

# Battery-Electric Vehicles (BEVs)



Electricity is a scalable, domestic source of energy that is low and stable in price and produced from both non-renewable (coal, natural gas) and renewable sources (solar, wind). Battery-electric vehicles (BEVs) only run on electricity from a battery pack charged by an electric power source and then stores that energy to power an electric motor – all while producing no direct tailpipe emissions. Overall, electric vehicles can help increase energy security, improve fuel economy, lower fuel costs, and reduce emissions.

## Sample Battery-Electric Vehicle Models



2019 Nissan Leaf



2019 Chevrolet Bolt

Battery-Electric Vehicle Comparison		
Model	2019 Nissan Leaf	2019 Chevrolet Bolt
Electric range on a full charge	150 miles	238 miles
Battery size	40 kWh lithium-ion battery	60 kWh lithium-ion battery
Charge Time for full charge (Level 2/240V AC)	7.5 hours	9.3 hours
EPA-estimated MPGe combined city/highway	119	112
Starting MSRP	\$29,990	\$36,620
After federal tax credit	\$22,490	\$29,995

The Nissan Leaf and Chevrolet Bolt are both battery-electric vehicles. The Bolt runs on a 40-kWh battery while the Chevy Bolt runs on a 60-kWh battery allowing it to have a higher driving range of 238 miles on a full charge compared to the Leaf's 150 miles. Both heavy-duty and light-duty EVs are commercially available, contact your local dealer for more info on local deals and pricing. Although EVs are typically more expensive than conventional and hybrid vehicles, some cost can be recovered through fuel savings, a federal tax credit, or state incentives.

## Business Case/ROI Scenario for Battery-Electric Vehicle (BEV)

Gasoline vs. Electric Cost Comparison for Light Duty Battery-Electric Vehicle			
Gasoline		Electric	
Avg. Base Cost for Gas Vehicle	\$25,000	Avg. Incremental Cost for BEV	\$5,000
Avg. Annual Fuel Use (gallons)	485	Avg. Annual Fuel Use (kWh)	4,350
Annual Mileage	15,000	Annual Mileage	15,000

Price Levels	Low Fuel Price		Median Fuel Price		High Fuel Price	
	Gas (\$2.54)	Electricity (\$1.06)	Gas (\$2.77)	Electricity (\$1.06)	Gas (\$3.57)	Electricity (\$1.08)
Avg. Annual Fuel Costs	\$1,232	\$138	~\$1,343	~\$145	\$1,731	~\$141
Avg. Annual Fuel Cost Savings	\$1,094		\$1,198		\$1,590	
Payback Period	4.6 years		4.2 years		3.1 years	

The vehicle cost comparison between a regular gasoline light-duty vehicle and a light-duty electric vehicle shows a positive fuel costs savings amount that will provide a payback of the incremental \$7,000 purchase price under a low, median and high fuel price scenario.

### EV Charging Station Locator

Hundreds of EV charging stations are available in the United States. Visit the U.S. Department of Energy Alternative Fuels Data Center to find public charging stations in the United States and Canada: [https://afdc.energy.gov/fuels/electricity\\_stations.html](https://afdc.energy.gov/fuels/electricity_stations.html)

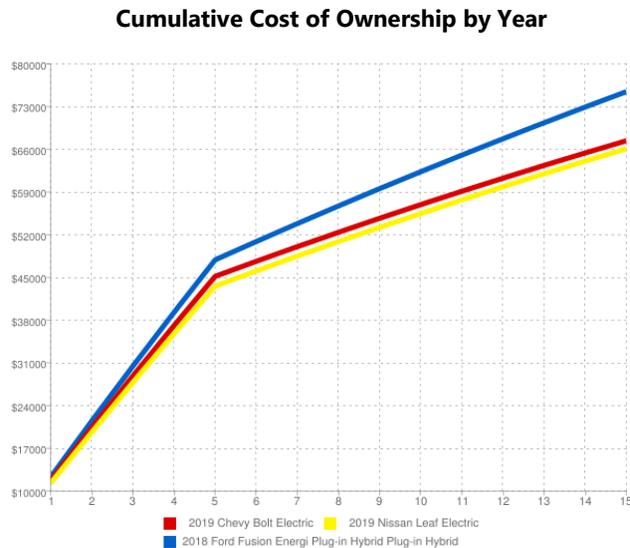


### Case 1: Federal EV Tax Credit

The federal government and several states offer financial incentives, including tax credits, for lowering the up-front costs of plug-in electric vehicles (BEVs, PHEVs). The federal Internal Revenue Service (IRS) tax credit is for \$2,500 to \$7,500 per new EV purchased for use in the U.S. The size of the tax credit depends on the size of the vehicle and its battery capacity. This tax credit will be available until 200,000 qualified EVs have been sold in the U.S. by each manufacturer, at which point the credit begins to phase out for that manufacturer.

Tax Credit Amount	Vehicle	Starting MSRP	Price after tax credit
\$7,500 Federal EV Tax Credit	2019 Chevy Bolt	\$36,620	\$29,120
\$2,500 Federal EV Tax Credit	2019 Nissan Leaf	\$29,990	\$27,490
\$4,000 Federal PHEV Tax Credit	2018 Ford Fusion Energi PHEV	\$33,120	\$29,120

\*The graph below shows the cumulative cost of ownership by year of each vehicle with their respective tax credit applied. This graph was generated from the Alternative Fuels Data Center Vehicle Cost Calculator.



**Utility EV rebates may or may not be able to be stacked on top of dealership rebates and federal tax credits.**

<sup>1</sup>For the AEP Ohio & Nissan Leaf rebate, the offer cannot be combined with any other Nissan special lease, APR or rebate. Owners may also be eligible for up to \$7,500 in federal tax incentives.

<sup>2</sup>Cannot be combined with other Nissan special incentives. This special offer is being provided by Nissan to Duke Energy customers for a limited time and is not being extended.

### Case 2: Utility EV Rebates

Depending on where you live, you may also be eligible for EV incentives from your utility. Monetary and non-monetary incentives may include additional tax credits, vehicle or infrastructure rebates or vouchers, vehicle registration fee reductions, loans, special low-cost charging rates, and high-occupancy vehicle lane exemptions.

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