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Setting the Record Straight: The Facts About Electric Vehicles

There are a number of myths floating around today about plug-in electric vehicles (PEVs). It's time to clear the air.

Quick guide to PEV types:

PEV: Plug-in electric vehicles get all or part of their power from the electric grid and include BEVs, PHEVs, and EREVs.

BEV: Battery-electric vehicles (BEV) run entirely on grid-charged batteries.

PHEV: Plug-in hybrid electric vehicles have batteries recharged from the electric grid, and also contain internal combustion engines fueled by gasoline.

EREV: Extended-range electric vehicles (EREVs) also have a gas engine that powers an electric generator for several hundred additional miles after the car's battery is fully discharged.

MYTH: PEVs can only support short trips, not my daily commuting needs.

FACT: The average daily commute of most Americans is less than 40 miles and can be supported – and exceeded – by the certified range of commercially available electric vehicles on the road today. Mainstream battery-electric vehicles (BEVs) are targeting at least a 100-mile range on a full charge – which is more than adequate for over 90 percent of all U.S. household trips.[1] For people who regularly exceed the range of today's BEVs, plug-in hybrid electric vehicles (PHEVs) can go even farther – up to 300 miles or more, including gasoline range.[2]

MYTH: PEVs are far more expensive than the average car.

FACT: While the cost of a PEV is higher than most comparable traditional cars, the PEV's total cost of ownership must be taken into account. Consider the following:

- Federal tax incentives – such as the federal income tax credit of up to $7,500 – may lower the total cost of PEV ownership.[3]
- Compared to gas-powered cars, BEVs could save owners 100 percent on oil; 35 percent on scheduled maintenance;[4] and 30 percent on repairs.[5]
- Driving 15,000 miles per year in a BEV, or a PEV in "all-electric" mode, could save you more than $1,700 in annual fuel costs.

MYTH: A PEV will make my energy costs go way up!

FACT: Higher electric bills are always offset by savings at the gas pump. Dependent on driving patterns, many BEVs today exceed the equivalent of 100 miles per gallon (or, MPGe).[6] This would be like "filling up" for a few cents per mile, compared to the average 14 cents per mile in a traditional car.[7] For example, Florida Power & Light Company customers who drive 1,000 miles in a month and charge exclusively at home would see their electric bill impacted by about $35 per month – this is in stark contrast to what would have been spent at the gas pump.

MYTH: PEVs aren't "clean." Instead of burning gas, they run off of dirty power plants.

FACT: Even when emissions from power plants are taken into consideration, BEVs contribute to significantly less greenhouse gasses than traditional cars. The stats are impressive:

- PEVs powered by FPL's electricity have 70 percent fewer emissions than gas-powered vehicles making them an especially feel-good option for PEV buyers in the region.
- Electric vehicles could reduce greenhouse gas emissions by more than 450 million metric tons annually in 2050 – that's the equivalent of taking 82.5 million passenger cars off the road.[8]

MYTH: Charge times are just too long – what a major inconvenience!

FACT: Plugging in takes just a few seconds and then your car "refuels" while you're off doing other things. In fact, the majority of PEV charging happens overnight at home. A 120-volt, Level-1 charge provides an average of 2 to 5 miles of range per hour. Since the average American drives less than 40 miles a day, Level-1 charging with a standard household outlet is sufficient for most owners who charge at night. A 240-volt, Level-2 charge provides 10 to 20 (or more) miles of range per hour for those seeking a faster "fuel up."

MYTH: There's nowhere to charge when I'm on the road, making PEVs totally impractical.

FACT: Fortunately, a Level-1, 120-volt charge at home is more than adequate for most drivers with an average daily commute of 40 miles. For those needing PEVs for longer trips, more public and semi-public (i.e. the workplace) charging options are becoming available and will continue to be implemented as PEV adoption increases. Currently, more than 5,000 public stations are installed in the U.S. – and increasing daily. You can visit http://www.afdc.energy.gov/fuels/electricity_locations.html or use a smart phone app to find your closest charging station. If range is a major concern, PHEVs and EREVs can supplement battery power with gasoline power for longer trips – only if you need it – allowing you to benefit from electric power most of the time.

MYTH: PEV batteries don't last long enough and are very expensive to replace.

FACT: It is true that the advanced technology batteries used in PEVs are expensive – however the costs have been coming down and are expected to continue to drop in the coming years. Plus, buyers can feel confident knowing that most major automakers are offering warranties on the batteries covering eight years, or 100,000 miles of driving.

MYTH: Car batteries are an environmental hazard and can't be recycled.

FACT: More than 50 percent of the lithium-ion battery – which is used in many PEVs – can be recycled.[9] Furthermore, when lithium-ion batteries can no longer be used in vehicles, they are often left with 70–80 percent of their charge capacity – making them reusable for other storage needs, including projects supporting clean, renewable power.

MYTH: PEVs are not as safe as traditional, gas-powered cars.

FACT: PEVs offer safety and reliability benefits equal to, or better than, traditional vehicles. In fact, all PEVs produced by major auto manufacturers are held to the same safety standards as conventional vehicles set by the National Highway Traffic and Safety Administration (NHTSA). Additionally, PEVs must also meet the electrical and safety standards set by the Society of Automotive Engineers, the National Electric Vehicle Infrastructure Working Council and others, while charging equipment must be tested by independent and certified labs – such as Underwriters Laboratories, and Edison Testing Laboratories. And the odds of being injured in a crash are 25 percent lower for people in hybrid than in non-hybrid vehicles.[10]

MYTH: The power grid can't handle broad PEV adoption.

FACT: The nation's grid has a lot of excess, unused generating capacity – or power. In fact, the existing electrical infrastructure could currently fuel 84 percent of U.S. cars, pickup trucks, and SUVs (198 million vehicles) for a daily commute of about 33 miles.[11]

1 Department of Energy (DOE). Office of Energy Efficiency and Renewable Energy. "Plug-in Electric Vehicle Handbook for Consumers." September 2011.

2 Chameides, Planet Green, Dave. "12 Myths About Electric Vehicles" 06 December 2011. HowStuffWorks.com. http://auto.howstuffworks.com/myths-electic-cars-vehicles.htm. 07 December 2012.

3 DOE. Energy Efficiency & Renewable Energy. "Federal Tax Credits for Electric Vehicles Purchsed in or after 2010." http://www.fueleconomy.gov/feg/taxevb.shtml. Accessed October 2012.

4 www.plugincars.com/study-electrics-35-less-costly-maintain-comparible-ice-vehicles-1257775.html

5 GE Capital data and PRTM estimates. Cited in figure 3M, "% Improvement over ICE Maintenance and Repair Costs," p. 104. "Fleet Electrification Roadmap," Electrification Coalition, November 2010.

6 DOE. "Plug-In Electric Vehicle Handbook for Consumers."

7 DOE. "Plug-In Consumers Electric Vehicle Handbook for Consumers."

8 Electric Power Research Institute, Natural Resources Defense Council & Charles Clark Group, Environmental Assessment of Plug-in-Hybrid Electric Vehicles, Volume 1: Nationwide Greenhouse Gas Emissions. July 2007.

9 Lee, Henry & Lovelette, Grant. Harvard Kennedy School Belfer Center for Science and International Affairs. "Will electric cars transform the U.S. vehicle market?" July 2011.

10 Highway Loss Data Institute. "Hybrid models have lower injury odds than their conventional counterparts." http://electricdrive.org/index.php?ht=a/GetDocumentAction/id/29985. 17 November 2011

11 Pacific Northwest National Laboratory (PNNL). "Impacts Assessment of Plug-In Hybrid Electric Vehicles on Electric Utilities and Regional U.S. Power Grids. Part 1: Technical Analysis." http://energytech.pnnl.gov.

Questions? For additional information and resources on vehicle siting, please visit:

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