

**BUSINESS**

# Electric vehicles are gaining traction among Wisconsin drivers and businesses that provide support

**Rick Barrett** Milwaukee Journal Sentinel

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From cars to motorcycles, and fire trucks to charging stations, Wisconsin has a key role in the development of electric vehicles.

Moreover, the number of EVs on the state's roadways, although still barely a blip on the radar screen, has risen steadily in recent years — fueled by growth from Madison and the Milwaukee suburbs.

There were 7,521 electric vehicles registered in Wisconsin as of mid-2021, according to the most recent figures from the state Department of Transportation. That was up 156% from 2018 and more than eight times higher than in 2016. Around 60% of the EVs were registered in Dane, Milwaukee, Waukesha, Ozaukee, Washington, and Racine counties.

"The 'suburban donut' phenomenon holds true throughout the country," said Tomer Borenstein, chief technology officer at Blastpoint, a Pittsburgh data analytics firm that's studied the adoption of EVs in dozens of cities.

Wisconsin now has roughly the same number of electric vehicles as Indiana and more than three times as many as Iowa, according to U.S. Department of Transportation figures.

The White House has an EV strategy that includes a nationwide network of charging stations and \$5 billion for states to build them. Last summer, President Joe Biden set a goal of making half of all new cars, trucks and SUVs sold in the U.S. zero-emission vehicles by 2030, including EVs and hydrogen fuel-cell cars.

Biden's \$1.9 trillion Build Back Better plan, stalled in the Senate, could raise the tax credits available to consumers buying EVs to a maximum of \$12,500, about one-third of the purchase price of some of the vehicles. And unlike now, there wouldn't be a limit on the number of cars that would be eligible per manufacturer.

"It would really transform transportation in this country," said Joel Levin, executive director of Plug In America, an advocacy group based in California.

Much of Wisconsin's focus has been on vehicle technology companies such as Modine Manufacturing, in Racine, and Husco International, in Waukesha, preparing for the transition to EVs.

Pierce Manufacturing, based in Appleton, recently launched the nation's first all-electric fire truck. Harley-Davidson Inc.'s electric motorcycle division will soon be a stand-alone company traded on the New York Stock Exchange. Clarios, the former automotive batteries business of Johnson Controls, has collaborated with a Chinese company to develop and manufacture lithium-ion battery systems for global automakers.

From batteries to windshields, Wisconsin has a legacy in vehicle manufacturing that's well positioned for electrics, said Kurt Bauer, president of the trade group Wisconsin Manufacturers & Commerce.

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“We’re a big manufacturing state. In fact, we just overtook Indiana as the number one state for manufacturing, per capita, in the U.S.,” Bauer said.

## **Wisconsin companies live in two worlds**

Wisconsin companies say they’re pursuing products for EVs as some of the biggest changes in transportation history unfold before them.

“If you’re not ready for this today, you’re going to be left behind over the next five years,” said Austin Ramirez, chief executive officer of Husco International, a global automotive components manufacturer.

Husco's Nautilus technology manages the temperatures of an EV's battery, passenger cabin and power electronics by continuously controlling the flow of coolant to each system. Those types of controls are essential for an EV to operate efficiently and reliably.

“We've been working for at least five years to really diversify our product portfolio,” Ramirez said, so the company is well positioned for EVs or conventional vehicles.

Modine Manufacturing, a 115-year-old maker of vehicle heating and cooling systems, recently established a separate business unit focused exclusively on EV thermal management.

"EVs are the future of transportation. In the next 20 to 30 years, the market will roll over from gas combustion engines to electric," said Gina Bonini, general manager of the new unit.

Modine has developed different versions of its battery thermal management system depending on where it's going to be used. In Arizona, for instance, more aggressive cooling would be required when summer temperatures hit triple digits.

“There’s a safety aspect of making sure you don’t have a thermal runaway on the engine or battery,” Bonini said.

Pierce Manufacturing has been testing the nation's first electric fire truck in Madison. It's been used at one of the city's busiest fire stations where it's plugged into a high-voltage charger between runs. The 42,000-pound truck has a backup diesel engine that kicks in should the batteries run low while out in the field.

"We always have that ability to switch modes," said Eric Linsmeier, electrical and software technology director at Pierce.

The fire truck is much quieter when using its electric motor, improving communications in the cab and at fire scenes. What's more, the lack of diesel fumes keeps the station cleaner and healthier.

"There's been a lot of focus on not putting carcinogens into the air," Linsmeier said.

At various airports around the U.S., Pierce is testing an electric fire-rescue vehicle.

"This is exciting work that matters," Linsmeier said.

## **EV car owners say range anxiety isn't so bad**

Mike Klimkosky says one of the best road trips he's ever made was from Wisconsin to California, along a route that took him through the Rocky Mountains and then south to the Mexican border.

And he did it with a Tesla, five years ago when there weren't nearly as many public charging stations.

Klimkosky, from Mequon, got into a routine of driving for a few hours and then pulling off the road for a quick charge and a chance to stretch his legs. He planned his route so that his EV wouldn't run out of juice.

"I had no issues at all," he said.

What's called "range anxiety" is a legitimate concern in places where not following a route with charging stations could leave an EV driver stuck on the side of the road

waiting for a tow truck.

But in reality, that hardly ever happens, according to AAA — The Auto Club Group.

“I’d say it’s extraordinarily rare when we get those calls,” said Nick Jarmusz, AAA's Midwest communications director.

The majority of electric vehicle owners do most of their charging at home where it’s cheaper and convenient. And the driving range of the latest EVs is now between about 100 and 500 miles depending on the model of car and variables such as speed and weather.

Klimkosky says he’s getting around 350 miles on a full battery charge on one of his two Teslas, and that a typical recharge would cost less than \$10. On road trips, he often passes up high-speed charging stations when they're too close together.

“There are now thousands of them across the country,” he said.

Range anxiety is more of an issue with older EVs that didn't get very good mileage when they were new and have worsened as their battery has aged.

There was a time when even 40 miles was considered “amazing,” said Eric Powers with EV Powers Hybrid Battery Service and Repair in Madison.

Electric vehicle owners point out that they save money on maintenance because their cars have fewer moving parts to wear out, there's no catalytic converter to replace, no fuel injectors to go bad, and no oil changes. The batteries are supposed to last hundreds of thousands of miles, although in many cases it's too early to tell whether that's true.

Still, the sticker price is enough to scare off some buyers. The cheapest new Tesla sells for around \$45,000, and a Nissan Leaf is closer to \$33,000 before a \$7,500 federal tax credit is applied to the sale.

Teslas no longer qualify for the tax credit because the company met the government's allowed quota of vehicles.

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“Where the purchase incentive really matters is for the lower-price cars,” said Levin with Plug In America.

## **Wisconsin rural cooperatives pushing for charging stations**

In some places you're about as likely to see a unicorn, as an EV, on anything but the interstate highway.

"Most EV growth has occurred, and will continue occurring, in suburban areas," said Borenstein with the data firm Blastpoint.

"The two major reasons for this are fairly simple: logistics and economics," he said. Suburban homes have garages that are well suited for at-home charging, and the families can afford an expensive vehicle.

"The old adage 'keeping up with the Joneses' also helps to explain the viral nature of EV growth in the suburbs," Borenstein said.

A group of about 50 electric utility cooperatives is promoting EV adoption through a network of rural charging stations.

The group, CHARGE EV, has stations across much of the Upper Midwest. It recently added more cooperatives including one that covers 41 counties in Iowa.

"This is an incredible boost for CHARGE both in terms of cooperatives' participation and the opportunity for collaboration," said group President Nate Boettcher, who also runs Pierce Pepin Cooperative Services in Northwest Wisconsin.

Electric co-ops, many of them started from the Rural Electrification Act of 1936, are a powerful economic engine serving more than 42 million people across 48 states. In Wisconsin, they provide electricity to the majority of dairy farms.

Rural charging stations are well positioned to help ease range anxiety between cities. "There's really no better entity to fill in the gaps," Boettcher said.

Many utilities have offered generous rebates for consumers and businesses to install chargers. They've also offered reduced electric rates during off-peak hours to lower the cost of EV driving.

Some cooperatives have purchased EV demonstrator vehicles to show that they're not tiny, underperforming cars.

"Once someone takes an EV for a test drive, it really changes their opinion," Boettcher said. "At one event, we had an electric school bus. And, you know, it looked just like a regular yellow school bus."

What could open up much of America to EVs would be the rollout of pickup trucks such as the Ford F-150 Lightning that's scheduled to go into production in the spring.

"That's going to be a game changer," Boettcher said. "If an EV pickup looks like an F-150 that people know and love today, and it has the ability to do the things they want, they're going to want to drive that."

Motor Trend magazine recently named the Rivian R1T pickup as its 2022 Truck of the Year. The upstart, California-based Rivian is ramping up electric vehicle production at the old Mitsubishi plant in Normal, Ill. In early November, the company raised nearly \$12 billion to become the most successful initial public offering in the U.S. since 2014.

Rivian will have to overcome a lack of brand recognition and dealerships in order to gain much traction in the marketplace. But Tesla has done it by selling cars online

and through a network of stores, outside of Wisconsin, where people can place orders.

"It's also very clear that anything that significantly lowers the price of a vehicle makes it more attractive," said Marc Geller with the California-based Electric Vehicle Association.

## **Businesses see opportunity in EV traffic**

Many businesses, including restaurants, shopping centers and convenience stores, are gearing up for EV traffic and the opportunity to gain customers looking to spend money on something else while they wait for their car to charge. Hotels are planning to be EV-friendly destinations as well.

"It's a relatively low demand right now ... but we think this is the future," said Nick Johnson, a Wisconsin Hotel & Lodging Association board member.

Starting in January, Kampgrounds of America (KOA) says it will begin installing charging stations at some of its 525 locations. Each high-voltage unit will be able to charge an EV up to 10 times faster than a standard 120-volt charger.

"This amenity is a first of its kind for a campground network," KOA President Toby O'Rourke said in a statement.

Wireless charging has become available in several states and in Europe.

Integrated Roadways, a Kansas City company, is testing "smart roads" that could someday be used to charge EVs and make roads pay for themselves. The systems could also deliver high-speed internet service in rural America.

Integrated Roadways has eyed several Wisconsin cities for testing, said company founder Tim Sylvester.



"We're transforming the road into a network," he said. "Our goal is to be a technology platform for the next generation of vehicles."