

All-Electric Vehicles

All-electric vehicles (EVs) run on electricity only. They are propelled by one or more electric motors powered by rechargeable battery packs. EVs have several advantages over conventional vehicles:

- **Energy efficient.** EVs convert over 77% of the electrical energy from the grid to power at the wheels. Conventional gasoline vehicles only convert about 12%–30% of the energy stored in gasoline to power at the wheels.
- **Environmentally friendly.** EVs emit no tailpipe pollutants, although the power plant producing the electricity may emit them. Electricity from nuclear-, hydro-, solar-, or wind-powered plants causes no air pollutants.
- **Performance benefits.** Electric motors provide quiet, smooth operation and stronger acceleration and require less maintenance than internal combustion engines (ICEs).
- **Reduced energy dependence.** Electricity is a domestic energy source.



EVs have some drawbacks compared to gasoline vehicles:

- **Driving range.** EVs have a shorter driving range than most conventional vehicles —although EV driving ranges are improving. Most EVs can travel more than 100 miles on a charge, and some can travel in excess of 200 or 300 miles depending on the model.
- **Recharge time.** Fully recharging the battery pack can take 3 to 12 hours. Even a "fast charge" to 80% capacity can take 30 min.



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expensive, and replacing them may be costly if they fail.

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