [many aspects of charging infrastructure](#) development, installation, and service management. Most importantly, it provided information on streamlining processes and how EV drivers would interact with public charging stations, and spearheaded other projects over the years. Today, the Seattle's city fleet has over 400 EVs, and the city has one of most ambitious vehicle electrification programs in the country. Learn more on how Seattle is leading by example in the [AFDC Case Study](#) featuring Seattle's electrification plans.

⁶⁶ Climate Mayors, Drive EV Fleets. Available at <https://driveevfleets.org/>

Key Next Steps

In preparation to begin implementing the EVRP as a guiding tool for the Eastern Iowa region, there are some next steps that the Steering Committee and the jurisdictions can undertake to maintain the momentum gained through this planning effort. Broadly, each jurisdiction can start planning and acting to incorporate top priority actions into their own climate and mobility plans. Examples include, but are not exclusive to, fleet electrification efforts, bike sharing initiatives or municipal policy efforts. Jurisdictions can work to broaden and scale up programs and initiatives that are already ongoing. This exercise could be an opportunity to understand current gaps in staffing and programmatic capacity that need to be addressed in the near and medium terms.

As a first step, the Steering Committee should establish a schedule for meetings following the completion of the plan in order to continue sharing information and resources, as well as updates on progress made toward the plan goals. Meetings could take place quarterly or biannually, depending on the agreement of the steering committee members.

An area of immediate action is education and outreach. The jurisdictions in the Steering Committee can work individually and as a group to start planning a coordinated effort to engage with external stakeholders to implement priority actions. The lead stakeholders could also organize outreach, information-gathering and implementation efforts by themes or areas of expertise and interest, by creating working groups to make the process more efficient. At the same time, lead stakeholders can engage with internal stakeholders, e.g., other city leaders and staff, to make the process of EVRP promotion and implementation as inclusive as possible from the start.

Pursuing federal funding and applying for EV infrastructure grants or other initiatives such as the Alternative Corridor Designation can also be a short-term action item. The jurisdictions can use opportunities like to plan together at the regional level and maintain a basis for future coordination on EV projects and funding opportunities. Given the expected push from the federal government to support EV adoption and EV infrastructure deployment, there are likely to be many upcoming opportunities for funding that Eastern Iowa's stakeholders should position themselves for in advance.

Appendix A: Charging at Multifamily Units

According to the U.S. Department of Energy, 80% of EV charging happens at home.⁶⁷ While charging at home is relatively easy for homeowners with access to a private garage or driveway, large apartment buildings and condominiums, usually referred to as multifamily units, do not usually have this option. There are several barriers for EV charging at multifamily units. Upfront costs, especially if significant retrofitting is required, are usually the main barrier. In other cases, parking logistics can make a project difficult. An additional overarching barrier is often educational and include lack of guidance for property owners, managers or homeowner associations on EV charging options and information on equipment, installations, payment schemes and maintenance.

The last few years have seen an increasing growth of initiatives targeting multifamily buildings to provide more equitable access to EV charging infrastructure. Many charging companies offer turnkey solutions that provide integrated services and often act as third party lessors by retaining equipment ownership and covering maintenance and repair costs. Utilities are also becoming more involved in multifamily charging projects by providing specific incentives, make-ready infrastructure programs for multifamily properties and advisory services. Finally, municipalities and local governments can also play a role by streamlining permitting and inspection processes and making sure that information is clear and readily available to potential EV owners or property managers.

Getting Started with an EV Charging Project

For a site owner interested in a charging project at a multifamily community, parking arrangement is one the first items to evaluate. Parking scenarios different and each type presents unique characteristics. For example:

- **Outdoor Lot:** will require weather-resistant equipment and reinforced sockets for durability; might be located away from the main power source.
- **Garage (or Ramp):** may allow installations to be closer to the power source but could require more cutting through building walls and concrete floors.
- **On-street:** may require additional permits to access the public right-of-way (ROW).

Knowing the specification of the building's electric circuits and metering structure is key to determine the type of EV charging infrastructure that can be supported, and the need for upgrades. Two common metering situations include:

- **Common Area or Group Metering:** a single meter measures electricity usage for an entire building, with the electric bill going to the property owner/manager. The property owner or manager may opt to own and maintain the charging stations, or to contract with a third party.
- **Mixed Use Metering:** a meter measures electricity usage in mixed use buildings, including multifamily and public/commercial areas. Ad-hoc metering arrangements may be needed to track energy usage.

The metering infrastructure may also inform choices on infrastructure and billing options. For example, network-capable – or “smart” – EV charging equipment that can communicate with connected devices (e.g., wi-fi routers) can allow tracking of energy usage and individual billing, a useful feature in

⁶⁷ U.S. Department of Energy, n.d. Charging at Home. Available at <https://www.energy.gov/eere/electricvehicles/charging-home>

multifamily communities, in addition to provide demand response capabilities to allow consumers to participate in utility managed charging programs. Other factors that influence the choice of charging equipment depends on factors including:

- **Projected Usage:** it is important to future-proof an EV charging installation, anticipating increased EV charging demand to avoid further retrofit costs.
- **Installation Costs:** costs vary with parking type, distance of the parking from the electrical service, need for upgrades, permits, and other costs (e.g., additional local regulations).
- **Cost Recovery Options:** based on the metering situation and project scope, different EV charging financial models (flat fee; charging by time or by energy usage) might be suitable to enhance cost recovery options.

The Benefits of Multifamily Charging	Barriers to Multifamily Charging	Best Practices for Multifamily Charging Projects
<ul style="list-style-type: none"> • Attract and retain existing EV drivers. • Increase property value by adding critical infrastructure. • Aligning with emerging technologies. • Prepare for increased EV charging demand. • Promote corporate and sustainability efforts. 	<ul style="list-style-type: none"> • Upfront costs. • Installation process and permitting. • Installation logistics. • Infrastructure operation & maintenance. • Lack of information on equipment and procedures. • Lack of clarity on cost-recovery models and fee structures. 	<ul style="list-style-type: none"> • Learn about tenants' charging needs • Map the parking options and logistics of charging locations • Consult with the utility or a contractor to review electrical power, metering, billing options • Select charging strategy and equipment • Obtain necessary permits • Hire a qualified contractor to install equipment • Create EV charging guidelines

Eastern Iowa Case Studies

Case Study 1 – Vargason Properties

Synopsis

Vargason Properties owns and manages 8 identical 3-story, 12-unit buildings in Iowa City and Tiffin, plus 2 duplexes in Iowa City for a total of 100 rental units, constructed between 1985 and 2000. All properties are renter occupied mostly long-term by families and workers (only 20% of the tenants are transient students staying less than 2 years).

Each building has an outdoor parking lot with 20 spaces. The buildings are adjacent, and some of them are arranged around a court with parking spaces that create a common lot in the middle. None of Vargason's renters have asked about EV charging yet, however the owner is aware that EV adoption is increasing rapidly and he is committed to explore the possibility to offer EV charging options to differentiate his business and attract new tenants.

Concerns

- Need for power upgrades and installation costs
- Ownership and maintenance of EV infrastructure
- Finding the right business model to avoid passing infrastructure costs to tenants
- Enforcement of parking rules in EV dedicated spaces
- Understanding tenants' appetite for EVs at his properties

Motivations

- Iowa City is well positioned to educate people and establish policies and guidelines when it comes to using EV charging and respecting designated spaces
- Align with market trends and with future city policies that could mandate EV infrastructure in new buildings

Recommendation

The case of Vargason Properties is an example where most EV charging could be provided through a series of Level 2 chargers installed in the outdoor parking court. A qualified electrician or the local utility could readily answer questions regarding power availability, metering options and need for power upgrades. Charger providers who operate in the area would also be able to provide additional information on charging infrastructure options, costs and available incentives. Based on the information provided, a leasing contract with a third-party that owns, operates and maintains EV chargers would be worth exploring as a possible solution.

Case Study 2 – Gronen Properties

Synopsis

Gronen Properties owns 175 units in multi-story apartments (4+ levels) and multi-building complexes. About 70 units qualify as affordable housing while 47 are workforce housing apartment units) and 45 are market rate. The buildings are older than 20 years but have been all rehabilitated within the past 15 years. The properties are mostly renter occupied, and 90% of residents own a car. The parking types are a mix of open parking lots and parking ramps both onsite (for about half of the units) and offsite. The offsite parking spaces are rented from city-owned surface lots, and the parking cost is included in the rent (72 units rent parking in a city-owned parking ramp facility located in Dubuque Millwork district, a 3-level garage that has a few public EV charging stations installed). To date, none of the tenants has asked about EV charging. However, the owner thinks EVs are a great choice moving forward and she would like to explore opportunities to offer EV charging options.

Concerns

- Finding the right business model to avoid creating stranded assets due to renters' turnover
- Parking etiquette, and enforcement of parking rules in EV dedicated spaces
- Understanding tenants' appetite for EVs without raising expectations

Motivations

- Gronen Properties' existing parking space rental agreements with the city
- Support corporate environmental and sustainability goals

Recommendation

The case of Gronen properties suggests that there is a need for further information gathering about the options that could be pursued to expand access to EV charging for the tenants. A consultation with the city of Dubuque could be useful to leverage internal knowledge and expertise and explore funding opportunities and business models that could address some of the financial concerns including the long-term value of EV charging infrastructure. Additional solutions would have to be explored for the parking spaces that are rented from city-owned lots.

Takeaways

The two case studies suggest that there is a small but growing interest among rental property owners to provide EV charging to their tenants. This is an opportunity for the jurisdiction of the Steering Committee to effectively engage with the broad real estate community and address some foundational aspects of EV charging at multifamily housing through a dedicated educational process. Recognizing that EV charging at multifamily housing is a fast-evolving topic, the Frequently Asked Questions (FAQs) below captures some of the common issues and concerns that property owners might experience. Additional case studies and guidelines for charging at multifamily are included as well. As more landlords approach the City with questions about EV charging at their properties, these resources can provide useful guidance.

Frequently Asked Questions about Multifamily EV Charging

Will the Project Be Too Expensive?	Will Stations be Used Enough to Cover Costs?	Will Tenants Use the Stations Properly?
<ul style="list-style-type: none">• Make sure to include costs & benefits, both short and long term.• Consult with electrical contractors and EV charging providers on cost-effective business models.• Ask the city and local utility about existing incentives and grants.	<ul style="list-style-type: none">• Most likely they will over time. As EV prices fall, lack of home charging options is becoming the largest barrier to EV adoption, especially for multifamily residents. Providing charging will increase EV adoption and chargers' usage.• A tenant survey can help assess current and future charging needs.	<ul style="list-style-type: none">• A common set of policies and rules for EV station usage will help to ensure proper use.• Educate tenants about the project to ensure acceptance, cooperation and good stewardship of chargers.• Revisit policies on a regular basis, as adjustments may be needed as demand increases, technology changes, etc.

Best Practices and Policies for Multifamily Charging

- Electric Vehicle Charging for Multi-Unit Dwellings. [Alternative Fuels Data Center: Electric Vehicle Charging for Multi-Unit Dwellings \(energy.gov\)](#)
- Atlas Public Policy's guide for EV charging at multifamily units highlighting the drivers, barriers and recommendations. [EV Charging at Multi-Family Dwellings \(atlaspolicy.com\)](#)
- A guide to the selection, installation and maintenance of electric vehicle chargers in Multi-Unit Residential Buildings. [Installing Electric Vehicle Charging MURB](#)
- Clean Cities Coalitions: EV charging for multi-unit dwellings. [Clean Cities Coalitions: EV charging for multi-unit dwellings](#)
- Seattle City Light's [guide for EV charging installation in MUDs](#)
- California' Energy Commission project report on [overcoming barriers on EV charging in MUDs](#)

Multifamily Case Studies

- Multi-Unit Dwelling Electric Vehicle Charging Case Study San Diego. [MUD Charging SANDAG](#)
- Smart Columbus: Increasing EV Charging Access at Multi-Unit Dwellings. [MUD Case Study](#)
- Muir Commons: A case study in MUD EV infrastructure. [Muir Commons: A case study in MUD EV infrastructure - Charged EVs](#)
- Overcoming Barriers to Electric Vehicle Charging in Multi-unit Dwellings: A South Bay Case Study. [South Bay Case Study](#)
- Brannan Condominiums Case Study. [Brannan MUD Veloz](#)
- Elysian Apartments Case Study. [Elysian MUD Veloz](#)

Appendix B: Overview of Stakeholder Outreach and Engagement

The Project Team and the Steering Committee contacted almost 200 individuals (of which 80 represented municipalities and counties across the region of interest) to invite them to participate in the stakeholder engagement. The process took place in January 2021 and consisted of two components: a webinar covering the plan at glance and a virtual engagement session aiming at capturing the communities' input. A total of 56 participants joined the engagement session, including the members of the Steering Committee. The external stakeholders (43 individuals) represented utilities, private businesses, EV charging infrastructure providers, local officials, state agencies, environmental organizations, and EV owners. The only stakeholder category that had no representation was auto dealerships.

The virtual engagement session comprised four segments aiming at capturing the communities' input on several key aspects of EV readiness planning and implementation, such as:

- **Benefits of EVs:** The most referenced benefits of EVs were air quality improvements as well as opportunities for economic development and for making a stronger case for locally generated clean electricity to charge EVs.
- **Barriers to EV adoption:** In the initial discussion about barriers to EV adoption, the most cited barriers were range anxiety (due to concerns for sufficient charging opportunities), lack of EV availability at local dealerships and lack of consumer education about EVs. In voting on the significance of barriers, stakeholders identified charging availability, cost, and misinformation as the most significant barriers to address.
- **Strategies and lead / supporting stakeholders to advance EVs:** The top-three voted strategies identified as critical to advance EV adoption and access were: investing in and expanding EV charging infrastructure; providing incentives for EVs; and ramping up consumer education and outreach. Overall, the discussion on strategies revealed a strong stakeholder interest to invest in the educational component, for which municipalities were indicated as a key player.
- **Actions to implement strategies:** Proposed actions included lowering the cost of ownership (EV registration/fees), facilitating EV charging at businesses and apartment buildings, and increasing the outreach to dealers. Starting a public list of potential buyers and a group buying program to increase EV model availability at dealers was also quoted as an action to overcome barriers to EV access. Legislators, utilities, state agencies, and local governments were identified as lead stakeholders to implement strategies. Energy districts were also proposed as a stakeholder.
- **Criteria:** Suggested criteria for prioritizing strategies included: costs, feasibility, equity, effectiveness, scalability, policy durability, and timing. Equity and implementation costs received the most votes. Several follow-up questions about equity indicated the desire of the stakeholder group to further investigate how equity can be incorporated in utility rates/programs.

What benefits do you think EVs would bring to your community?

	Mentions
Improve air quality and respiratory health	8
Reduce carbon / GHG emissions	7
Reduce vehicle operational costs	6
Opportunity for economic growth, attract visitors and create jobs	6
Opportunities for clean electricity development through local wind resources	5
Provide sustainable alternative to petroleum-based transportation	3
Reduce noise pollution	3
Opportunity for infrastructure development	2
Reduce air and water pollution	1
Increase energy independence	1
Mitigate climate change impacts	1
Opportunity to increase property value	1
Grid load improvement	1

What are the barriers to EV adoption and access in Iowa?

	Mentions
Range anxiety, concerns about sufficient charging infrastructure	30
EV unavailability at dealerships, lack of dealership knowledge	15
Lack of consumer education about EVs	13
Lack of state incentives and high taxes / registration costs	6
Lack of makes and models on the market	5
Lack of charging at multi-family buildings	3
Legislative barriers (e.g., legislation favoring ethanol fuel)	2
Lack of qualified technicians for EV maintenance	2
Concerns with battery recycling and waste	2
Demand charges	1
EVSE ownership model	1
Grid capacity	1

Voting Results

1b. Which of these barriers are most significant?

- Charging availability (16 votes; 16 unique voters)
- Cost (16 votes; 13 unique voters)
- Anxiety over cost, charging opportunity, limited travel, limited range, end of life of old batteries (14 votes; 11 unique voters)
- Misinformation (13 votes, 9 unique voters)

- Cost, who pays for infrastructure, who can afford EVs (9 votes, 7 unique voters)
- Dealership options (ability to buy) (7 votes; 7 unique voters)
- Types of EV models available (7 votes; 6 unique voters)
- Utility companies (7 votes; 4 unique voters)

2b. Which of these strategies are most significant?

- Utility direct investment in EVSE (10 votes; 3 unique voters)
- Incentives at state / fed level (8 votes; 6 unique voters)
- Education (8 votes; 8 unique voters)
- Improved battery technology (8 votes; 8 unique voters)
- Access to infrastructure (6 votes; 5 unique voters)
- Government subsidies (6 votes; 4 unique voters)
- Surcharge vehicles to support EVSE (5 votes; 4 unique voters)
- Public EV events (5 votes; 5 unique voters)
- Tax-payer subsidies for EVs (5 votes; 1 unique voters)
- Personal stories (4 votes; 4 unique voters)
- Create toolkit for partners (4 votes; 4 unique voters)
- Rebate programs, TOU rates (4 votes; 4 unique voters)
- Educate on TCO, add incentives (4 votes; 4 unique voters)
- Incentives to install EVSE (4 votes; 4 unique voters)
- Local policies (4 votes; 4 unique voters)
- Make chargers accessible at multifamily units, public spaces (3 votes; 3 unique voters)
- Include chargers in road design criteria, and in complete street policies (3 votes; 3 unique voters)

3b. Which actions are most promising?

- Remove fossil fuel subsidies (11 votes; 8 unique voters)
- Building codes that require EVSE (8 votes; 7 unique voters)
- Get gas stations to invest in chargers (8 votes; 7 unique voters)
- Get tax credit for exchanging ICE cars with EVs (7 votes; 5 unique voters)
- Require apartments to build chargers (6 votes; 6 unique voters)
- Tax credits for property owners who install chargers (5 votes; 5 unique voters)
- Mandate EV use for public vehicles (5 votes; 5 unique voters)
- TOU rates, off peak charging (5 votes; 5 unique voters)
- Streamline business charging process, remove tax (4 votes; 4 unique voters)
- Low income rebates (4 votes; 4 unique voters)
- Connect public with EV ambassadors (4 votes; 4 unique voters)
- Compile successful strategies in a toolkit (4 votes; 4 unique voters)
- Ensure equitable access to chargers (4 votes; 4 unique voters)
- Rebates at time of purchase (3 votes; 3 unique voters)
- Ride and drive events (3 votes; 3 unique voters)
- Create marketing campaign (3 votes; 3 unique voters)
- Work with universities to generate educational kits (3 votes; 3 unique voters)

- Collect data showing actual Iowa range of EVs (3 votes; 3 unique voters)
- Install chargers at streetlights (2 votes; 2 unique voters)
- Promote utility partnerships with EVSE business hosts (2 votes; 2 unique voters)
- Create a fair vehicle charge based on use (2 votes; 2 unique voters)
- Add a reg fee to gas vehicle to promote cleaner vehicles (2 votes; 2 unique voters)

4b. Which criteria do you think are most important to consider in EV Implementation programs?

- Equity (18 votes, 11 unique voters)
- Cost (17 votes; 13 unique voters)
- Feasibility (12 votes; 10 unique voters)
- Effectiveness (10 votes; 9 unique voters)
- Scalability (7 votes; 6 unique voters)
- Policy durability (6 votes; 6 unique voters)

Appendix C: Overview of Readiness Strategies and Prioritization Process

The Steering Committee members labeled the actions proposed under each strategy by assigning a low, medium, or high score for each of the evaluation metrics. Table C1 includes the definitions of low, medium and high for the full set of metrics as provided to the Steering Committee. In the case of Timing, near-, medium, or long-term were used to indicate when the jurisdiction could start implementing the action. The responses were collected and compiled to obtain a combined answer for each action. The results are summarized below for each strategy.

For each strategy, the action that received the highest prioritization is highlighted in bold text inside a gray box. Additional actions that received a minimum medium prioritization *and* medium timing for implementation are highlighted in bold. Tables C2 to C7 list the prioritization result for each action.

Table C1: Instructions provided to the Steering Committee for strategy and action prioritization

Metric	Criteria
Cost	Expected/perceived implementation costs for this action
Technical Feasibility	Expected/perceived technical feasibility of this action
Policy/Political Feasibility	Expected/perceived administrative and legislative feasibility of this action
Durability	Expected/perceived durability over time for this action
Scalability	Expected/perceived scalability of this action from local to regional scale
Impact	Expected/perceived effectiveness of this action for EV adoption and access to EVs and EV charging
Equity	expected/perceived equity impact for this action
Timing	When the jurisdiction (city, town, county) could start implementing this action based on existing conditions and other criteria (near = 1-2 years; medium = 3-5 years; long = within 10 years)
Overall Prioritization	Overall expected/perceived priority for implementing this action based on the response given to the previous metrics

Table C2. Invest in EV Charging Infrastructure

Most actions proposed under this strategy received medium and high scores across all metrics. Among the interventions scored by the participating jurisdictions, *'Quantify the need for new public charging equipment to fill gaps at both local and regional level, including DC fast chargers to enable long-distance travel along corridors,* received a unanimous high priority and the nearest timing for implementation.

Actions	Lead Stakeholder	Additional Stakeholders	Timing	Overall Prioritization
Quantify the need for new publicly available charging equipment to fill gaps at both local and regional level, including DC fast chargers to enable long-distance travel along corridors.	Local Gov. & Cities	State & Regional Entities (Developers, Chamber of Commerce)	Near-medium	High
Identify and pursue opportunities to fund city-owned and operated charging infrastructure (available for employee and public use) in high-traffic locations such as parking lots nearby major roadways, retail and recreational areas.	Local Gov. & Cities	Utilities (Chamber of Commerce, Employers, Businesses, Developers)	Medium	Medium
Collaborate with external entities (e.g., other government agencies, chambers of commerce, workplaces, businesses) to track and pursue grants for public and workplace charging infrastructure.	Local Gov. & Cities	Businesses (Chamber of Commerce, Businesses, Developers)	Medium	Medium
Encourage coordination between utilities and potential private EV charging hosts to leverage existing utility funding/incentives (e.g., VW settlement).	Utilities	(Local Governments, Utilities, Chamber of Commerce)	Medium-long	Medium
Promote existing utility programs offering consumer rebates for residential EV charging.	Utilities	Dealerships (Businesses, Banks, Local Governments)	Medium	Medium

Table C3. Expand Access to EV Charging Infrastructure

The actions proposed under this strategy received a mixed score across all metrics. Among the proposed interventions, ‘*Amend local zoning/land use code(s) to require EV charging as permitted accessory use, and to include requirements and/or incentives (density bonuses) for the installation of charging infrastructure in new construction and major renovations*’ received the highest overall priority and the nearest timing for implementation.

Actions	Lead Stakeholder	Additional Stakeholders	Timing	Overall Prioritization
Amend local zoning/land use code(s) to require EV charging as permitted accessory use, and to include requirements and/or incentives (density bonuses) for the installation of charging infrastructure in new construction and major renovations.	Local Gov. & Cities	Developers (Businesses, Landlords, Chambers of Commerce, Local Gov./Cities)	Near	High
Implement tailored local policies to streamline and clarify EV charging permitting and inspection processes at private and public locations.	Local Gov. & Cities	Utilities (Iowa Utility Board, Chamber of Commerce)	Near	Medium
Specify definitions and design guidelines (e.g., safety, accessibility) for EV parking spaces for both on- and off-street parking.	Local Gov. & Cities	(Utilities, Consultants)	Medium	Low
Develop and adopt regulations and enforcement policies for proper use of EV parking spaces by both EV and non-EV users.	Local Gov. & Cities	(Utilities, Businesses)	Medium	Low
Ensure, to the extent possible, that local regulations/policies specific to EV parking and charging are consistent with neighboring jurisdictions.	Local Gov. & Cities (MPO, Chambers of Commerce)	(Consultants)	Medium	Low
Include EV chargers in road design criteria and complete street policies.	Local Gov. & Cities (MPO, State)	(Developers, Engineering Firm, Bistate Regional Commission)	Medium	Low

Table C4. Promote Adoption of and Access to EVs

The actions proposed under this strategy received a mixed score across all metrics, resulting in a medium-low prioritization. *'Coordinate with dealers to facilitate point-of-sale rebates for EVs'* received the highest priority, and *'Work with local banks to provide low interest EV and EV charging loans available to disadvantaged communities, small businesses'* received the second highest priority.

Actions	Lead Stakeholder	Additional Stakeholders	Timing	Overall Prioritization
Promote utility programs offering specially designed residential and commercial EV rates (e.g., time-of-use, subscription rates), and off-peak charging programs to lower EV operational costs.	Utilities	Local Gov. (Chambers of Commerce, BiState Regional Commission, BSRC, Auto dealers)	Medium	Medium-low
Work with local banks to provide low interest EV and EV charging loans available to disadvantaged communities, small businesses.	Iowa Clean Cities (Utilities, Banks)	Nonprofits (Local, State and Federal Gov.)	Medium	Medium
Engage in partnerships with the private sector and other organizations that provide opportunities for funding (e.g., grants, financing) and promote innovation / pilot projects to advance electric transportation across modes (car-sharing, ridesharing and micro mobility including e-bikes).	State and Local Gov.	(Local and Regional Gov., Chambers of Commerce, Micro mobility companies)	Medium	Low
Create local or regional EV group buy/purchase programs to increase EV availability at auto dealerships.	Auto dealers (Chambers of Commerce, Businesses)	(Banks, IEDA)	Medium-near	Low
Prioritize and incentivize projects that demonstrate local economic benefits for low-income residents such as job creation, training opportunities, youth engagement, and workforce development.	Local Colleges	Local Gov. (Chambers of Commerce, Social Services, NICC)	Medium	Low
Coordinate with dealers to facilitate point-of-sale rebates for EVs.	Utilities (Businesses)	Local Gov. (Chambers of Commerce, State Gov., Dealers)	Medium	Medium

Table C5. Increase Education and Awareness of EVs and EV Charging

The actions proposed under this strategy received a mixed score across all metrics resulting in overall low priority. *'Developing and maintaining a comprehensive EV resources website to educate all consumers on the environmental, financial, and other benefits of EVs'* was ranked as the action with the highest priority, and near-term implementation timing.

Actions	Lead Stakeholder	Additional Stakeholders	Timing	Overall Prioritization
Develop and maintain a comprehensive EV resources website to educate all consumers on the environmental, financial, and other benefits of EVs. Website should include information on logistics of buying EVs (including available incentives), installing charging (including the local permitting process), finding charging, etc. Link to other reputable and well-maintained resources (e.g., AFDC) as appropriate.	Utilities	(Chambers of Commerce, State Gov, Auto dealers)	Near	Medium
Target education and outreach efforts based on demand, tailoring messages accordingly (residents, businesses, dealerships, developers, employers, etc.). Also target low-income and underrepresented populations.	Utilities (MPO, Chambers of Commerce)	(Local Cities & Gov., Social Services, Businesses)	Near	Low
Work with local community colleges, and trade schools to incorporate vocational programs for electrician and EV maintenance jobs into their curriculum (or STEM programs).	Community Colleges	(Chambers of Comm., Local Gov., Businesses)	Medium-long	Low
Engage with advocacy organizations to create educational toolkits about EVs (costs, range), EV charging (infrastructures, best practices at workplaces, multifamily units).	Utilities	Dealers (Local Gov., Clean Energy Districts, Auto dealers, Nonprofits)	Medium	Low
Connect public with EV ambassadors; organize ride & drive events (including virtual); create marketing campaigns featuring personal stories.	Local Gov. / Clean Energy Districts / Utilities	Advocates (Auto dealers)	Medium	Low

Actions	Lead Stakeholder	Additional Stakeholders	Timing	Overall Prioritization
Leverage connections with the Clean Cities Coalition to showcase local - level success stories (for example, public charging installations).	Iowa Clean Cities (Local Gov.)	Chambers of Commerce, Regional Gov.	Medium	Low
Engage and partner with community-based organizations to understand opportunities, challenges to expand EV adoption/access in rural areas.	Local Gov.	Chambers of Commerce, Regional Gov., Banks, Utilities	Long	<i>Medium-low</i>
Develop outreach plans (e.g., community webinars for different EV and EVSE audiences, legislative briefings to educate public officials).	Local and Regional Gov.	Utilities, Nonprofits	Medium	Medium
Provide educational resources to employers and fleet managers regarding EV use and charging station deployment. Inclusive of technical assistance and training.	Community Colleges	Chambers of Commerce	<i>Medium</i>	Low
Create a program to recognize dealers and other businesses that do the most to champion EVs	Chambers of Commerce	Local Gov., Utilities, Auto dealers	Long	Low

Table C6. Coordinate Regionally to Implement Actions and Strategies

The actions proposed under this strategy received prevalently medium priority across all metrics. 'Integrate EV readiness into regional planning efforts, including regional transportation plans and sustainable communities' strategies' received the highest priority in terms of timing.

Actions	Lead Stakeholder	Additional Stakeholders	Timing	Overall Prioritization
Engage in state, regional, and national advocacy efforts to support laws, incentives and policies that further EV adoption (e.g., ZEV mandates, low-income rebates, point-of-sale vouchers), aligning with other leading cities and complementary regional initiatives.	Iowa DOT (MPOs)	(Local Gov., Auto dealers, Chambers of Commerce, IEDA)	Medium	Medium
Encourage local partners (Chambers of Commerce, retail businesses, etc.) to develop non-monetary incentives; reward EV ownership with access to high occupancy vehicle (HOV) lanes and restricted traffic zones.	MPOs, State Gov.	(Local Gov., Dealers, Developers)	Medium-long	Low
Integrate EV readiness into regional planning efforts, including regional transportation plans and sustainable communities' strategies.	MPOs	(Local Governments, Iowa DOT)	Near-medium	Medium
Develop common metrics to track progress on EV readiness at the local and regional level. Monitor and report progress toward EV readiness at the municipal /county level.	MPOs (State and Regional Commissions)	(Local Gov., DOT)	Medium	Medium
Create a regional working group or steering committee to share lessons learned, monitor emerging EV applications and track progress toward EV readiness at the regional level.	MPOs (State and Regional Commissions)	(Local Gov., DOT)	Medium	Medium

Table C7. Lead by Example

The actions proposed under this strategy received a medium prioritization score and a near-term timing for implementation. *‘Educating municipal/county employees about EVs and EV charging, encouraging EV adoption through the development of workplace charging programs’* was given the highest priority. As noted by the Steering Committee, the City of Dubuque has already completed a Fleet Electrification study, while Iowa City has an ‘EV First’ policy and has also completed a municipal fleet assessment.

Actions	Lead Stakeholder	Additional Stakeholders	Timing	Overall Prioritization
Assess the existing municipal/county fleet, develop a fleet management plan, and explore opportunities to incorporate EVs.	Local Gov.	IEDA (Auto dealers, Chambers of Commerce, Iowa Clean Cities)	Near	Medium
Educate municipal/county employees about EVs and EV charging, encourage EV adoption through the development of workplace charging programs.	Local Gov.	Businesses, Dealers, Chambers of Commerce	Near	Medium-high
Monitor and look for opportunities for projects to address emerging trends and technologies including battery storage, battery second-life applications, vehicle-to-grid and vehicle-to-building, wireless charging, autonomous vehicles.	Local Gov.	(Utilities, Auto dealers, Waste Commission, Chambers of Commerce, GDDB, Universities)	Long	Medium-low
Incorporate a low-income lens/component in any program or activity that is carried forward	Local Gov.	Local Regional and State Gov.	Near	Medium

Appendix D: Additional Resources & Further Reading

EV Policies and Charging Installation Guidelines

- Plug In America, Sierra Club, FORTH Mobility and the Electrification Coalition have published model policies to accelerate EV adoption, the AchiEVe Model Policies Toolkit. Available at [AchiEVe-Model-Policies-Toolkit_WebpageFinal_.pdf \(pluginamerica.org\)](#)
- The Great Plain Institute Summary of Best Practices in Electric Vehicle Ordinances. [GPI EV Ordinance Summary](#)
- California Governor's Office of Business and Economic Development (GO-Biz) [Electric Vehicle Charging Station Permitting Guidebook](#).

EV Charging and Business Case for Site Hosts

- The Atlas Public Policy EV Charging tool helps assessing the financial aspects of an EV charging project. [EV Charging Financial Analysis Tool – Atlas Public Policy \(atlaspolicy.com\)](#)
- The New York State Energy Research and Development Authority (NYSERDA) provides a series of case studies and best practice guides for charging station hosts, installers, and communities that help people navigate the process for permitting, buying, installing, and operating charging stations. Available at [Best Practice Guides and Cases - NYSERDA](#)
- The New York State Energy Research and Development Authority (NYSERDA) has published a series of Frequently Asked Questions for potential charging site owners to consider. [Charging Station Host Frequently Asked Questions \(FAQs\) - NYSERDA](#)
- The Atlas Public Policy EV Hub has published a guide to assess the business case for EV charging stations. [Assessing the Business Case for Hosting Electric Vehicle Charging Stations in New York State \(atlasevhub.com\)](#)

Best Practices and Policies for Workplace Charging

- Clean Cities Coalition Network Toolkit on Workplace Charging. [Workplace Charging Employer Workshop](#)
- Madison Gas & Electric Employer Charging Guide. <https://www.mge.com/MGE/media/Library/lovev/workplace-charging.pdf>

EV Group Buying

- Electric Vehicle Group Buy Programs: Handbook & Case Studies, July 2018, https://drive.google.com/file/d/1rNlnMle518d_W0pZ6qdg4pUNm7RSDAlf/view
- Request for Information Electric Vehicle Group Buy Program for Montgomery County, Maryland November 24, 2020 [Microsoft Word - RFI Final revised 11.24.20.docx \(montgomerycountymd.gov\)](#)
- **Northern Colorado Group Buy Program (Colorado):** Drive Electric Northern Colorado (DENC), a partnership of the Electrification Coalition, the City of Fort Collins, the City of Loveland, and Colorado State University has successfully coordinated multiple group buys since 2015. Initially based on a partnership with Nissan, the program has expanded and now it includes several auto dealers and local businesses that participate in a workplace charging challenge and a Drive Leadership effort designed to give leaders at Northern Colorado companies and organizations the opportunity to take an EV on a test drive for up to five business days.

- [Green Energy Consumers Alliance Drive Green Program \(Massachusetts & Rhode Island\)](#): Drive Green is a rolling group buy program, meaning discounts are available indefinitely. The program focuses on enrolling EV dealerships that commit to have dedicated salespeople and maintain a stock of EVs at their locations. In return, dealers receive leads and customers through the Drive Green platform, which is purposely built to provide an easy learning and shopping experience. Through the platform, potential EV buyers can set up test drives with multiple dealers. Some dealers offer additional discounts on top of the existing federal tax credits and state incentives.
- [Northern Virginia LEAF Group Buy Program \(Virginia\)](#): Virginia Clean Cities coordinated a Nissan LEAF group buy program in 2016 to provide lease and purchase discounts to residents of Virginia, Maryland, and Washington, D.C. Of note, Virginia Clean Cities has also partnered with local cooperatives to encourage bulk purchases of Level 2 EV charging stations.

Equitable Access to EVs

- The resource [“Electric Vehicles for All: An Equity Toolkit”](#) is used by advocates and electric vehicle stakeholders in California and other states to ensure EV policies and programs help low-income communities of color access EVs.
- The report [“Electric Carsharing in Underserved Communities: Considerations for Program Success”](#) has helped shape pilot programs to provide electric vehicle carsharing services to poor communities in order to increase mobility and drive adoption of electric cars.
- The reports [“Low Income Car Sharing”](#) and [“Increase Access through Ridesharing”](#) give an overview of low-income car sharing initiatives, lessons learned and best practices.
- The report [“Equity in Practice”](#) offers examples of equity assessments in transportation electrification plans, and public engagement strategies including who and how stakeholders are engaged or invited to partake in the development of such plans.
- The report [Seattle Electric Vehicle Outreach & Engagement Campaign](#) outlines the strategy for the city of Seattle to address racial equity and environmental justice while advancing electric and shared transportation.
- The report by the Argonne National Laboratory, [Used Plug-in Electric Vehicles as a Means of Transportation Equity in Low-Income Households](#) examines improving the equity of low-income households through access to EVs as a low-cost and low-maintenance means of transport.

Electric Car and Bike Sharing Pilots and Programs

- Denver Department of Public Health & Environment and the Denver Housing Authority launched the first EV car share location in a mixed income community in partnership with eGo CarShare [Denver Mariposa District EV Carshare](#)
- Sacramento’s Our Community CarShare (OCCS) is a pilot program that makes EVs available for free to community members around the Sacramento region, to raise awareness about EVs and provide a zero-emission transportation option to under-served communities [Breathe California](#)
- BlueLA is an EV carsharing program focused on low-income communities, with parking spots near low-income multi-family buildings and transit transfer points [Blink Mobility : Los Angeles, CA Electric Car Sharing Service](#)
- Forth’s St. Louis Vehicle Electrification Rides for Seniors (SiLVERS) pilot will seek to increase EV adoption and reduce transportation-related operating expenses for social service agencies in

low-income communities [Forth to Receive DOE Funding for Vehicle Electrification Rides for Seniors \(SILVERS\) Program](#). Ameren Missouri will provide incentives to develop the station sites.

- [Madison BCycle](#) is an urban bike sharing program, providing 300 electric bikes at 40 stations throughout the city. In addition, University of Wisconsin Transportation Services, in partnership with BCycle, has reduced membership [prices](#) for university students, employees, and affiliates.

EV Workforce Development

- EVSE installation workforce training [EVITP – Electric Vehicle Infrastructure Training Program](#)
- ASPIRE is a new program funded by NSF, headquarter at Utah State University in Logan with centers in several university. They have created an education (pre-college) program to create the workforce needed to support the energy transition [Innovation Ecosystem | ASPIRE \(usu.edu\)](#)
- [Macomb Community College - Macomb Community College's electric vehicle technology certificate prepares students for emerging jobs in a growing field](#)
- [Hybrid & Electric Vehicle Program | Reynolds Community College](#)

Battery Recycling and Second Life Applications

- [EV Battery Recycling | Union of Concerned Scientists \(ucsusa.org\)](#),
- [Lithium-Ion Battery Recycling Prize Drives Recovery of Spent Batteries | News | NREL](#),
- [Battery Storage Company, Lithium Ion Battery Recycling Company \(batterystewardship.com\)](#)
- [battery_second_life_faq.pdf \(energy.gov\)](#)
- [Stena's Batteryloop Gives Volvo Bus Batteries A Second Life \(insideevs.com\)](#)
- [Electric vehicles, second life batteries, and their effect on the power sector | McKinsey](#)

Vehicle-to-Grid

- [California looks to electric vehicles for grid stability | Energy News Network](#)

Appendix E: Letters of Concurrence



June 22, 2021

Iowa Economic Development Authority
Iowa Energy Office
200 E Grand Ave.
Des Moines, IA 50309

To whom it may concern:

The Metropolitan Planning Organization of Johnson County (MPOJC) is pleased to concur with the findings and recommendations of the Eastern Iowa EV Readiness Plan (EVRP), a project funded through the Iowa Energy Office SEP ARRA Funding Grant Process.

Through the participation of representatives of the Cities of Cedar Rapids, Cedar Falls/Waterloo, Davenport, Dubuque, Iowa City, and the Metropolitan Planning Organizations serving eastern Iowa, the EVRP documents baseline conditions in our area and recommended strategies to encourage the use of and prepare for larger adoption of electric vehicles.

The Eastern Iowa EVRP outlines the vision, goals, and objectives for promoting electric vehicle adoption in our area as related to equitable access to EVs and EV charging, emissions reduction and air quality improvements, economic benefits, and regional collaboration. It identifies strategies and best practices to help achieve those goals. The EVRP also provides a structure to plan for increased use of electric vehicles in our communities and region into the future.

The planning process employed in the creation of the Eastern Iowa EVRP, which included data gathering, stakeholder input, and feedback from the steering committee throughout the process, has resulted in a document that can be used both as a guide for implementing the recommended strategies as well as a resource for other related transportation planning efforts in the future.

We look forward to positive outcomes from the EV readiness actions identified in the plan.

Sincerely,

Kent Ralston
Executive Director



INRCOG
Iowa Northland Regional
Council of Governments

June 22, 2021

Iowa Economic Development Authority
Iowa Energy Office
200 E Grand Ave
Des Moines, IA 50309

To whom it may concern:

The Iowa Northland Regional Council of Governments (INRCOG) is pleased to concur with the findings and recommendations of the Eastern Iowa EV Readiness Plan (EVRP), a project funded through the Iowa Energy Office SEP ARRA Funding Grant Process.

Through the participation of representatives of the Cities of Cedar Rapids, Cedar Falls, Waterloo, Davenport, Dubuque, Iowa City, and the Metropolitan Planning Organizations serving eastern Iowa, the EVRP documents baseline conditions in our area and recommended strategies to encourage the use of and prepare for larger adoption of electric vehicles.

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We look forward to positive outcomes from the EV readiness actions identified in the plan.

Sincerely,

Kevin Blanshan
Executive Director

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Dubuque, IA 52001
Office (563) 690-6038
gbell@cityofdubuque.org
cityofdubuque.org

June 23, 2021

Iowa Economic Development Authority
Iowa Energy Office
200 E Grand Ave.
Des Moines, IA 50309

To whom it may concern:

The City of Dubuque is pleased to concur with the findings and recommendations of the Eastern Iowa EV Readiness Plan (EVRP), a project funded through the Iowa Energy Office SEP ARRA Funding Grant Process.

Through the participation of representatives of the Cities of Cedar Rapids, Cedar Falls/Waterloo, Davenport, Dubuque, Iowa City, and the Metropolitan Planning Organizations serving eastern Iowa, the EVRP documents baseline conditions in our area and recommended strategies to encourage the use of and prepare for larger adoption of electric vehicles.

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We look forward to positive outcomes from the EV readiness actions identified in the plan.

Sincerely,

Gina Bell
Sustainable Community Coordinator

Service

People

Integrity

Responsibility

Innovation

Teamwork



Serving local governments in Muscatine and Scott Counties, Iowa;
Henry, Mercer, and Rock Island Counties, Illinois

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Rick Dunn, Alderperson

Vacant, Alderperson

Randy Moore, Citizen

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Sangeetha Rayapati, Mayor

Mike Waldron, Alderperson

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Coal Valley, Cordova, Hampton,

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Duane Dawson, Mayor, Milan

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Geneseo, Villages of Alpha,

Andover, Annawan, Alkinoan, Cambridge,

Kelthsburg, New Boston, Orion,

Sherard, Viola, Windsor, and Woodhull

Dave Holmes, Mayor, Woodhull

Cities of Blue Grass, Buffalo,

Eldridge, Fruitland, LeClaire,

Long Grove, McCausland,

Nichols, Princeton, Rivendale,

Walcott, West Liberty, and Wilton

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Eileen Roethlis

Rick Schloemer

Bill Stoermer

Executive Director

Denise Bulat

Iowa Economic Development Authority

Iowa Energy Office

200 E Grand Avenue

Des Moines, Iowa 50309

To whom it may concern:

The Bi-State Regional Commission concurs the Eastern Iowa EV Readiness Plan (EVRP), a project funded through the Iowa Energy Office SEP ARRA Funding Grant Process, provides a framework for supporting electric vehicle uses in eastern Iowa as it grows and evolves.

The Bi-State Region includes Muscatine and Scott Counties in eastern Iowa, as well as three counties in western Illinois. The Quad Cities metropolitan planning area represents nearly 300,000 people. Since 1991, Bi-State's Air Quality Task Force's mission has been to work with local governments and businesses to voluntarily reduce emissions and encourage improvements in the regional air quality. Participation with cities and our peer Metropolitan Planning Organizations in eastern Iowa to document baseline conditions in the EVRP and recommended strategies for local governments to consider for EV readiness is consistent with those efforts.

Environmental protection and enhancement is a transportation objective in the 2050 Quad City Area Transportation Long Range Plan (March 2020) and the FY2022 Transportation Planning Work Program identifies good air quality as a transportation planning priority in our Transportation Management Area (TMA). The region's "Make Outdoor Air Quality Visible" Strategic Plan (2014) supports the use of alternative fuels and fleets in the Bi-State Region. Bi-State hosted an alternative fuels workshop in 2018 as part of its air quality outreach.

This project is also consistent with the 2021 Comprehensive Economic Development Strategy (CEDS) for the Bi-State Region to "Invest in and support infrastructure improvements... that will strengthen the bi-state regional economy." The CEDS is reviewed annually by the Economic Development Administration (EDA) via progress reports, and updated fully every five years. It is developed by the CEDS Committee, comprised of chambers of commerce, development organizations, institutions of higher education, business and local government representatives.

The planning process employed in the creation of the Eastern Iowa EVRP, which included data gathering, stakeholder input, and feedback from the steering committee throughout the process, has resulted in a document that can be used both as a guide for implementing the recommended strategies as well as a resource for other related transportation planning efforts in the future.

We look forward to positive outcomes from the EV readiness actions identified in the plan.

Sincerely,

Gena McCullough, AICP

Assistant Executive Director/Planning Director

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June 29, 2021

Iowa Economic Development Authority
Iowa Energy Office
200 E Grand Ave.
Des Moines, IA 50309

To whom it may concern:

The Corridor Metropolitan Planning Organization (Corridor MPO) is pleased to concur with the findings and recommendations of the Eastern Iowa EV Readiness Plan (EVRP), a project funded through the Iowa Energy Office SEP ARRA Funding Grant Process.

Through the participation of representatives of the Cities of Cedar Rapids, Cedar Falls/Waterloo, Davenport, Dubuque, Iowa City, and the Metropolitan Planning Organizations serving eastern Iowa, the EVRP documents baseline conditions in our area and recommended strategies to encourage the use of and prepare for larger adoption of electric vehicles.

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We look forward to positive outcomes from the EV readiness actions identified in the plan.

Sincerely,

Bill Micheel

Bill Micheel, AICP
Corridor MPO Manager
(319) 286-5045
w.micheel@cedar-rapids.org