Plug In America

EV Safety Fact Sheet

As electric vehicles (EVs) gain momentum and popularity, some detractors have created myths regarding their safety. Experts conclude that EVs are just as safe or safer than ICE vehicles and are less prone to fires and rollover crashes.

Rigorous safety testing

- EVs generally perform better than ICE vehicles in crash tests and score overall higher ratings from the Insurance Institute of Highway Safety (IIHS)
- All passenger vehicles, including EVs, sold in the U.S. must meet Federal Motor Vehicle Safety Standards and must undergo an extensive, long-established testing process.
- EV battery packs must go through additional testing.

Battery durability

- Battery packs are in sealed shells and are tested for conditions such as overcharge, vibration, extreme temperatures, short circuit, humidity, fire, collision, and water immersion.
- EVs are designed with additional safety features that shut down the electrical system when they detect a collision or short circuit.
- Because batteries are generally placed widely within the frame along the bottom of the vehicle, EVs tend to have a lower center of gravity than conventional vehicles, making them more stable and less likely to roll over.
- Batteries are also unlikely to be damaged in all but the most severe crashes. The EV battery can only be damaged if the car's steel frame itself is damaged.

Less prone to fires than ICE vehicles

- EVs catch fire much less often than ICE vehicles—they are about 60 times less likely to catch fire than ICE vehicles. ICE vehicle fires are extremely common in the U.S. They are estimated to happen 500–600 times on average every day.
- Because batteries are protected by the car's frame, they generally will only ignite in the most severe crashes.
- In the rare situations when EV batteries ignite, they can be more difficult to extinguish, although they do not explode like gasoline fires.
- The National Fire Protection Association has EV fire safety protocols and training resources available to guide first responders.

Less maintenance than ICE vehicles

- The battery, motor, and associated electronics require little to no regular maintenance.
- There are fewer fluids, such as engine oil, that require regular maintenance.
- Brake wear is significantly reduced due to regenerative braking.
- There are far fewer moving parts relative to a conventional gasoline engine.
- Consumer Reports estimates that maintenance costs are 50% less for EVs than ICE cars.

Sources: sierraclub.org/evguide/sites/content.sierraclub.org.evguide/files/0812%20EV%20FactSheet_07_web.pdf, afdc.energy.gov/vehicles/electric_maintenance.html, www.nhtsa.gov/battery-safety-initiative, www.hyundai.com/eu/electrification/owning-an-electric-vehicle/electric-car-safety.html, www.usfa.fema.gov/downloads/pdf/publications/electric-vehicle-safety-handout.pdf, cleantechnica.com/files/2018/07/CleanTechnica-EV-Safety-Advantage-Report.pdf, climatenexus.org/climate-issues/energy/electric-car-safety/, www-esv.nhtsa.dot.gov/Proceedings/24/files/24ESV-000318.PDF, www.autoinsuranceez.com/gas-vs-electric-car-fires/, cleantechnica.com/2018/12/30/electric-hybrid-cars-have-better-iihs-ratings-than-gasmobiles/, climatenexus.org/climate-issues/energy/electric-car-safety/, www.govinfo.gov/content/pkg/CFR-2017-title49-vol6/xml/CFR-2017-title49-vol6-part571.xml, www.nfpa.org/EV