



## Focus On: Electric Cars

High voltage power and charging systems present unique safety issues around electric cars.

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Electric cars<sup>1</sup> have generated interest worldwide among those seeking alternatives to fossil fuels. In the U.S. the number of plug-in electric cars sold from 2010 through June 2011 approached 10,500, according to Edmunds AutoObserver. Forecasts of the size of this market in the U.S. by 2020 vary widely, from 108,000 units (J.D. Power and Associates) to 465,000 (Deloitte). Forecasters agree, though, that growth will be influenced by oil prices, the costs of automotive lithium battery packs, convenience/infrastructure issues like the range (distance the car can travel between charges), availability of charging stations, and discounts/government incentives, including tax credits or rebates.

### Potential Exposures

The exposures associated with an electric vehicle depend on its specific configuration which can include pure electric, plug-in hybrid electric, and hybrid cars.

Electric vehicles present a wide variety of potential exposures impacting individuals and commercial operations including car manufacturers, battery manufacturers, individual car or fleet owners and/or operators, emergency responders, and auto body repair and service facilities. Insurers that offer homeowners, personal and commercial auto, commercial

general liability, commercial property, employers' liability, and workers' compensation covers should understand how their policies respond.

### Pedestrian safety

Because hybrid and electric vehicles produce very little sound, they are twice as likely to be involved in a low speed pedestrian collision compared to gasoline-powered vehicles. The Pedestrian Safety Enhancement Act of 2010 sets forth requirements for all electric vehicles to maintain a minimum sound standard that only a manufacturer or dealer can disable. This sound standard is intended to protect hearing and visually-impaired pedestrians. It is important to note that there is a three-year phase-in period for this Act, with no mandatory retro-fit requirement.

### Emergency responders

The use of ultra high strength steel, primarily boron, among car manufacturers has proven to be a challenge for emergency responders. New or upgraded equipment is required to cut through electric vehicles, placing a financial burden on already cash-strapped municipalities.

<sup>1</sup> "Electric cars" and "electric vehicles" are general terms describing any vehicle powered partially or completely by electricity stored in a battery.

In addition, electric cars carry voltages far above lethal levels. It is critical for first responders to know not only how to quickly locate built-in cut points, but also how to disengage electrical systems to avoid electrocution and safely retrieve an accident victim.

Post emergency response concerns must also be noted. Fire and accident investigators, tow operators, and mechanics should be aware that an electric vehicle that has been involved in a collision, fire, submersion, or other damaging event could have a compromised safety system with hazards including live electrical components.

### Charging stations

Charging equipment for plug-in electric vehicles is classified by the maximum amount of power in kilowatts provided to the battery. It ranges from Level 1 chargers that deliver a maximum of 2,000 watts to a standard 120V AC outlet to Level 3 chargers in development that will operate at more than 12,000 watts. DC fast charging equipment delivers 480 volts of DC power directly to the EV battery.

Underwriters should pay particular attention to Level 2, 3 and DC chargers where conventional wiring is not sufficient and additional fire protection may be necessary. Current leakage and shocks, and fire hazards

from damaged cords/plugs at service stations and residences are also a concern. Inspection frequency for chargers is not mandated, therefore insurers should consider the maintenance and fire protection measures in place for such risks.

### Additional Concerns

**Limited crash test data** – Most manufacturers of electric cars have performed in-house crash testing of their vehicles, and there has been some testing by third parties such as the National Highway Traffic Safety Administration (NHTSA) and the Insurance Institute for Highway Safety (IIHS). However, accident-related data will be limited until more electric cars are on our roads for a significant period of time.

**Electrical power disruptions** – Utility companies are working to upgrade transformers and taking other measures in communities where electric cars are expected to be in high demand to avoid service

disruptions caused by overheated transformers. However, insurers should note whether additional protections from electrical disturbances such as surges and outages are in place for electric cars plugged in to home or commercial charging stations.

**Limited repair experience** – Additional cooling systems associated with electric car batteries are a unique feature that may result in extra repair time and expense beyond the typical ramping-up associated with new car models. Parts availability may be an issue, especially with new manufacturers. And, a recent study revealed claims severity is 6.5% higher for hybrids than gas-powered vehicles due to higher labor charges and lower use of alternate parts.

**Product recall** – As with any new technology, the incidence for product recall is typically higher. Documented recalls have been issued by several electric car manufacturers.

## Exposure Checklist

### Commercial General Liability

- How does your policy respond to an insured's "failure to supply?"
- Is the grid prepared for the added demand of these vehicles?
- Are the charging stations maintained on a regular basis and have installers and maintenance technicians been properly trained?
- What measures are in place to protect against damage from fire or electrical disturbances?

### Environmental Liability

- What measures are in place for battery disposal?

### Workers' Compensation

- Are responders using the proper equipment and aware of the built-in cut points?
- Are responders properly trained to address EV fires, and handle batteries safely?
- Do responders/service technicians know how to disengage the electrical power system?

### Personal and Commercial Auto

- Have you considered the potential increased risk associated with a low-noise vehicle?
- Have you considered the potential for additional repair time and costs?

### Homeowners Coverage

- Is the home wiring compatible with additional charging demand?