

Lyme Electric Vehicle Buying Resource

The purpose of this page is to provide information on experiences of those who own or lease electric vehicles (EVs) or plug-in hybrids (PIHs) in Lyme. From personal experience, some of us have found that the single biggest impediment to purchasing an EV is the question “Will it really work, especially around here in the winter?” As you will see below, the answer is a somewhat resounding “YES!” Within both vehicle classes, though, there are several makes from which to choose, and the list gives an idea of the experiences of those with each make.

Definitions: “Electric Vehicle” and a “Plug-In Hybrid”:

- 1) An EV is all electric. No internal combustion engine at all. On the list, there are four makes of EV:
 - a. Tesla, who make several models.
 - b. Nissan, who make the Leaf.
 - c. Chevrolet, who make the Bolt.
 - d. Hyundai, who make the Kona.
- 2) A PIH has both an internal combustion engine and an electric engine. The electric engine has a limited range (20-50 miles). When the battery runs down, the gas engine takes over. On the list, there are four makes of PIH:
 - a. Toyota, who make the Prius Prime.
 - b. Subaru, who make the Crosstrek.
 - c. Mitsubishi, who make the Outlander.
 - d. Chevrolet, who make the Volt. I put this last on the list because Chevy no longer makes it.

Web Resources

1. A webinar from Vermont Law School on EVs in the Upper Valley. Although some of this information is Vermont-specific, much of it is generally applicable. March 21 2021. <https://www.youtube.com/watch?v=Wqbs5ykOaT8>
2. Information on which electric vehicles are still eligible for federal tax credit. <https://electrek.co/2021/03/22/which-electric-vehicles-still-qualify-for-us-federal-tax-credit/>
3. A site on the E-bikes that are currently available. <https://electricbikereview.com/category/affordable/>

Reasons to buy an electric vehicle. These reasons are somewhat a summary from the owners listed below:

- 1) They’re fun!!!! This might be a surprise to many. It certainly was to me. I expected incredibly poor performance, whereas the reality is completely the opposite. This may be an exaggeration, but I would say pretty much any EV can beat pretty much any gas-powered car in a drag race: BMW, Audi, Camaro, or what-have-you. A couple of people comment on this specifically. The reason is that there’s no “revving up” of the engine to be done. As soon as you hit the accelerator (we can’t call it the ‘gas’ on these), you have full power – instant torque! Go to the local Nissan or Chevy dealer and test-drive a Leaf or a Bolt and see for yourself.

- 2) They're cheaper over time. At the moment, charging these EVs will cost you less per mile than running a gas-powered car, given the prices of electricity and gas, and the efficiencies of the respective vehicles. Also, there's a lot less maintenance expense (see below).
- 3) They're low-maintenance. There are no oil changes, no filter changes, and very few moving part changes. About the only things that wear are the things connected to the wheels (brakes, tires). One concern is the battery, which will be discussed later.
- 4) They're lower greenhouse gas emitters. In fact, of course, the greenhouse gas (GHG) emission from actual driving is zero. However, one should consider that charging an EV is using fossil fuels indirectly, through the electric company. Based on the latest numbers, Eversource and NHEC are at 25 and 59% non-GHG sources (based on our breakdown*). Of course, if you have solar panels you can push these numbers still further to the good. Another thing is that most EVs are more efficient per mile in terms of amount of energy needed than are gas-powered vehicles. Finally, it is highly likely that the energy mix for electric companies will use less and less fossil fuels over the next few years, so that the positive impact of EVs on our carbon footprint will be increasing over time.
- 5) Two things that are nicer for others around us:
 - a. They don't emit emissions from the tailpipe, making it a lot nicer to sit at a stop light, or for joggers/cyclers/walkers in the vicinity.
 - b. They're quiet, reducing the noise that sometimes gets in the way of enjoying our incredible environment in Lyme.

Common concerns. As you will see from the list, most EV owners have not experienced these issues:

- 1) People are concerned about the range of these vehicles, and about getting stuck "running out of gas". All of the new EV models you will see on the list get above 200 miles per full charge, many of them pushing or going over 300 miles. I am finding that "running out of gas" is actually far less of an issue day-to-day, because I can plug in each night and be "full" the next morning if necessary. In practice, I go close to a week between plug-ins. Ranges for EVs seem to increase yearly, so this potential problem is fast becoming obsolete. You will see on the list that three of the EVs are listed at under 100 mile ranges. Take a look at the model years for these: 2013 and 2015. The same model now (the Leaf) is over 200.
- 2) Related to the first concern, people are worried that they will not be able to take long trips with their EV. Several people on the list do this routinely (I am defining 'long trips' as over 200 miles in a day). It does require a different mind-set, in which you will stop longer to "fill up". However, with most super-chargers, fill-ups take about 20 min and then you're back on the road. Considering that 200 miles is about 3 hrs of highway driving, it's generally a nice break anyway! More about EV charging stations and the differences between EV makes in this regard is given below.
- 3) People are concerned that the EVs won't be rugged enough for our New England winters. You will see from the list that this is not a problem, at all. EVs are certainly no less rugged than comparable models of gas-powered vehicles. Many have all-wheel drive now, and even the ones that don't do not receive complaints on this from their owners. Many EV owners use snow tires, but I myself am choosing not to for my first winter,

with the reasoning that the Tesla without snows will handle much better than my Prius with snows, because a) it is AWD, and b) it is heavier. Another issue is interior heating. In older EVs, one made a choice between turning on the heater, which eats up battery charge, or being cold. Some more modern EVs have improved greatly by using energy-efficient heat pumps. I've actually been blown away by how fast the heater, seat heater and, above all, the front window de-froster, are in my Tesla.

- 4) People are concerned that the winter performance of the battery will be very poor. It is definitely true that battery performance goes down in the winter, but most people say that this is perhaps a 20% drop in range. Because most people charge overnight, and the battery is full in the morning summer or winter, they don't notice a change in this respect.
- 5) People worry that, even if the car performs great at first, the battery will degrade over time and they will be stuck either replacing it or getting a new car in a few years. Reports I have gotten from those with 4-year old EVs say that battery performance remains close to 100%. The re-sale values of Teslas are quite high currently. Time will tell on this, it's all new, but it's clear that this is not an issue over the first several years, and batteries are very rapidly evolving in EVs. One issue with battery life is how you charge it (frequent rapid super-charging purported to reduce battery life, and only filling to 80% or less for routine use helps to preserve life).
- 6) Other concerns relate to how EVs are charged. At home, EVs can either be charged through a 110 V "Level 1" outlet (in other words, a standard outlet), or a 220 V "Level 2" outlet (in other words, the type of outlet used for your dryer). The difference in charging speed is large. I just went out to check this on my Tesla, and found out that "filling up" from its current state (44% charged) to 80% would take 5 hrs with my 220 V and over 24 hrs with the 110 V outlet. So, most people get a 220 V installed for an EV, which will add \$500-1000 to your total cost, depending on how far away from your electricity mains you want the outlet. For plug-in hybrids, many people get away with the 110 V outlet, because the battery is a lot smaller. Most people garage-house their EVs, but this is not necessary for charging purposes.

Differences between models. One question might be "what are the differences between the different EVs?" At this point, I'm really kicking myself for not asking owners their major reason for buying the EV they did. Here, I will give you my own synopsis from the list, supplemented by my own experience (I have a Tesla Model Y). Basically, I will divide this into two questions. Why do people buy Teslas, and why do people buy something other than Teslas?

- 1) Why do people buy Teslas? Teslas are more expensive, although the Model 3 (their base model) is not hugely more expensive than the others. Here are the reasons people give. Direct information about Teslas can be directed to the UV Tesla google group (uv-tesla@googlegroups.com).
 - a. Teslas are more convenient on long trips. This is due to two reasons:
 - i. The ranges for Teslas are generally higher than for other makes, maybe 40-80 miles depending on what numbers and models you are comparing.
 - ii. Tesla has more charging stations. This is because Tesla has installed its own super-chargers over quite a bit of the US, and only Teslas are able to charge there. Teslas can also use non-Tesla chargers. Having said that,

charging stations are increasing in general around the US at a reasonable pace.

- iii. Tesla does a really excellent job with their on-board navigation system, showing you where super-chargers are and planning routes that take into consideration when you will need to stop to charge.
 - b. The range of Tesla models means that you can probably find a model that will fit your needs. For example, you will see a veritable explosion of Tesla Model Ys bought in Lyme this year (five), the first year for this model. The reason is that the Model Y is a big hatchback, similar in size to a Prius (in fact, a little bigger). Basically, the major competitors only offer one model, which is a compact. Many of us chose the Model Y because we wanted to be able to haul stuff around inside.
- 2) Why do people buy something other than Tesla? The two other major makes owned in the Upper Valley are the Nissan Leaf and the Chevy Bolt. Also, one person owns a Hyundai Kona. Almost without exception, these cars are dearly loved by their owners. Here are some reasons for going in this direction:
- a. Price. These cars are definitely cheaper than Teslas. At the moment, any electric car is more expensive initially than a gas-powered car. These cars typically run in the low 30s, compared to a Tesla Model 3 which, for the most basic model, will cost you 40 or over. In addition, some of these cars are eligible for a tax write-off of \$7,500, which the Tesla isn't. The reason is that this is an incentive to the auto makers to produce electric vehicles, and once an auto maker has sold a certain number their models are no longer eligible. Tesla has passed that long ago. I believe that Chevy has passed this mark too. To date, the Leaf has not.
 - b. The availability of a local dealer. Tesla does not have local dealers. They either bring your new car to you, or you drive down to Peabody MA or elsewhere to pick it up. If you want to test drive, you have to go to Peabody. If you need repairs, Tesla comes to you (two things on that: there are very few needed repairs reported, and people have generally been happy with the 'coming to you' thing). The availability of a local dealer and local service is comforting. Both Nissan and Chevy have local dealers. Hyundai also makes an EV that a one person outside Lyme (but in the UV) owns, but Hyundai does not have a local dealer.
 - c. In terms of range, several owners of these cars do long trips with no problems.

Why people buy PIHs. This is largely because they are worried about the EV concerns I list above. To reiterate, PIHs use electric power only until the battery is drained, and then shift to the gas engine. When the electric engine is being used, you seem to have similar acceleration as an EV (this is based on a rough poll I just took of the PIH owners). A feature of this is that, for most local travel, you would not be using the gas engine at all (for instance, for a trip to the CO-OP and back, or for most commutes around here). Many PIH owners report not filling up for over 1000 miles of driving. Prius Prime owners report getting something like 150-200 miles/gallon in their normal driving mode. Many also just feel more secure for the long trips.

Lyme EV/PIH Owners. These are just compilations of some of the response categories. For the full list with more extensive commentaries from owners, you can download the Excel spreadsheet. Names and contact info are listed for owners who were comfortable with being

contacted. The owners had four choices for “Overall Satisfaction”: extremely satisfied, satisfied, dissatisfied, and extremely dissatisfied.

The list only includes Lyme residents, with one exception, which is Chevy Bolt owners. Nobody in Lyme owns a Bolt as of yet, but these are popular cars elsewhere, and I have found two people in the UV so far who were willing to contribute to the list, so I include them for that option. If others would like to add their information to the list, they can email Henry Higgs at hhiggg@gmail.com with the heading “To add to EV/PIH list” (indicate whether you would be OK with your name and e-mail address appearing on the list. It’s perfectly OK if you do not).

Electric Vehicles

Tesla

<u>Model</u>	<u>Year</u>	<u>Range per charge (miles)</u>	<u>Overall satisfaction*</u>	<u>Name</u>	<u>email</u>	<u>Town</u>
Model Y	2020	300	Extremely satisfied	Harry Higgs	hhiggg@gmail.com	Lyme
Model Y	2020	Don’t know yet	Don’t know yet			Lyme
Model S	2018	280	Extremely satisfied	Michael Prince	Mikeprince@me.com	Lyme
Model Y	2020	Don’t know yet	Don’t know yet			Lyme
Model Y	2020	Don’t know yet	Extremely satisfied	Ben Haas	benhaas@gmail.com	Lyme
Model Y	2020	250	Extremely satisfied	Matthew Prince	princeoflyme@gmail.com	Lyme
Model 3	2020	300	Satisfied	Phil Kinsler	psyfil@earthlink.net	Lyme

Nissan Leaf

<u>Year</u>	<u>Range per charge (miles)</u>	<u>Overall satisfaction</u>	<u>Name</u>	<u>Email</u>	<u>Town</u>
2013	30-45	Extremely satisfied	Toby and Stacey Summerfield	tobysummerfield@yahoo.com	Lyme
2019	240	Extremely satisfied	Tim Burdick	teburdick@gmail.com	Lyme

Chevy Bolt

<u>Year</u>	<u>Range per charge (miles)</u>	<u>Overall satisfaction</u>	<u>Name</u>	<u>Email</u>	<u>Town</u>
2020	230	Extremely satisfied	Jeremy Merritt	jeremyx@gmail.com	Hanover
2019	250	Extremely satisfied	Doug Hardy	dhardyvt@gmail.com	Norwich

Plug-In Hybrids

<u>Make/Model</u>	<u>Year</u>	<u>Range for battery(miles)</u>	<u>Overall satisfaction*</u>	<u>Name</u>	<u>email</u>	<u>Town</u>
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Toyota/Prius Prime	2020	30	Extremely satisfied	Lee and Kathy Larson	landk.larson@gmail.com	Lyme
Toyota/Prius Prime	2016	20	Satisfied	Kym Williams	kymwilli@gmail.com	Lyme
Chevy/Volt	2012	35	Extremely satisfied	James Graham	jamesg@blue-bottle.com	Lyme
Chevy/Volt	2017	53	Extremely satisfied	Niles Donegan	bicoid@gmail.com	Lyme
Subaru/Crosstrek	2019	20	Extremely satisfied			Lyme
Mitsubishi/Outlander	2018	25	Satisfied	Molly Betournay	mollybetournay@gmail.com	Lyme

*we include solar, wind, hydro, landfill gas, geothermal, fuel cells and energy storage as non-GHG sources. We include municipal trash, wood, biomass and liquid biofuels as other renewables (in addition to the non-GHG sources).