## HYBRID VEHICLE EMERGENCY RESPONSE

**April 2010**

**Guidelines to Emergency Response - Hybrid Vehicles**

1. There are several different types of Hybrid vehicles on the roads today.
   a. Full Hybrid - Lower speeds use only the electric motor while higher speeds use both the electric and gasoline engines. Typically utilizes battery packs in excess of 200VDC, Example – Toyota Prius, Lexus HS250h.
   b. Power Hybrid – Uses electrical motors to increase torque output. Typically uses battery packs in excess of 120VDC, Example – Honda Insight, Lexus RX400h.
   c. Mild Hybrid – Hybrid systems are used to rapidly start and stop the internal combustion engine while idling or stopped at stop lights. The hybrid system also can deliver additional torque to the engine. Typically uses battery packs of around 42VDC, Examples – GMC Sierra Hybrid, Chevrolet Silverado Hybrid.
   d. Start/Stop Hybrid – Utilizes a 12v starter/alternator system to start and stop the internal combustion engine quickly. Typically uses battery packs of around 36VDC, Examples – Saturn Aurora Greenline, Chevrolet Malibu Hybrid.

2. Identify the vehicle as a hybrid, some models only provide the ‘hybrid’ logo on the trunk or hatchback which can potentially render initial visual recognition unreliable.
   a. Typically most hybrids have logos found on the front fenders or the front or rear doors. Certain models, such as Lexus, only provide the letter ‘h’ as a visual indicator that the vehicle is a hybrid.
   b. In the engine compartment the words Hybrid, IMA or Synergy Drive maybe located on plastic cowlings or in the case of the Dodge Durango or Chrysler Aspen Hybrids it is located on the Air Cleaner Cover.
   c. The instrument panel of the vehicle may also provide information as to whether the vehicle is a hybrid. Such as the words ‘Auto Stop’ and ‘Off’ located in the tachometer.

**References:**
- Manufacturer’s Guidelines

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**Firefighter Daily Quick Drills - Easy Access to Training Topics**

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3. All types of hybrid vehicles contain High or Medium voltage DC cables.
   a. Orange wires indicate High Voltage Wires, DC>60V, AC>30V.
   b. Yellow or Blue wires indicate Medium Voltage Wires, DC<60V, AC<30V.

4. Hybrid vehicles have the ability to move instantaneously even though the vehicle appears to be off.
   a. Verify the vehicle is in park and the parking brake is applied.
   b. Some vehicles have a ready light or off indicator located on the dashboard. This light should be off or the tachometer should be in the off position, otherwise the vehicle could move.
   c. Crib the vehicle. Note: On some vehicles the high voltage wiring runs along the driver or passenger side of the vehicle, it is important to only crib the vehicle at the points indicated by the manufacture.
   d. Remove fuses located in the engine compartment identified for the hybrid system, when in doubt remove all fuses. NOTE: Even with the fuses or local disconnect removed or enabled the batteries ALWAYS carry their potential voltage.

5. Emergency response should be the same as with any vehicle.
   a. Approach the vehicle from the sides, never the front or back.
   b. Disable the vehicle from moving, crib, engaging the parking brake, place the vehicle in park, turn off the ignition and remove the key. In the case of hybrid vehicles removing the fuses for the hybrid drive will under normal circumstances remove the potential voltage from the system, NOT THE BATTERIES.
   c. Damaged or cracked batteries shall be dealt with according to normal hazardous materials procedures, these batteries typically are dry cell and have very little leakage potential.