

## EV Myths: Busted!

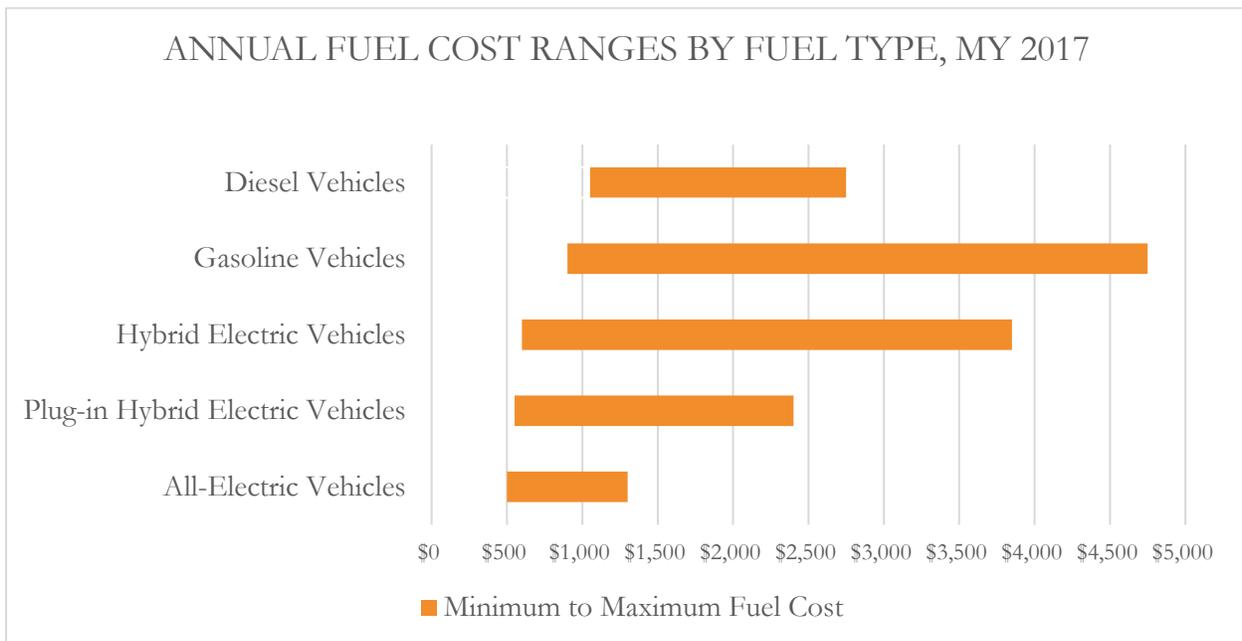
### 1. Myth: EVs can't go very far, and I am afraid I will end up stranded with a dead battery.

**Busted:** Early EVs had limited range, but several things have changed that eliminate this concern. The most important change is the new generation of EVs which travel three-to-four times as far on a single charge as earlier vehicles - more than enough to cover typical NJ driving. The Chevy Bolt, for example, typically provides about 238 miles of travel, far in excess of the approximately 40 miles most people drive each day. There are plug-in electric hybrid vehicles (PHEVs) with a small gasoline engine that automatically engages if the electric range is exceeded, which completely eliminates concerns about being stranded. In rare cases, where longer driving is needed, public charging stations are becoming available to make charging convenient. Another important change is that new EVs are more affordable. Affordable cars with greater range combined with increased public charging, now make EVs a practical choice for many drivers. This "new reality" is being confirmed by consumers: most new EV owners find that their concerns about range disappear once they become familiar with their EV's travel capabilities.

Make and Model	Pure-Electric Range
Chevrolet Bolt EV	238
Tesla Model S	210-351
Tesla Model X	200-257
Hyundai Ioniq Electric	124
Ford Focus Electric	115
Nissan LEAF	107
BMW i3 REx	97
Kia Soul EV	93
Mercedes-Benz B250e	87
Volkswagen e-Golf	83
BMW i3	81-114

## 2. Myth: EVs are just for rich people - they are very expensive compared with traditional gasoline vehicles.

**Busted:** The first EVs were expensive, but new EVs are now affordable for many drivers: newly announced vehicles from major suppliers like Chevy, Nissan, and others, offer vehicles with MSRPs close to the average US vehicle cost. Federal incentives - currently a \$7,500 tax credit - can make new EVs even less expensive than the average car purchase. Vehicle costs should also factor in the cost to operate the car. EVs can be "fueled" with electricity, typically for 5-cents a mile or less, while conventional cars on the road today are paying about 11 cents per mile to run on gasoline. EVs also have minimal maintenance costs since there are fewer moving parts and fluids compared with a conventional vehicle. The lower cost and reduced operating expense of newly available EVs make them competitive with average vehicle pricing today, and the economics are improving as battery costs decline.



Graph above based upon:

- Vehicle driven 15,000 miles per year.
- 55% city driving, 45% highway driving.
- \$2.33 per gallon for regular unleaded gasoline, \$2.82 per gallon for premium, \$2.57 per gallon for diesel, and \$0.13 per kilowatt-hour for electricity.
- PHEV fuel cost estimates are based on blended gasoline/electricity costs.

Source: <https://energy.gov/eere/vehicles/fact-968-march-13-2017-all-electric-vehicles-have-lowest-estimated-annual-fuel-cost>

3. **Myth:** There are not as many public EV charging locations as gas stations, and that means I will have difficulty charging my EV while away from home.

**Busted:** EVs won't refuel on electricity the same way conventional cars refuel on gasoline - so comparison with gas stations is not really relevant. Most EV "fueling" will happen at home, and the need for a charge while away from home at a public charger will be relatively rare. If needed, public chargers are becoming widely available, and typical charge times are becoming much shorter. Charging at home greatly reduces the need for refueling at a station - like we are used to with gasoline cars - but if needed, public EV chargers are making an electric "fill up" on the road similar to the time it takes to fill up a car with gas.

4. **Myth:** EVs are just fancy golf carts, not real cars that meet my travel needs.

**Busted:** The modern EV is a safe, practical, and fully featured vehicle that support the needs of most drivers without compromise. They are compelling vehicle designs that just happen to run on electricity rather than gasoline, and many include state of the art technology features. In fact EVs from Chevy, Tesla, and Nissan have been recognized recently as "car of the year," independent of the fact that they are electric cars. EV drivers do not need to sacrifice their lifestyle or travel choices with the EVs available today. These modern EVs provide the vehicle design and driving range needed to fully meet typical driver expectations. And, the biggest surprise of all, they are really fun to drive, offering exceptional performance!

<u>Electric Vehicle</u>	<u>0-60 mph time (seconds)</u>
2016 Chevrolet Volt	8.4
2017 BMW i3	6.6
2017 Chevrolet Bolt	6.4
2016 Tesla Model S 90D	4.2
2016 Honda Fit EV	8.5
2017 Nissan Leaf	10.4



2016 Tesla Model S 90D



2017 Chevrolet Bolt

## 5. Myth: Only tree-huggers that care about environmental impact are interested in EVs.

**Busted:** It is true - positive environmental impact are a big benefit of driving an EV. In NJ, every electrically fueled mile is 70-80% cleaner than a gasoline fueled mile in both CO2 emissions and other pollution. However, many EV drivers today love their EVs for other reasons given the benefits of EV ownership are many: lower operating costs, and fun to drive with all the latest high tech features. Additionally, with more EVs on the road, there are aggregate impacts that really matter - national reductions in petroleum use, more positive trade balance, cleaner air in our urban centers (where vehicle pollution is the worst), and lower electricity costs for everybody through increased use of the public grid. Some EVs can even be used as a back-up generator to power the home if the public grid is down. EVs are also at the forefront of major changes in how America travels, including self-driving cars and new car-sharing arrangements. The bottom line is modern EVs bring many advantages, in addition to major environmental benefits, and are leading a major transformation in the role a vehicle plays in daily life, our national economy, and the environment.

What are the Benefits of Electric Drive Vehicles?			
Benefits	Hybrid Electric Vehicles	Plug-In Hybrid Electric Vehicles	All-Electric Vehicles
<b>Fuel Economy</b> 	<b>Better than similar conventional vehicles</b> The fuel savings of driving a Honda Civic Hybrid versus a conventional Civic is about 38% in the city and 20% on the highway.	<b>Better than similar HEVs and conventional vehicles</b> PHEVs use 40% to 60% less fuel than conventional vehicles and permit driving at slow and high speeds using only electricity.	<b>No liquid fuels</b> Fuel economy of EVs is usually expressed as cost per mile, which is discussed below.
<b>Emissions Reductions</b> 	<b>Lower emissions than similar conventional vehicles</b> HEV emissions vary by vehicle and type of hybrid power system. HEVs are often used to offset fleet emissions to meet local air-quality improvement strategies and federal requirements.	<b>Lower emissions than HEVs and similar conventional vehicles</b> PHEV emissions are projected to be lower than HEV emissions, because PHEVs are driven on electricity some of the time. Most categories of emissions are lower for electricity generated from power plants than from vehicles running on gasoline or diesel.	<b>Zero emissions</b> EV emissions do not come from the tailpipe, so EVs are considered zero-emission vehicles. However, emissions are produced from the electric power plant. Most categories of emissions are lower for electricity generated from power plants than from vehicles running on gasoline or diesel.
<b>Fuel Cost Savings</b> 	<b>Less expensive to run than a conventional vehicle</b> Because of their improved fuel economy, HEVs usually cost \$0.05 to \$0.07 per mile in fuel, compared to conventional vehicles, which cost \$0.10 to \$0.15 per mile in fuel.	<b>Less expensive to run than an HEV or conventional vehicle</b> When running on electricity, a PHEV can cost \$0.02 to \$0.04 per mile in fuel (based on average U.S. electricity price). When running on gasoline, the same vehicle can cost \$0.05 to \$0.07 per mile in fuel, compared to conventional vehicles, which cost \$0.10 to \$0.15 per mile in fuel.	<b>Less expensive to run than conventional vehicles</b> EVs only run on electricity. A typical electric vehicle costs \$0.02 to \$0.04 per mile for fuel (based on average U.S. electricity price).
<b>Fueling Flexibility</b> 	<b>Can fuel at gas stations or public alternative fueling sites</b>	<b>Can fuel at gas stations or charge at home or public charging stations</b>	<b>Can charge at home or public charging stations</b>

Source: Alternative Fuels and Advanced Vehicles Data Center, [www.afdc.energy.gov/afdc/vehicles/electric\\_benefits.html](http://www.afdc.energy.gov/afdc/vehicles/electric_benefits.html)

With these myths busted, we hope you walk away armed with the following information:

1. EVs and the public charging infrastructure have changed dramatically over the last two years.



2. EVs are attractive, high tech, and a practical and affordable choice for many drivers.



- EVs deserve a fresh look from any driver motivated by economics, performance, and environmental benefits.



Next steps: take an EV for a test drive!