

Driving electric – the journey so far

Erin Cashion

I purchased my 2015 Nissan Leaf SV on December 16, 2017 – a Saturday. The passing of the holidays marks my official survival of my first year of driving electric, and I'll never go back.



← *Ziggy Stardust. She plays guitar with the spiders from Mars*

Humble Beginnings

The Leaf is the third car I've owned. My first vehicle was a 1989 Geo Prizm hatchback, purchased used by my parents as a graduation gift for \$3400 cash. It didn't have a tape deck, but it held a surprising amount of cargo, it was great in the snow, it got 32–40 MPG, it was a lot of fun to drive (stick shift), and its rear end looked like something dug up in the desert outside of Roswell. I loved her dearly. She was dubbed The Enchantmobile by an Ohio friend after he saw the state slogan on my New Mexico license plate ("the Land of Enchantment").

The Enchantmobile, after 8" of snow in Vermont →



The Prizm was a great car, but I secretly wished I was driving something more eco-friendly. I identified as a fairly rabid environmentalist compared to the average U.S. citizen, but not among other environmentalists (the same way I'm considered a liberal in Ohio, but a moderate in Seattle). I was

deeply concerned about climate change well before Al Gore's documentary was released. At that time, in the late 90s and early 2000s, hybrids were still relatively new and untried tech. Although GM launched an electric car in 1996, few people had heard about it, and I wouldn't until much later. (The history of electric cars actually goes all the way back to the mid-19th century.)

All the data suggested that continuing to drive an existing car emitted less carbon than buying a new one, even if it didn't get great gas mileage. I didn't have the money for an upgrade anyway, so I installed a second-hand CD player in the Enchantmobile (all by myself!) and kept driving it.

Through college and a series of low-paying and far-flung wildlife tech jobs, the Honda and Toyota hybrids became more popular. The Tesla Roadster was released the year I started grad school and the first Leaf was released the year I finished. Two of my closest friends bought new Honda Insights that same year. The first Model S hit the market the year after that. Teslas were still only for rich (i.e. solidly middle class) people, but the sea change had happened. It was only a matter of time before EVs hit the mainstream.

After grad school, I still couldn't buy even a used Prius; and anyway the trusty old Prizm was still running ok. I assuaged my greenie guilt by driving as little as I had in grad school, commuting to my job by bike or foot and reserving my car for only dire needs and long trips, and I dreamed of some utterly unimaginable future when I might be able to buy a Tesla.

Saying goodbye →



But in early 2014 the Enchantmobile turned 25, and finally took a turn. The engine was solid, but all of the plastic parts were brittle from her years in the desert sun, and repairs to other parts of the vehicle were getting more frequent and expensive. The last thing I replaced was the alternator, and after that I felt like I couldn't trust her anymore. I sold her to a mechanic friend for \$200 as a project car, and it broke my black little heart. I took possession of my mom's 2003 Corolla S, "Wanda", which she had purchased new.



← Wanda

Searching for the Automotive Glass Slipper

A few months later, I finally landed a real grownup job (i.e. the kind that has paid time off and health insurance). In the grand scheme I still wasn't making real bank, but for the first time in my life I was able to put some money aside – enough to buy a used-but-relatively-new car in a few years. (Due to my low tax liability, the \$7500 federal tax credit on new EVs is essentially useless to me.)

I had only two criteria: It had to get over 50 MPG, and it had to be a hatchback.

Hybrids had been on my mind for a long time, so that's where I started. I only knew about the Insight and Prius, but I was dismayed that the efficiency hadn't really improved in the 15 years they'd been around. Insights were still only getting MPG in the high 40s, and Priuses weren't much greater. It was damn disappointing that I'd waited all that time for the tech to improve, and it really hadn't. I didn't want a Prius anymore, I wanted something **better!**

Even with the grownup job, Teslas were still way beyond my means, but Hyundai was slated to release the new Ioniq hybrid sometime in the next year (a.k.a. "The Prius Killer"). And there were whisperings of other tantalizing alternative vehicles to come, including the Model 3. I sat on the decision for another year to see what else would come onto the market.

The next fall, I was able to test drive the Ioniq hybrid and I liked it quite a lot, with its smooth interior made of recycled materials, agreeable driving experience, and impressive efficiency and range (650+ miles!); but I balked at buying a new car. I fell down countless internet rabbit holes and read endless reviews on Car and Driver and discovered that there were now *many* other alternative options in the used market besides the Insight and Prius.

Among those I noticed was the Chevy Volt, totally new to me despite being in its 6th model year. I test drove one as well as the brand-new Bolt BEV, of which I was also totally unaware until I saw it on the dealership's website. I was tantalized by the Bolt, but a \$40k car is just as beyond my means as an \$80k car. I even test drove a Prius to make sure I didn't like it, and walked away satisfied. I still *really* wanted a Tesla. In truth the Model S and X were just too much car, but the idea was incredibly compelling so I test drove one anyway – a model S – to find out what I was missing.

I didn't fully realize it at the time, but after that experience, spending money on another combustion engine was off the table.



The car that sent my soul into outer space →

Enter: The Leaf

Despite their relative affordability, I had mostly ignored the Leaf up to that point. They are a pretty goofy looking car, what critics call “polarizing” – like our current political climate. Being accustomed to 360+ miles per fillup, an 80ish mile range sounded like a joke to me. It would *not* replace the Corolla, but it would meet 90% of my driving needs, so maybe that was good enough? I took one for a test drive to see if it felt as weird to drive as it looked on the outside.

It didn't, so I started watching the listings at my local Nissan dealership with a kind of dull resignation. It wasn't *really* what I wanted, but my glass slipper just didn't exist yet. After nearly 2 decades of waiting for something better to come along, I felt a real urgency to stop driving a fossil car. So it had to be a Leaf. When a blue one with the coveted gray interior popped up about a month later – very similar to my old beloved Enchantmobile! – I had a decision to make.

The shared garage at our rented townhouse didn't have power, so I would have to use public charging exclusively until power was installed. Knowing landlords, that could take anywhere from months to never, and we weren't likely to be able to buy a house anytime soon. I despised going to the gas station, but how much worse would I feel killing 2 hours while my car charged? I was paralyzed by this prospect.



And that's how I passed 4 hours on a couch at a Nissan dealership staring into space and struggling with executive dysfunction, while my absolute saint of a partner sat with me and made sure I stayed hydrated and fed. In the end, I finally signed the paperwork and plunked down a deposit before driving away silently.

← The face of buyer's remorse

A Brief Adjustment Period

My first week or so with the Leaf was difficult. I was consumed with buyer's remorse and range anxiety so keen it was almost a physical sensation. The climate controls were unfamiliar, I didn't know what any of the buttons did, and noticing the seatbelt warning light for the first time caused a moment of searing panic. After decades of troubleshooting the Prizm's foibles on a budget, I had a familiarity with ICE cars that was, in a way, a source of confidence and comfort. When something failed on an ICE car, I had a good idea what was wrong and how serious it was (i.e. how long I could put off fixing it). But the inner workings of EVs were entirely alien to me. I didn't even know how the Leaf **worked**. I was constantly digging for the manual. I even considered returning it and going back to Wanda, who I had hung onto for road trips and as a backup for my partner's increasingly flaky Saturn.

After gingerly using the DC fast charger at Easton the first time, the stress started to dissolve. I finally noticed that the instant acceleration makes it extremely fun to drive, making it just as good as a Tesla – or at least good enough for my purposes. I used every opportunity to engage in “stoplight zoomies”, and then I (mostly) stopped when I read that it eats the tires and is bad for the battery. It's nimble and responsive, and so quiet that noises coming from outside the cabin are sometimes disorientingly loud. The heated steering wheel and seats seemed like a frivolity at first, but it has made such a huge difference in my wintertime comfort that I now consider it an essential feature. I came to look forward to my charging outings as an excuse to take care of errands, and I got a MoviePass so I could watch movies while I charged.

A couple months into my Leaf ownership, I purchased an OBDII dongle and downloaded the LeafSpy app so I could agonize about every 0.01% of battery health change. I don't know that I would recommend LeafSpy to everyone, but as a recovering data nerd it has been interesting/excruciating to see how the battery health (SOH) goes up and down relative to usage patterns, charging method, energy units (or GIDs) used, and time of year.

After 6 months of public charging, our landlord ran power out to the garage, and I purchased a Clipper Creek Level 2 charging station – solving my imaginary problem for good.



10 months of LeafSpy data fun. Starting SOH: 94.85%. Ending SOH: 92.84%

Minor Gripes

All told, I only have two gripes about the Leaf: the range, and the navigation system.

The car is a delight to drive and very comfortable, so it makes me sad that taking a long road trip in it is impractical. Even if DC fast charging stations were as abundant as gas stations, road trips would still take almost twice as long in the Leaf. Ambient temperature adds another variable to trip planning, as range declines significantly in lower temperatures.

In November I took the Leaf on a 200 mile round trip into an unfamiliar area with no fast charging. One of the charging stations on this route didn't work and I was not allowed to charge at another, so on both occasions I had to crawl slowly to the next one. On my way back home the temperature plummeted, so I had to stay under 40mph and use back roads to make sure I had enough juice to get home (which was too slow for some tailgating gassholes!). The total time of the trip, including these snafus and all of the charging stops (5 in total), was **13 hours**. Thank goodness for smartphones and the Plugshare and Chargepoint apps! The trip would not have been possible without them.

Secondly, the map screen is handy for general wayfinding, but the navigation is really annoying and not intuitive. There doesn't appear to be an easy way to exit the navigation while in the middle of a route. You have to go through submenus to quit the route (hazardous while driving), or leave it on and endure it yelling at you endlessly. I only used it once to find a charging station during that first hellish week, and haven't since. I solved this issue by putting a magnetic mount on my air vent so I can use the Google Maps and PlugShare apps on my smartphone to navigate and find charging stations.



← Available on Amazon in packs of 2

Another thing: unlike most other EVs, the Leaf lacks any kind of active cooling mechanism for the lithium-ion traction battery. Excessive heat degrades the batteries and causes their capacity to decline, which is why most other EVs were engineered with fluid-cooled battery packs. It's not a significant issue

here in Ohio due to our relatively mild climate so it doesn't count as an official gripe, but this design flaw will impact my future EV purchases.

Converting the Masses

I got a pretty good deal on the Leaf, but it's still the most expensive thing I've ever purchased, and it took me years to save up for it. I sometimes joke that I ate ramen for 10 years to be able to afford it, but it's not much of an exaggeration. That said, most people don't have the luxury of joking about the compromises they made just to buy a used EV, and most people aren't rabid environmentalists like me. Telling the average U.S. citizen that climate change is the most significant threat we have ever faced as a species won't convert them to EVs, because Maslow's hierarchy applies: the average citizen is struggling to meet just their basic needs.

For folks already juggling significant financial burdens like health care costs, dependents, increasing rent, and (if they're lucky) student loans, EVs are just not on the radar. For folks who aren't struggling as much, equivalent gas cars are still significantly cheaper, more widely available, more familiar, and come in more shapes than sedan and hatchback. In short, EVs are only accessible or desirable to privileged people like me, with college educations, green agendas, and/or more-than-minimum-wage jobs. EV adoption in the US will not happen on a large scale until that changes.

Wages aren't likely to increase anytime soon, so EVs must become an easy, accessible, and desirable choice for the working class. That means they have to 1) be able to go more than a couple hundred miles per charge, 2) come in truck and SUV shapes, and 3) cost less than \$4000 used. In addition, the charging infrastructure outside of major metro areas for non-Tesla EVs must be improved significantly.

The good news is that the next few years are going to see an explosion of new EVs coming onto the market, and a few years after that, we'll start to see these changes taking shape. I fear it will be too little too late, but the change is coming just the same. What a time to be alive!

Conclusion

On the occasions when I drive Wanda now, it feels like I'm driving an asteroid. It seems terribly loud at highway speeds. I really notice the odor of exhaust and the vibration. The handling feels stiff, and overall it just feels clunky and unpleasant. I can't wait to get out. I try to take her for a spin a couple times a month to keep the 12V conditioned, but she mostly just sits on the curb now. It's really kind of sad.

I bought the Leaf as a stop gap, but I failed to anticipate how quickly I would become attached to the dang thing and I now use any excuse to "do a Leaf". I've become accustomed to the car's range and learned a lot about its battery health and upkeep. The first winter, I avoided using the heat as much as possible to save energy. This winter I don't hesitate to use the heat when I want it, not only because I can charge at home, but also because the range loss just doesn't freak me out the way it used to.

Using public charging wasn't the obstacle I imagined; in fact, I usually didn't have my errands finished by the time the car was done. All that worry over nothing!

Anyone accustomed to driving a gas car is familiar with the dreadful sensation you get when you're driving along and smell a solvent smell or notice a new noise, and try to discern if it's coming from your car. Whatever that smell or noise is, I know it very likely isn't coming from my car, because it doesn't have 85% of the parts I had to replace repeatedly in my two gas cars. That's one of the more subtle and

unquantifiable joys of driving an EV. So far the only repair I've had done was the rear wheel bearings, the noise from which was VERY obvious thanks to the lack of engine noise, and the replacement was covered under the 5-year powertrain warranty.

After a year with an EV, I'm very happy with it. For all of my (two minor) gripes, the Leaf is ideal for my driving habits and I love everything about it, from its froggy little face to its bulbous rear end. Its agility and responsiveness make it a total joy to drive. The aging Corolla and Saturn, both needing major and expensive repairs over the past several years, increasingly feel like albatrosses around our necks. After a year of being part of my life with Ziggy, my partner is now shopping for a Volt PHEV as his stop-gap car while we wait for the EV revolution to gain more momentum.

In the meantime, I'll keep driving my Leaf. 🌿



← *My first Tesla!*