



As part of the 2021 Infrastructure Investment and Jobs Act (IIJA), federal funds were authorized to support the continued development of electric vehicle (EV) chargers.

As a result, Iowa is joining many other states in developing plans to create a EV charging network along highway and interstate corridors. This network will offer convenient EV charging opportunities and facilitate a more reliable travel network for EVs within the state, as well as across the country.

BACKGROUND

The Iowa Department of Transportation (DOT) is preparing a plan for developing EV charging infrastructure across the state highway and interstate system. This plan will build upon guidance from both the *Iowa In Motion Long Range Transportation Plan and State Freight Plan*, as well as the *2019 Charging Forward: Iowa's Opportunities for Electric Vehicle Infrastructure Support Study*.

In Iowa we want to pursue every tool in the toolbox to address our energy independence. That includes biofuels and initiatives like this Electric Vehicle Infrastructure Deployment (EV Plan). Iowa has seen steady growth in EV travel and development of fast charging stations along key highway corridors. This planning process, and subsequent funding through IIJA, allows the state to continue infrastructure development initiatives.

IOWA'S AVAILABLE FUNDS



Federal Fiscal Year 2022 Funding
\$7.6 million

5-Year National Electric Vehicle Infrastructure Federal Funding
\$51.4 million

DRIVING GROWTH



U.S. electric car sales jumped to a record high of **over 200,000 vehicles in Q1 2022**. EV sales continue to grow in the U.S. as automakers build more options and consumers drive the demand.



With statewide growing adoption, **9,400 EVs and hybrid vehicles** were registered in Iowa as of April 2022—at least one was registered in every county.



To support this growth, Iowa has **270 EV charging locations** (Level 2 and 3) across the state for public use.

TO LEARN MORE

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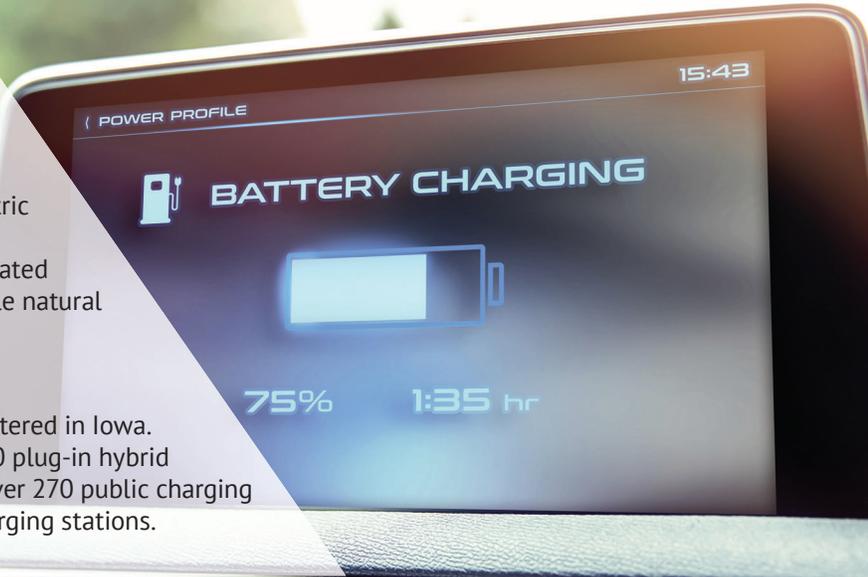




Iowa is a proud and nationally recognized leader in renewable energy and biodiesel and ethanol production. Our state has made a significant investment in renewable fuels infrastructure. State leaders, local communities, private companies, and utilities are making solid progress to add electric vehicle infrastructure to our diverse fuel mix. Iowa will remain unwavering in our support for varied fuel resources and associated infrastructure, including ethanol, biodiesel, propane, renewable natural gas and electric.

ELECTRIC VEHICLES IN IOWA

As of April 2022, an estimated 9,400 electric vehicles are registered in Iowa. The Iowa DOT estimates 5,000 represent all electric and 4,400 plug-in hybrid vehicles. To support the growing popularity for EVs in Iowa, over 270 public charging stations are available, representing Level 2 or Level 3 fast charging stations.




HEVs
Low-emission vehicles that use an electric propulsion system to assist liquid fueled engines. Cannot plug-in to charge.



PHEVs
Similar to a hybrid, but with a larger battery and electric motor. Has a fuel tank and a charging port.



BEVs
Powered solely by an electric battery, with no gas engine parts. Most BEVs are capable of faster charging and have zero tailpipe emissions.



FCEVs
Powered by electricity using a fuel cell powered by hydrogen. FCEVs do not plug-in for charging and have zero tailpipe emissions.

HYBRID ELECTRIC VEHICLES (HEVs)

Hybrid EVs pair a conventional internal combustion engine that typically runs on gasoline, ethanol, diesel or biodiesel with an electric propulsion system. The internal combustion engine provides most of the vehicle's power, while the electric motor assists the engine with the goal of increasing fuel efficiency. Hybrids do not have the ability to plug in and recharge.

PLUG-IN HYBRID ELECTRIC VEHICLES (PHEVs)

Similar to a Hybrid EV, PHEVs have an on-board battery and an internal combustion engine. However, the battery on a PHEV is generally much larger, which allows the

vehicle to run entirely off of electricity during shorter trips. The vehicle can also use liquid fuel, like gasoline or diesel, to provide a longer driving range for extended trips. These vehicles can be plugged into an electric power source to charge the battery.

ALL-ELECTRIC OR BATTERY ELECTRIC VEHICLES (BEVs)

BEVs use a battery to store the electric energy that exclusively powers the motor. The BEVs battery is charged by plugging the vehicle into an electric power source.

FUEL CELL ELECTRIC VEHICLES (FCEVs)

FCEVs are Zero-Emission Vehicles. They employ fuel cell technology to generate electricity required to move the vehicle. FCEVs are powered by hydrogen and produce no tailpipe emissions – only warm air and water vapor.

VEHICLE TYPES

HYBRID & ELECTRIC

NATIONAL ELECTRIC VEHICLE INFRASTRUCTURE PROGRAM (NEVI)

In February 2022, guidance was issued for the National Electric Vehicle Infrastructure (NEVI) Program, which provides federal funds for strategic deployment of an electric vehicle (EV) charging infrastructure.

ALTERNATIVE FUEL CORRIDORS are federally designated routes on major highways that allow for inter-city, regional, and national travel using lower-emission vehicles. In Iowa they are Interstates 29, 35, 80 and 380.

The NEVI Program provides up to \$7.5 billion to make EV chargers accessible for public use by establishing a nationwide

interconnected network across the U.S., located primarily along alternative fuel corridors. Funds include \$5 billion for the NEVI Formula Program and a \$2.5 billion discretionary grant program.

Iowa DOT has established a Joint Office to oversee development of an EV Plan for Iowa that supports these transportation electrification efforts.

Required State EV Plans under NEVI must:

- » Be open to public and commercial fleet operators
- » Prioritize EV charging stations along designated corridors

- » Address needs for EV charging infrastructure in rural corridors and under-served or disadvantaged communities
- » Provide long-term operation and maintenance
- » Include existing EV charging infrastructure programs and incentives
- » Catalyze additional private investment
- » Consider consumer protection, cyber-security, domestic manufacturing, emergency evacuation planning, environmental permitting, resilience, and terrain related issues

Charging stations along Alternative Fuel corridors must:

- » Connect to the electric grid and be spaced no more than 50 miles apart and less than one mile from Interstates and highway corridors
- » Be near restrooms, small businesses, and other amenities
- » Include at least four 150KW fast ports capable of charging four cars simultaneously
- » Adhere to Joint Office of Energy and Transportation standards and requirements

1

LEVEL 1

- » Residential outlet
- » 120 volts
- » Good for overnight charging
- » 2-5 miles/charging hour
- » Billed at public utility rate
- » Charging Unit Cost: \$600+

2

LEVEL 2

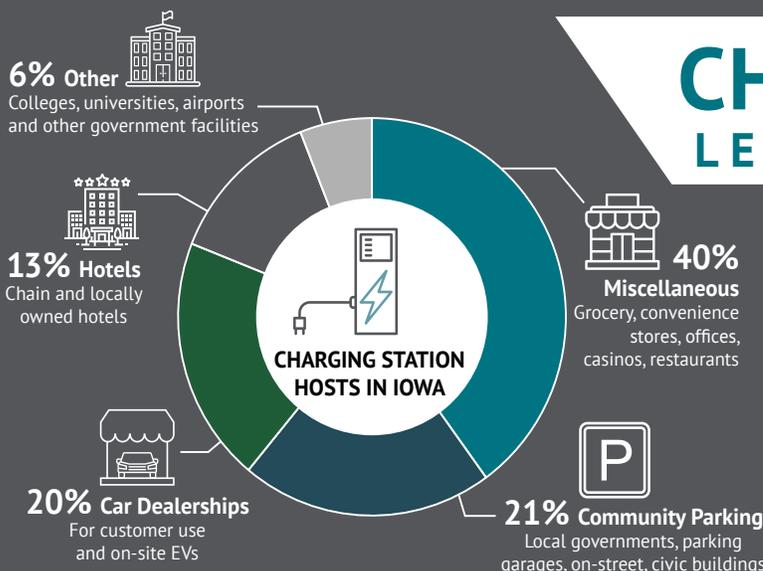
- » Charging stations across the U.S.
- » 240 volts
- » Good for short-range charging
- » 10-20 miles/charging hour
- » Host sets billing rate
- » Charging Unit Cost: \$7,000+

3

LEVEL 3/FAST CHARGER

- » Charging stations across the U.S.
- » 480 volts
- » Good for long-range charging
- » ~30 minutes for full charge
- » Host sets billing rate
- » Charging Unit Cost: \$125K+, plus installation

CHARGING STATIONS LEVEL 1, LEVEL 2, LEVEL 3



To support the growing popularity for EVs, over 270 public charging stations are available in Iowa, representing Level 2 or Level 3 fast charging stations.



FAST CHARGING INFRASTRUCTURE

LEGEND

- Interstate
- Roadway

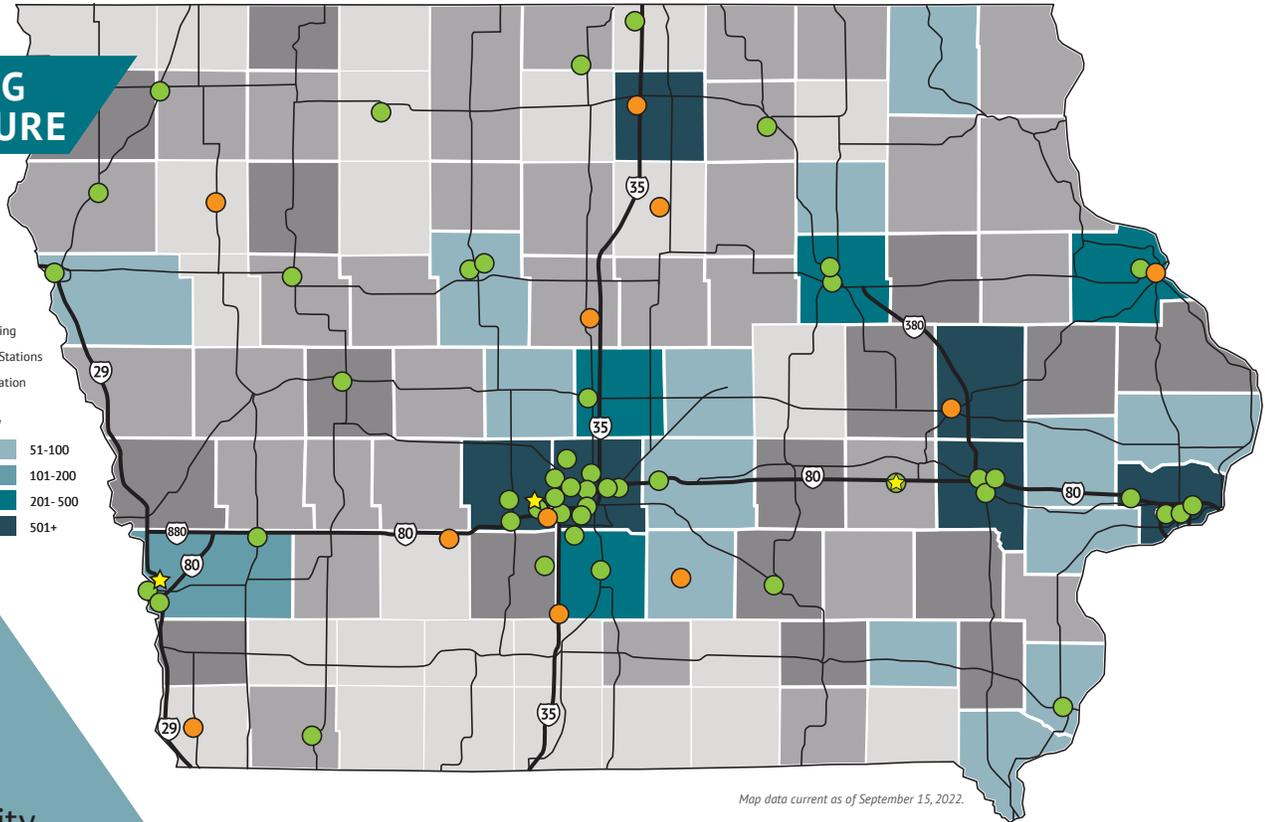
Type of Charger

(Does not include stations exclusive to Tesla vehicles.)

- Level 3/Fast Charging
- Pending Charging Stations
- ★ NEVI Compliant Station

Registered EVs by County

- | | |
|-------|---------|
| 1-10 | 51-100 |
| 11-25 | 101-200 |
| 26-50 | 201-500 |
| | 501+ |



Map data current as of September 15, 2022.

PLAN VISION

A readily accessible EV ecosystem that promotes mobility, reliability, and sustainability for the overall economic and social wellbeing of Iowa.

PLAN TIMELINE

- » **November 2021** – IJIA authorizes federal funding for nationwide EV infrastructure program
- » **February 2022** – NEVI Program Guidance Memo issued
- » **June 2022** – stakeholder and public survey to gather input for Iowa's EV Plan
- » **August 1, 2022** – deadline to submit Iowa's EV Plan
- » **September 30, 2022** – estimated deadline for NEVI/EV Plan approval by FHWA

PLAN GOALS



» An EV fast charging system that **supports regional and interstate travel**



» A **local EV system** that **promotes equitable access and mobility** throughout Iowa's communities



» A charging network that helps **provide the traveling public a variety of transportation and energy options**

» A transportation system that **reduces energy life-cycle emissions** to minimize impact on human and environmental health

» A **sustainable transportation and energy system** that can adapt to economic, technological, and environmental changes while providing a high level of system reliability

» A charging network that **supports long-term EV station success** which maximizes economic benefits for consumers



» A growing network of chargers that **fosters innovation and collaboration to expand economic opportunities**

