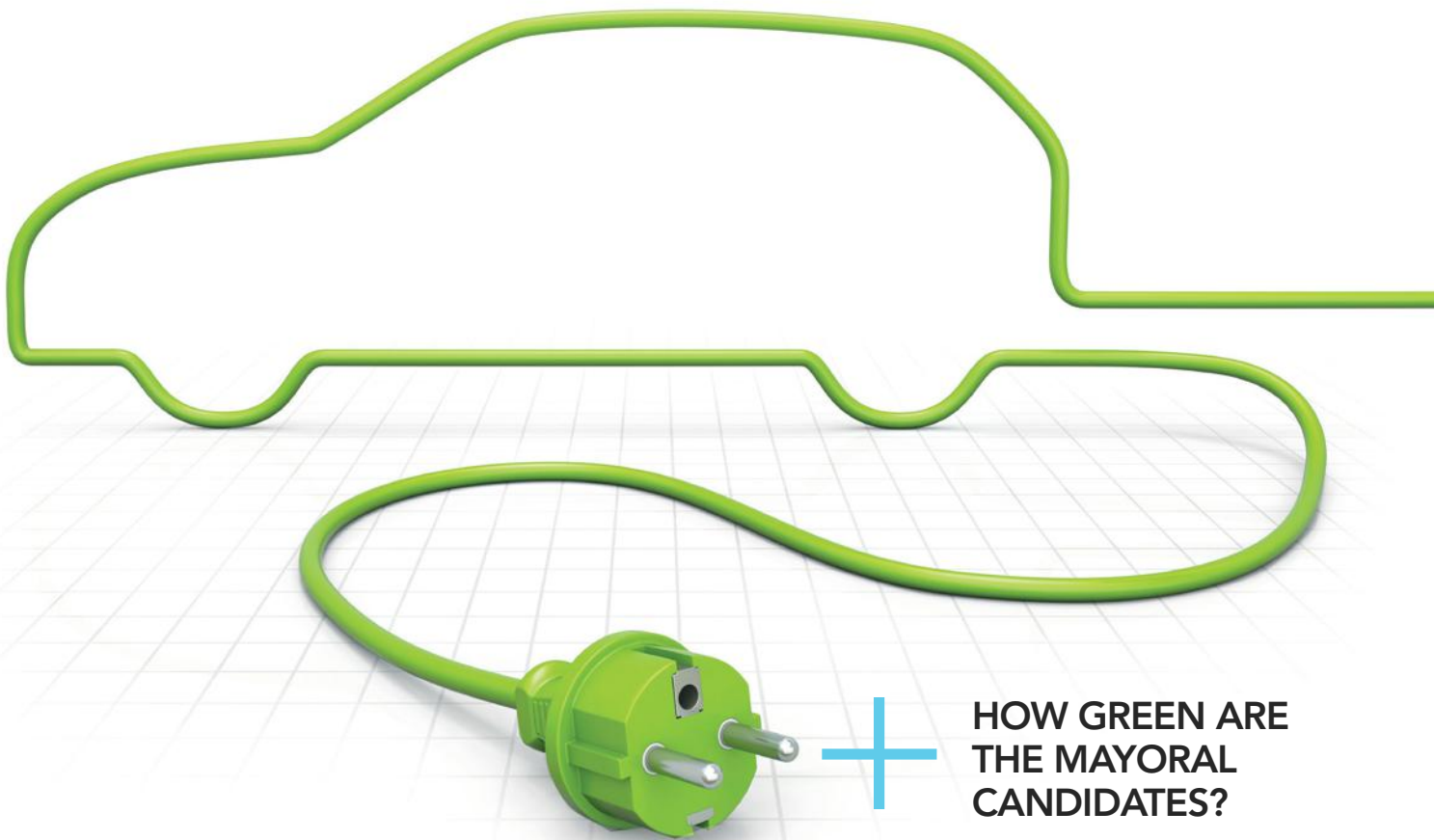


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## NEW ELECTRIC CARS

Have electric vehicles finally passed the tipping point into mass production?



**+** HOW GREEN ARE  
THE MAYORAL  
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# NOT YOUR GRAMPA'S ELECTRIC CAR



## ford

Ford plans to bring three to four additional electric or plug-in hybrid vehicles to market by 2013.

## FOCUS ELECTRIC

**Technology:** electric  
**Type of vehicle:** four-door sedan  
**Transmission:** front-wheel drive  
**Battery type:** 23-kWh lithium-ion  
**Max. speed:** 84 mph  
**Max. distance per charge:** 100 miles  
**Charge time:** 3-4 hours at 240V  
**MSRP:** still not announced at press time  
**Availability in Chicago:** later this year  
**Notable:** Ford uses cotton from recycled blue jeans for some of the car's components



## nissan

## LEAF

**Technology:** electric  
**Type of vehicle:** four-door hatchback  
**Transmission:** front-wheel drive  
**Battery type:** 24-kWh lithium-ion  
**Max. speed:** reports vary, but estimated around 90 mph  
**Max. distance per charge:** 100 miles  
**Charge time:** to 80 percent capacity in 30 min. with special "fast-charger," otherwise, about 8 hours at 220V and about 21 hours at 110V  
**MSRP:** \$32,780 to \$33,720  
**Availability in Chicago:** later this year  
**Notable:** Batteries are located in the floor for better weight distribution



## chevrolet

## VOLT

**Technology:** plug-in hybrid  
**Type of vehicle:** four-door sedan  
**Transmission:** front-wheel drive  
**Battery type:** 16-kWh lithium-ion  
**Max. speed:** 100 mph  
**Max. distance per charge:** 379 miles  
**Charge time:** 4 hours or more at 240V; 10 hours at 120V  
**MSRP:** starting at \$40,280  
**Availability in Chicago:** later this year  
**Notable:** Last month, *MotorTrend* magazine named the Volt its 2011 Car of the Year

The 103rd edition of the Chicago Auto Show—the largest and oldest in North America—gets underway this month at McCormick Place, but unlike in years past when gas-guzzling behemoths that U.S. consumers most wanted to see took center stage, this year, electric vehicles just might steal the show.

Judging from the number of automakers entering the electric vehicle market, now and in the near future, it may seem that the electric vehicle—or EV—has finally passed the tipping point into mass production. But in fact, the first four-wheel vehicles ever made were electric, first appearing in the 1800s, and enjoying their heyday at the

turn of the 19th century. In the 1920s, however, gas-powered vehicles gained popularity, largely due to the longer distances they could cover, and EV production dropped off.

In the 1960s and '70s, concerns over air pollution and reliance on foreign oil renewed interest in electric, and California's Zero Emission Vehicle Mandate in 1990, which required two percent of light-duty vehicles sold in the state to be emission-free by 1998—and 10 percent by 2003—helped boost production. But due to the relatively high cost of

producing the electric vehicles, automakers pressured the state to back down. Since then, the greenest mass-market vehicle we've seen in the United States has been the hybrid-electric, most famously the Toyota Prius.

But today that's changing. And fast.

All the battery-equipped vehicles on the market today or coming soon can be grouped into two types: Plug-in hybrids and electric. Plug-in hybrids (like the Chevy Volt) have a gas tank to augment power from a battery pack—or take over when the batteries are depleted. Refueling requires plugging the car into an electric outlet and/or filling the gas tank.

The term "electric vehicle," on the other hand, in the strict sense refers to those automobiles that run only on electricity. The Nissan Leaf and Tesla Roadster are two examples on the market now. The designation, however, is commonly used for both kinds of vehicles (which can create some confusion).

Both types have a set of rechargeable batteries that powers a motor, which in turn spins the wheels. When you step on the accelerator pedal, a controller allows more power to pass from the battery pack to the motor. Gearshifts are generally absent from EV's, which makes for smoother accelera-

## New electric cars

The following is a sampling of electric and plug-in hybrid vehicles either on the market now or available soon. Not all manufacturers are represented here. (The prices listed here are the MSRP (manufacturer's suggested retail price) and do not reflect any rebates)



## ford TRANSIT CONNECT ELECTRIC

**Technology:** electric  
**Type of vehicle:** four-door van  
**Transmission:** front-wheel drive  
**Battery type:** 28-kWh lithium-ion  
**Max. speed:** 75 mph  
**Max. distance per charge:** 80 miles  
**Charge time:** 6-8 hours at 240V; longer time (unspecified) at 120V  
**MSRP:** \$57,400  
**Availability in Chicago:** now  
**Notable:** The taxi version, similar to the van, has begun service in Boston



tion. A process known as regenerative braking, in which energy produced from applying the breaks is fed back into the battery, also helps increase the vehicle's efficiency.

In their current incarnation, strictly-electric vehicles do have drawbacks. They can't travel as long a distance as their gas, or gas-electric, counterparts without being recharged (though this will most likely change over time as batteries evolve). They also risk running out of power before coming upon an outlet to recharge.

The amount of time needed to fully charge the battery pack can be prohibitive, too. Though it varies by model, 110 to 120 volts, which is the standard for most home outlets



## mitsubishi iMiEV

**Technology:** electric  
**Type of vehicle:** four-door subcompact hatchback  
**Transmission:** rear-wheel drive  
**Battery type:** 16-kWh lithium-ion  
**Max. speed:** 80 mph  
**Max. distance per charge:** ~75 miles  
**Charge time:** from 30 minutes to 8 hours, depending on the process, at 220V; 12 to 14 hours at 120V  
**MSRP:** starting at under \$30,000  
**Availability in Chicago:** 2012  
**Notable:** In its home market of Japan, the iMiEV adds only 30 percent of the CO2 emitted by its gas counterpart to the environment (comparison done with the production of electricity for the iMiEV)

in the U.S., will make for a longer charging time. While using 220 to 240 volts speeds up the process significantly, it generally requires installing a special charging device, which can range from around \$600 to \$1,500 and higher.

Over the next few years, we'll see more "charging stations" in public places. Akin to gas stations for traditional vehicles, these hubs of electricity offer drivers a quick charge while on the road. Not only will they be found along highways and in garages, but also at big-box stores, hotels, libraries, stadiums and many other driving destinations.

Indeed, the market for these stations is booming. "I would almost say exploding in their numbers," says Rich Carroll, a partner at Pioneer Conversions, which converts traditional cars to electric, and president of the Fox Valley Electric Auto Association ([fveaa.org](http://fveaa.org)).

At the beginning of 2010, Chicago and its collar counties had just seven charging stations, reports Carroll. But citing the Chicago Electric Vehicle Consortium, a committee formed in 2009 to divvy up a \$15 million grant from the U.S. Department of Energy towards "alternative" vehicles, fuels and power



## honda FIT EV

**Technology:** electric  
**Type of vehicle:** four-door subcompact hatchback  
**Transmission:** rear-wheel drive  
**Battery type:** lithium-ion; energy rating still not announced at press time  
**Max. speed:** 90 mph  
**Max. distance per charge:** 100 miles  
**Charge time:** 6 hours or less at 240V; 12 hours or less at 120V charger  
**MSRP:** not announced at press time  
**Availability in Chicago:** in 2012  
**Notable:** A display in view of the driver will suggest when to turn off the climate control or accessories to save battery power



## tesla ROADSTER

**Technology:** electric  
**Type of vehicle:** two-door sports car  
**Transmission:** rear-wheel drive  
**Battery type:** 16-kWh lithium-ion  
**Max. speed:** 125 mph  
**Max. distance per charge:** 245 miles  
**Charge time:** 3.5 hours at 240V  
**MSRP:** \$109,000  
**Availability in Chicago:** now  
**Notable:** It can accelerate from 0 to 60 mph in 3.7 seconds





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tesla

## MODEL S

**Technology:** electric

**Type of vehicle:** four-door sedan

**Transmission:** rear-wheel drive (four-wheel-drive available as an option)

**Battery type:** 16-kWh lithium-ion

**Max. speed:** 120 mph

**Max. distance per charge:** 160, 230, or 300 miles, depending on the battery pack

**Charge time:** to 80 percent capacity in 45 min. at 480V; times at other voltages unclear

**MSRP:** starting at \$57,400

**Availability in Chicago:** 2012

**Notable:** It can accelerate from 0 to 60 mph in 5.6 seconds



stations, he expects to see 300 in the Chicago metropolitan area by the end of 2011.

Brian Levin, vice president of Carbon Day Automotive, which sells and installs vehicle charging equipment, says it's too soon to tell how public stations' pricing schemes will pan out over time.

"Our system gives owners of stations the ability to choose whether to charge drivers or give away," he says. "We'll see in time how owners of charging stations go about it." He does predict that some businesses may offer free quick charges in the hopes of gaining the drivers' business while they wait.

As technology marches on, EVs, computers and smart phones will work hand in hand. In the case of Carbon Day Automotive, their charging systems are networked. Via a website or a phone app, owners can see operational status and can locate free public stations—all in real time. The system will even send drivers a text message when their vehicle is fully charged.

If you're excited about EVs, stay tuned. There are many more models on the horizon. A handful of manufacturers, including Audi, BMW, Mercedes-Benz, Mini, Smart, Volkswagen and Volvo, will roll out new models over the next few years.

When purchasing an EV, Illinois residents are entitled to a reduction of \$4,000, or a tax rebate of up to 80 percent of the vehicle's price, whichever is cheaper. Residents of other states are eligible for incentives, too. Consult [energy.gov/taxbreaks.htm](http://energy.gov/taxbreaks.htm) for more information.

The 2011 Chicago Auto Show runs from Feb. 11-20, at McCormick Place, Chicago. The Chevy Volt, Ford Transit Connect Electric, Honda Fit EV and Nissan Leaf are all scheduled to be on display. Visit [chicagoautoshow.com](http://chicagoautoshow.com) for more information.

*David King is a Chicago-based freelance writer.*

Read more about David King's visit to the Auto Show! Visit [mindfulmetropolis.com/blog](http://mindfulmetropolis.com/blog)