









MAINE CHARGING FORWARD WITH ELECTRIC CARS

NRCM SURVEY OF MAINE ELECTRIC CAR OWNERS

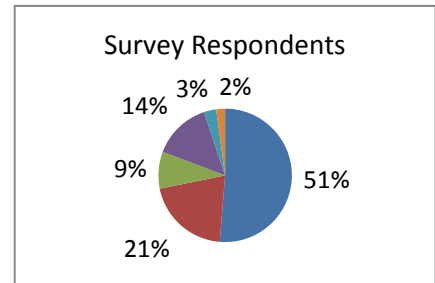
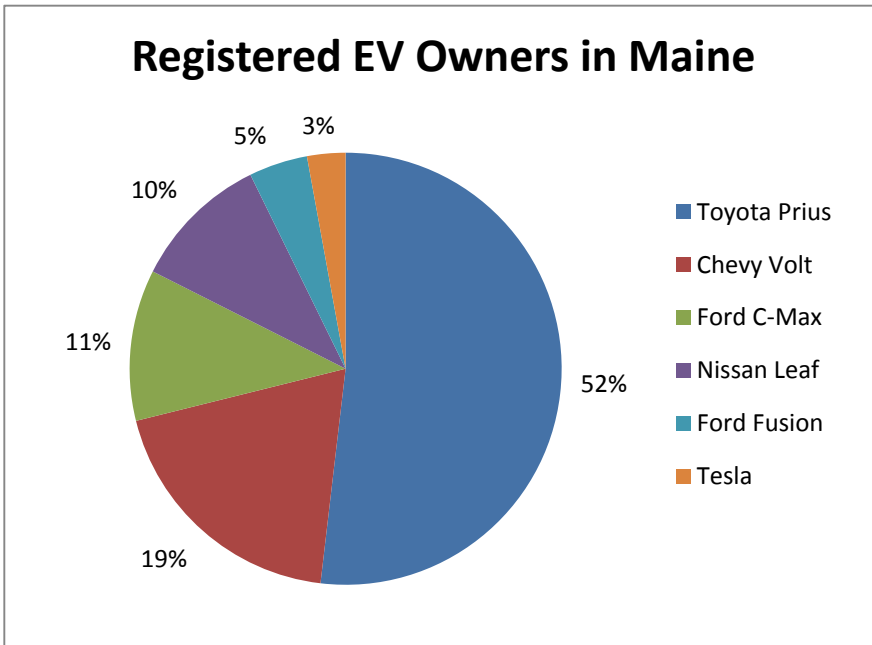
In September 2014, the Natural Resources Council of Maine (NRCM) mailed a detailed opinion survey to the approximately 600 registered electric vehicle (EV) owners in Maine. This was the first known survey of Maine EV owners, and they responded at an unusually high rate—more than 40%. Although this is not a random sample, it is such a large proportion of all EV drivers that it provides important information that is worth sharing. EVs could represent one of the largest opportunities for Maine to curb climate pollution while reducing our dependence on oil and saving money on gasoline. Transportation emissions are Maine’s single largest source of climate-disrupting carbon pollution, and we currently send more than \$2 billion out of state on gasoline and diesel purchases every year.

ELECTRIC VEHICLE DRIVERS: WHO, WHAT, WHY, & WHERE?

There is an array of plug-in electric car models on the road in Maine today, from all-electric models to those with relatively small batteries and substantial gasoline range. Below are the primary electric car models in use in Maine, their ranges (miles electric plus miles gasoline if applicable.)

<p>Toyota Prius Plug-in (12 miles electric + 540 miles gas)</p> 	<p>Chevy Volt (38 miles electric + 340 miles gas)</p> 	<p>Ford C-Max Energi (20 miles electric + 580 miles gas)</p> 
<p>Nissan Leaf (75 miles electric)</p> 	<p>Ford Fusion Energi (20 miles electric + 580 miles gas)</p> 	<p>Tesla S (208 or 265 miles electric)</p> 

The top two reasons for buying an EV were **saving money on gasoline (63%)** and **reducing air/climate pollution (63%)**.



A substantial number of survey participants also noted **reducing use of foreign oil (28%)** or **interest in new technology (28%)** as reasons for their purchasing an EV.

The mix of models owned by our survey respondents closely matched each vehicle’s share of Maine’s EV fleet.

EV owners can be found all across Maine. They live in from a range of communities including **Auburn, Blue Hill, Brewer, Buxton, Carmel, Castine, Houlton, Kennebunk, Kittery, Lincoln, Livermore Falls, Naples, Nobleboro, Old Town, Presque Isle, Readfield, Rumford, Topsham, Trescott, Waterford, and Waterville!**

OVERALL OPINIONS & BASIC DRIVING HABITS

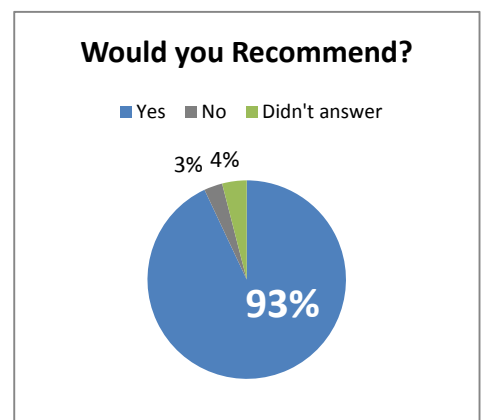
Maine EV owners almost universally love their vehicles. Perhaps the best indicator is how many would recommend their vehicle to a friend, family member, or colleague: **93%** (compared to **3%** who wouldn’t recommend.) **Virtually all** respondents find their vehicle to be **reliable** and **easy and affordable to maintain**.

Reasons survey respondents gave for why they like their EV include:

- Great mileage; driving by gas stations without filling up!
- Lower emissions
- Quiet, easy to drive
- “Zippy” (good acceleration), good handling
- Comfortable, reliable

Ways respondents would like to EVs improved include:

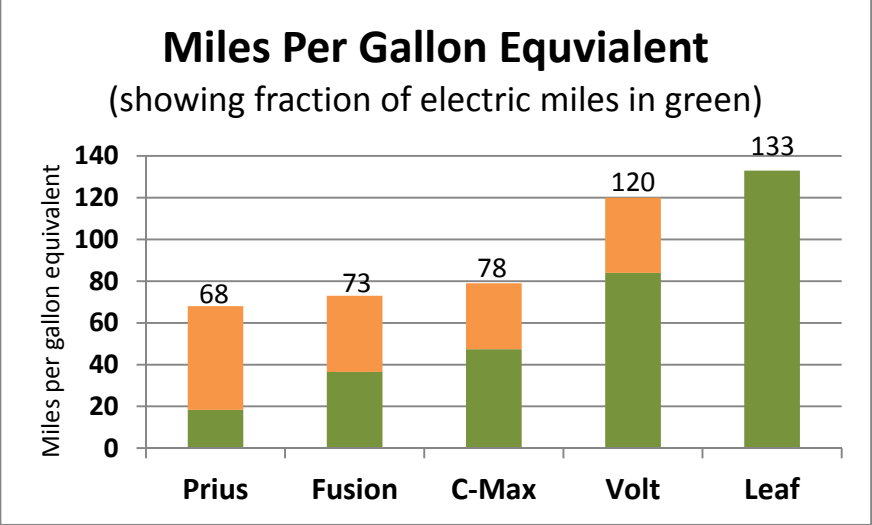
- Some *Prius* owners expressed a wish the electric range was longer
- Some *Leaf* owners with longer range want more charging stations
- Several drivers reported getting somewhat lower battery range in very cold weather
- Some *Prius* and *Volt* drivers noted the cars don’t have high clearance off the ground



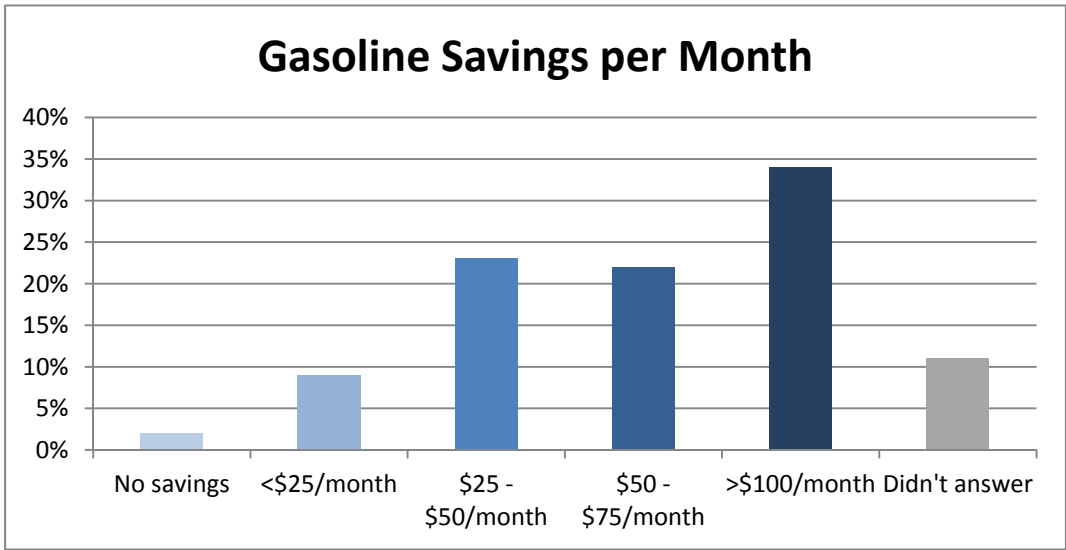
The survey found that **62%** of respondents use their vehicle for **commuting to work**. Of those who commute in their EV, **39%** commute less than 10 miles each way, **28%** commute 11-20 miles, and **33%** commute more than 21 miles (10% commute *more than 50 miles* each way).

MILEAGE AND FUEL SAVINGS

On average, respondents reported that about half of their miles driven use the electric battery, and the other half gasoline. To compare EV mileage to gasoline-only cars, a miles-per-gallon equivalent (mpge) is typically used to equate electricity to gasoline. The average mileage reported was **88 mpge**. The chart shows the average reported mpge per model, and the size of the green section indicates the proportion of miles that were reported as electric. Note that the mileage of an average new car in the U.S. is less than 30 mpg.



EV owners reported saving substantially on gasoline, with the largest percentage (**34%**) saving more than **\$100/month on gasoline**. Volt drivers generally reported higher savings than other models.



On the other side of the equation, drivers did not report substantial increases in electric bills, with the largest portion (**35%**) reporting **no noticeable change**. Other responders were split evenly between bill increases of <\$10/month, \$10-\$20/month, and \$20-\$40/month. Since few of these EV drivers reported taking advantage of time-of-use rates, there is an opportunity to cut their electric bills even further.

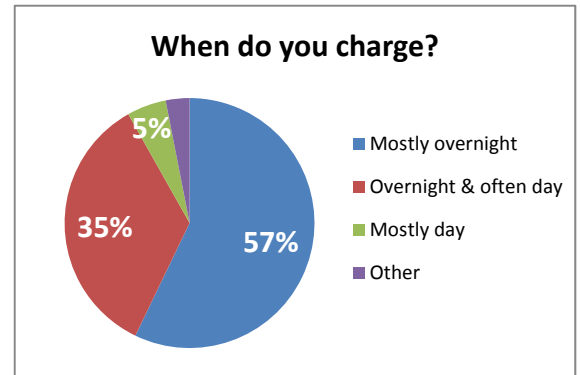
CHARGING HABITS

Electric car charging appears to be very similar to how most of us charge our cell phones: at home, overnight. Almost all drivers (**95%**) reported that **they primarily charge their cars at home**. A few (**10%**) reported that their workplace was a secondary charging location. A very small number (**3%**) reported they primarily charge their cars at work: these vehicles are mostly owned by a business, and, therefore, charged onsite. A majority (**57%**) charge “mostly overnight,” and most of the rest (34%) reported charging overnight and during the day.

Even among drivers who commute 21 miles or more each way, most report charging only at home (75%) and mostly overnight (62%).

Two thirds of EV drivers have **never used a publicly available charging station**. This may not be surprising, given the small number of charging stations previously available. Charging stations are increasing rapidly, however, and there are now nearly 50 in Maine. About **10%** have used public charging 1-5 times and another **10%** have used one more than 5 times.

Only **8%** of EV drivers are on “time-of-use” rates offered by electric utilities like CMP. Time-of-use rates are relatively lower electricity rates during “off-peak” times (e.g., night time) and higher rates during “peak” hours. That’s because the more electricity we use at peak times, the higher electric rates are for all of us. Even of those EV drivers who charge “mostly overnight,” only a small number (12%) are on time-of-use rates. It is likely that a far greater portion of EV owners would benefit economically from time-of-use rates if they knew about them. It is also possible that an even higher proportion of charging would occur overnight if EV owners had a better economic incentive to do so.



CONCERNS AND BARRIERS

We asked people about what initial concerns they had when they considered buying (or leasing) an electric vehicle, and about the concerns they had since actually owning and driving them. The greatest concern for EV drivers (**40%**) is the up-front cost to buy the vehicle. Although all EVs qualify for some level of federal tax credit, Maine does not offer any tax credit of its own, unlike several other states. Roughly half of the EV drivers in Maine lease their vehicles.

While 20-30% of drivers had several initial concerns before they bought their EV, after they had owned their vehicle only a small fraction (less than 10%) of EV drivers remained concerned about issues such as the cost of charging, cost of insurance, affordable maintenance, resale value, or problems with charging equipment. Likewise, battery range was a notable concern among drivers considering buying an EV, but that concern shrank dramatically from 51% to 28% after drivers began to own and operate their EV.

CONCLUSION: WHAT'S NEXT?

This survey shows that EVs are here and working for Maine people in surprisingly large numbers. It also shows that there are significant benefits to driving them, primarily through increased fuel economy, lowered gasoline bills, and reduced tailpipe pollution. The survey also shows that there are concerns or barriers that impact choices to purchase an electric vehicle, including upfront costs and availability of charging stations to extend effective electric driving range. State and local policies and investments may address these issues and accelerate the desire for even more electric cars in Maine.



Natural Resources Council of Maine
3 Wade Street • Augusta, Maine • 04330
(207) 622-3101 • nrcm@nrcm.org • www.nrcm.org