Electric Vehicle Basics

2012

Electric Auto Association (EAA)

"Promoting the use of electric vehicles since 1967"

Solectria Force

Ford Ranger

GM EV1

Toyota RAV4-EV

Tesla Roadster

Chevy Volt

Nissan LEAF

Why Electric Vehicles?

Electric vehicles (EVs) produce zero tailpipe emissions and up to 99% lower emissions than gasoline and diesel vehicles. EVs help America reduce its dependence on oil.

Thousands of EVs are registered across the country. Today's battery technology enables full-function EVs ranges of 80-300 miles per charge traveling at highway speeds. An EV fits perfectly into multi-car households; the EV for everyday travel, and a hybrid or conventional car for extended trips. Studies have shown that 80% of commuters travel less than 40 miles per day. How about *you*? Could 100 mile range *and* convenient refueling at home meet *your* daily driving needs?

There is a market for EVs – both for performance and efficiency! EVs are high performance vehicles and priced competitively when measured against comparable gas-powered vehicle lifetime costs. Fuel and maintenance expenses for EVs are significantly lower. An electric drive motor provides as many as 1,000,000 miles of service. The initial purchase price for EVs will continue to drop as production volume increases – Henry Ford knew that long ago! In the meantime, EV owners enjoy the financial benefits of significantly lower fuel and maintenance expenses.

EVs are clean, efficient, and utilize technology that is readily available today! Demand a plug on your next car.

EVs, Hybrids, and Fuel Cell Vehicles

The electric drive vehicle technologies include: electric vehicles (EV), hybrid gas-electric vehicles (hybrid), and fuel cell vehicles. EV technology is at the core of all three. The difference between EVs, hybrids, and fuel cell vehicles is the method used to generate the electricity to power them.

The batteries in an EV are charged using standard household electricity and electricity captured by regenerative braking (while driving). EVs can be 'filled-up' at home via the existing electrical grid. EVs produce zero emissions while driving. If the electricity comes from renewable resources, they cause no emissions at all!

Hybrid gas-electric vehicles use both an electric motor and a conventional gas-powered engine. Hybrids generate tailpipe emissions, but less than their gas-only counterparts. The batteries in conventional hybrids are charged internally by electricity generated by the gas engine and electricity captured by regenerative braking. Thus, conventional hybrids can only be 'filled up' at the neighborhood gas station. However, 'plug-in' hybrids also allow the batteries to be charged at home by plugging in, and offer a limited all-electric range before the gas engine is needed at all!

Fuel cell vehicles use an onboard fuel cell to generate electricity to power the electric motor. Although fuel cell vehicles are emissions free, they are about 4 times less efficient than EVs, and remain decades away from a commercial market – due to high cost and a lack of infrastructure for distributing and dispensing hydrogen into vehicle.

About the Electric Auto Association

The EAA is a non-profit educational organization that promotes the advancement and widespread adoption of electric vehicles; organizes public exhibits and events of electric vehicles to educate the public on the progress and benefits of electric vehicle technology.

"EAA EV drivers have logged over 14 million clean miles"

BMW ActiveE

Coda Sedan

Fisker Karma

Ford Focus EV

Mitsubishi i-MiEV

Th!nk City

Toyota Rav4-EV

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Earth's Finite Resources

US oil production has been in severe decline since 1970[1]. The US (4% of the earth's population) consumes 21% of the world's total oil production[2]. Oil is getting more expensive to produce and harder to find. The days of cheap oil are over[2].

Electric Vehicle Information

Why EVs?

EVs offer the best and cheapest alternative to petroleum-based transportation. Driving an EV helps improve the quality of life for all Americans. They are fun to drive. It is patriotic!

Can EVs go fast?

Yes! For real speed, check out the National Electric Drag Racing Association (nedra.com).

EVs just move the pollution, don't they?

No. Even including the effects of electricity generation, the California Air Resources Board reports that ***EVs are 90% cleaner than the newest and cleanest conventional gas-powered car vehicles***[3] – not including the environmental impact of oil refining! EVs are a proven "clean and green" choice.

Are EVs practical?

Yes. Studies show that 80% of daily commuting is less than 40 miles. Internal combustion vehicles generate the greatest amount of pollution during the first 20 minutes of operation. EVs require no warm-up period and are the perfect transportation option.

Where do you "fill up" an EV?

EVs are primarily charged at home overnight, using surplus (low-cost) electricity. Popular websites to find public charging locations include: regargo.com and plugshare.com; with apps for smartphones.

Are EVs expensive to purchase?

Not when you consider the total lifetime costs[4]. Many states and the federal government recognize this low-volume pricing issue and offer incentives to reduce the initial cost of buying or leasing an EV. 2012 is a breakthrough year with new production EVs and plug-in hybrids entering the market.

Are EVs expensive to operate?

No. Production EVs cost between 2-3 cents/mile to operate; and are nearly maintenance free (no smog checks, oil changes, or tune-ups). At $2.00 per gallon, a gas-powered car must average 67 mpg to match this! And today's gas prices are $4.00/gal!

Do batteries pollute landfills?

More than 97% of *all* battery lead is recycled[5]. For lithium-ion batteries, it's estimated that packs will still have 80% capacity when retired from automotive use. The packs can be reused for stationary storage of power produced during off-peak periods by wind turbines and solar generation stations before eventually being recycled. [6]

Electric Auto Association

[1] http://www.washingtonpost.com/blogs/ezra-klein/post/oil-production-is-booming--but-for-how-long/2012/01/26/gIQApHGxSQ_blog.html
[2] http://www.pickensplan.com/theplan
[3] http://www.arb.ca.gov/msprog/zevprog/factsheets/evsummary.pdf
[4] http://tinyurl.com/8dchqzb
[5] http://www.batterycouncil.org/LeadAcidBatteries/BatteryRecycling/tabid/71/Default.aspx
[6] http://www.edmunds.com/fuel-economy/what-happens-to-ev-and-hybrid-batteries.html