

Electric Vehicles and Georgia

The Many Benefits of Driving on Electricity

HIGHLIGHTS

Strong state policy support has enabled Georgia to become a leading market for electric vehicles (EVs). As a result, thousands of Georgia drivers are enjoying the benefits of driving on electricity. EVs are cheap to fuel, clean to operate, fun to drive, and pair well with renewable electricity. But market forces alone will not ensure that the share of EVs in Georgia continues to grow. Consumer education, policy support, and public-private partnerships are essential to enable Georgia to remain a leading state for EV adoption.

Georgia has become one of the fastest-growing markets for electric vehicles (EVs) in the United States. As of July 2014, the Peach State had the second-most registered EVs in the country, with more than an estimated 12,000 (Francis 2014). And Atlanta has surpassed Seattle to claim the second-highest percentage of EV registrations among major U.S. metropolitan areas (WSJ 2014).

Smart policies such as Georgia's Zero Emission Vehicle Tax Credit and Electric Vehicle Supply Equipment Tax Credit have spurred these sales. The vehicle tax credit reimburses drivers of both purchased and leased vehicles for 20 percent of the EV cost, up to \$5,000, and can be applied in conjunction with the federal EV tax credit of up to \$7,500. The option of applying the credit to a lease has been very attractive, as some states restrict similar tax credits to purchased vehicles. The EV equipment credit reimburses businesses that install infrastructure for charging EVs for 10 percent of the cost of the equipment, up to \$2,500 (State of Georgia 2010).

A variety of plug-in EVs are already available in Georgia, and automakers are introducing more EV models across the United States each year. However, the benefits of EVs in Georgia extend beyond merely providing consumers with more choices in the showroom. Based on current sales, EVs are saving Georgia drivers \$10 million in fuel costs, enabling them to avoid burning 4.5 million gallons of gasoline, and reducing harmful climate change emissions by more than 22,000 tons annually.¹ These savings underscore the importance of continued policy support to help Georgia's drivers access vehicles that are cheap to fuel, clean to operate, and good for Georgia's economy.



Driving on electricity benefits Georgia consumers. In 2014, the average EV driver saved more than \$850 on fuel compared with a driver of a comparable gasoline-powered vehicle.

Economic Benefits of EVs

Everyone likes to save money, especially on fuel. However, the volatility of the global oil market has made it difficult for drivers to plan for the costs of filling up. The price of electricity, in contrast, has remained remarkably stable and less costly than gasoline (Figure 1).

For example, in 2014, driving the average new gasoline vehicle 100 miles cost \$13.57 in Georgia. Driving that same distance on electricity cost an average of \$3.53 in the state—and as little as \$0.40, if EV owners charged their vehicles with electricity at the lowest nighttime cost.² Compared with an owner of a comparable conventional vehicle, an EV owner saved more than \$850 on fuel and Georgia’s EV drivers saved a total of \$10 million in fuel costs in 2014 (Figure 2).³ Although gas prices have recently fallen, driving on electricity is still cheaper than driving on gasoline.

According to state and national analyses, spending less on fuel frees up households to spend more in other economic sectors, from education to construction, that are more job intensive than the oil and gas industry (BLS 2012; Anair 2011). EVs thus provide economic benefits to Georgia by enabling owners to direct some of their fuel savings to local businesses that create local jobs.

What’s more, the money that EV drivers do spend on fuel goes to power companies that employ Georgians, pay local

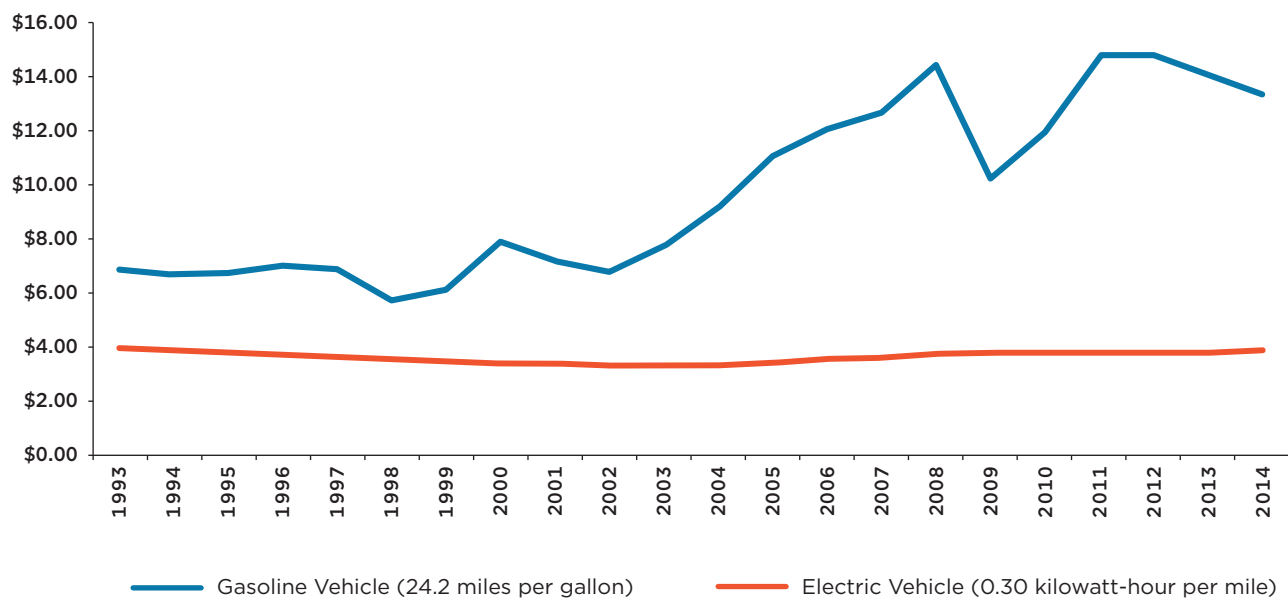
taxes, and have a stake in the state economy. A majority of the money drivers spend to fill up conventional vehicles, in contrast, pays for crude oil, which is extracted and refined outside Georgia. For every dollar spent on gasoline in the United States in the past five years, 71 cents went to extracting and refining crude oil, while less than a dime went to the local gas station (EIA 2014a; NACS 2014).

EVs also save drivers money through lower maintenance costs. Although EVs are an advanced technology, they are remarkably simple to maintain because they have fewer moving parts than conventional gasoline-powered vehicles. EV drivers never have to worry about changing the oil, for example. And EV brake pads require less periodic maintenance because drivers use them less often, thanks to regenerative braking, which slows the vehicle while producing electricity. Although tallying maintenance costs is difficult because newer EVs have not been on the road as long as conventional vehicles, one study found that maintaining an EV can cost 60 percent less than maintaining a conventional vehicle (EPRI 2014).

Climate Benefits of EVs

When running on electricity, EVs produce zero harmful tailpipe emissions, which affect Georgia’s climate. Of course, producing the electricity used to charge an EV releases emissions. These “upstream” emissions are an important part

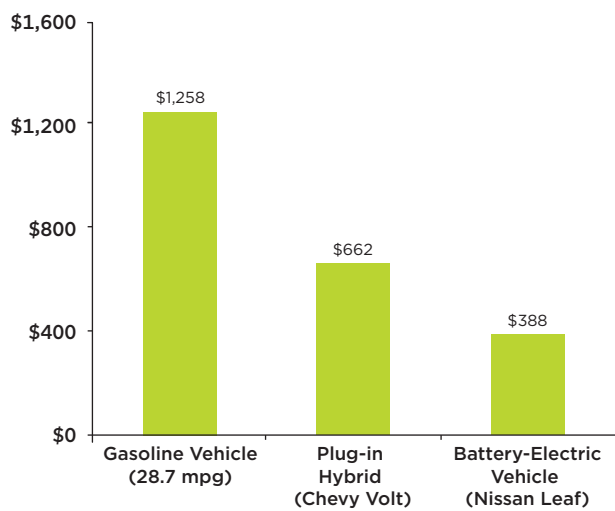
FIGURE 1. Gasoline vs. Electric: Cost to Drive 100 miles



For Georgia drivers, the cost of electricity has historically been lower and more stable than the cost of gasoline. Prices are adjusted for inflation.

SOURCES: BLS 2014; EIA 2014B; EIA 2014C.

FIGURE 2. How Much the Average Georgia Driver Spent on Fuel, 2014



EVs are cheaper to fuel than gasoline-powered vehicles. An EV driver in Georgia saved over \$850 on fuel in 2014 compared with a driver of a gasoline-powered vehicle.

Note: Total cost based on driving 11,000 miles per year. Fuel prices are 2014 averages for Lower Atlantic region gasoline and residential electricity in Georgia. Expenditures are in 2013 dollars.

SOURCE: EIA 2014B; EIA 2014C.

of comparisons of overall emissions, known as “well-to-wheels” calculations. However, UCS analysts have found that no matter where a driver plugs in an EV across the country, it is linked to fewer global warming emissions than an average compact conventional vehicle (Anair and Mahmassani 2012).

In Georgia, an average battery-electric EV is linked to fewer global warming emissions than a comparable conventional gasoline-powered vehicle that gets 47 miles per gallon (Anair 2014; Anair and Mahmassani 2012). And the emissions associated with an average EV in Georgia are set to drop even more as the state obtains more of its power from renewable energy.

In 2014, for example, Georgia Power procured more than 900 megawatts (MW) from existing renewable energy projects in the region. While this currently comprises only 2 percent of its capacity, the company is seeking to expand its renewable electricity portfolio (Georgia Power 2014a). The company projects that it will have the largest voluntary solar portfolio in the nation by 2016 (Market Watch 2014).

Pairing EVs with electricity from renewables—including wind energy as well as solar power—is a win-win for Georgia. EVs charged with electricity from renewables are responsible for the same amount of global warming emissions as gasoline-powered vehicles that get more than 500 miles per gallon (Anair and Mahmassani 2012). The EVs on the road in Georgia

today will therefore become even cleaner compared with gasoline vehicles as the share of electricity produced from renewables grows in Georgia.

Charging Ahead with EVs

Although EVs now account for only a small fraction of total vehicle sales in Georgia and the United States, the potential market for today’s EVs is huge. A 2013 survey by UCS and Consumers Union found that 42 million U.S. households with a vehicle could use one of today’s EVs. And that number will only rise as more charging infrastructure becomes available through programs such as Charge Georgia, an incentive program designed to boost public EV charging stations at universities and state agencies, and in cities and counties (UCS 2013).

Georgia’s tax credits for EVs and other smart state policies have already allowed thousands of Georgia drivers to realize the benefits of driving on electricity. However, market forces alone are not enough to ensure that the share of EVs in Georgia continues to grow. Policy support, consumer education, and public-private partnerships are essential to enable the state to remain a leader in EVs.

Policy support not only reduces the upfront cost of EVs but also enables the state to save drivers money, cut oil use, and reduce emissions. Policy support also addresses the EV chicken-and-egg problem by spurring businesses and organizations to install the charging infrastructure that EV drivers need. To cement Georgia’s reputation as a pioneer in transforming transportation to meet the challenges of the twenty-first century, policy makers need to continue to support the market for clean EVs and clean electricity.



When EVs are charged using renewable electricity—as with this solar charging station in the Atlanta metro area—their overall emissions are equivalent to a gasoline-powered vehicle that gets more than 500 miles per gallon.

ENDNOTES

- 1 Fuel savings are based on the sales-weighted fuel economy of electric vehicles sold in Georgia, compared with a 28.7 mile-per-gallon (mpg) gasoline car, as reported by the U.S. Environmental Protection Agency (EPA). Fuel savings are also based on average 2014 prices for Lower Atlantic gasoline and residential electricity in Georgia, as reported by the Energy Information Administration, U.S. Department of Energy. Emissions savings are based on average emissions from the electricity grid, as calculated by SERC Reliability Corp., one of eight regional electricity councils, compared with emissions from gasoline on a well-to-wheels basis.
- 2 These figures assume a 24.2-mpg gasoline vehicle, the projected average mpg for 2014 model year cars, as reported by the EPA, and an electric car with an efficiency of 0.30 kilowatt-hour per mile, such as a 2014 Nissan Leaf. Fuel prices are 2014 averages for Lower Atlantic region gasoline and residential electricity in Georgia, as reported by the Energy Information Administration. Lowest electricity price reflects the “super off-peak” electric rate, as reported by Georgia Power, and does not include taxes or regulatory fees.
- 3 Annual and total fuel savings assume 11,000 annual miles driven. Total fuel savings are based on the sales-weighted fuel economy of electric vehicles sold in Georgia compared with a 28.7-mpg gasoline car.

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