JOINT OVERSIGHT HEARING
ASSEMBLY TRANSPORTATION COMMITTEE
ASSEMBLY UTILITIES AND COMMERCE COMMITTEE

Monday, May 24, 2010

IN SUPPORT OF ELECTRIC VEHICLES: BUILDING CARS, PROVIDING POWER, DISPOSING BATTERIES

California is at the forefront in efforts to reduce greenhouse gases. Mobile sources (e.g., vehicles) account for nearly 40 percent of the greenhouse gas emissions in the state. California's greenhouse gas emission reduction goals, and related efforts, have been set forth in the following pieces of landmark legislation:

- AB 1493 (Pavley, Chapter 299, Statutes of 2002) requires the California Air Resources Board (CARB) to promulgate regulations to reduce greenhouse gases emitted by motor vehicles.

- AB 1007 (Pavley, Chapter 371, Statutes of 2005) requires the California Energy Commission to develop a state plan to increase the use of alternative transportation fuels.

- AB 32 (Nunez and Pavley, Chapter 488, Statutes of 2006) requires CARB to adopt a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions levels in 1990, to be achieved by 2020.

- AB 118 (Nunez, Chapter 750, Statutes of 2007) provides funding to implement AB 32 and AB 1007 with an emphasis on the commercialization of new alternative fuel and advanced vehicle efficiency technologies.

- SB 626 (Kehoe, Chapter 355, Statutes of 2009) requires the California Public Utilities Commission, in consultation with specified parties, to evaluate policies to provide fueling infrastructure for plug-in hybrid and electric vehicles (EVs).

Although California is using many approaches to reduce greenhouse gases, such as low-carbon fuels and greater gasoline engine efficiencies, chief among the approaches is the requirement that manufacturers produce and deliver EVs for sale in California. By model year 2010-2011, 11 percent of the vehicles produced and delivered for sale in California must be zero-emission vehicles (ZEVs). That number will grow incrementally until 2018 when a minimum of 16 percent of the vehicles produced and delivered for sale in California must be ZEVs. (Manufacturers may, however, comply with the ZEV requirements through multiple alternative compliance options that include the production of low-emission vehicles.)

Currently, ZEVs come in primarily two forms: hydrogen fuel cell EVs and battery EVs. While both technologies represent viable means of reaching the zero emission standard in vehicles, this hearing will focus on battery EVs and related issues.

Battery EVs run on electricity stored in batteries and have an electric motor rather than a gasoline engine. Over the years, manufacturers have developed a range of EV types that include: neighborhood electric vehicles (NEVs) that can be used for short trips around town on low-speed roads; city EVs with 50-75 miles range also for around town use but with greater capabilities than NEVs; and full-function EVs that can reach speeds up to 80 miles an hour and that have a longer range than the other types of EVs.

EVs are known to have faster acceleration but shorter distance ranges than conventional petroleum-fueled engines. They produce no exhaust but require rather long charging times. Smaller neighborhood EVs use a plug that will plug into any 110 volt outlet. However, full-function EVs use 220-240 electrical outlet with charging time varying, depending on how "empty" the battery is, how much energy the battery holds, and other factors. In general, it takes approximately six to eight hours to recharge vehicles that are "empty," however, "super charging" systems are on the horizon that will use 440 volts and fully charge vehicles in a much shorter time period. Additionally, full-function EVs will require installation of specific charging equipment.

Current or near-term major manufacturers of EVs include, Ford, Chrysler, General Motors, Honda, Hyundai, Kia, Mercedes, Mitsubishi, Nissan, Subaru, and Toyota. Other EV manufacturers include Tesla Motors, Think Global, Phoenix Motorcars, Venturi, and others.

Clearing the way for wide-scale use of EVs is no small task. In fact, it involves many complicated issues, such as:

- How will the needed infrastructure to re-power EVs be developed and by whom?
- Will consumers be able to afford EVs?
- Can drivers' habits change sufficiently to account for relatively limited EV distance ranges or will "range anxiety" prevail?
- How will California meet the demand for electricity sufficient to accommodate EVs?
- What will the rates be for recharging EVs? How will they be set to encourage the efficient use of the electricity infrastructure?
- How do we safely accommodate EV battery disposal?

- How do we ensure the safety of sight-impaired pedestrians amongst quiet EVs?

- How can California address a market for retail electricity at remote public or private re-charging stations?

- Will battery technology (including disposal) be adequate, and safe, to meet growing demands?

In addition to these challenges, EVs present interesting opportunities as well, including the potential that, with development of a "smart grid," EVs may be used to capture renewal energy (such as wind power) by night then return some of that energy during the day for use during peak hours.

While California is at the forefront of EV technology and deployment, it is not the only state embracing EVs. For example:

- The state of Arizona offers reduced license fees for EV and some plug-in hybrids. Also, a tax credit of up to $75 is available to individuals for the installation of EV charging outlets in a house constructed by a taxpayer.

- Colorado provides grants to local governments for the installation of EV charging stations. Grants are prioritized based on the local government's commitment to energy efficiency. Additionally, offers a tax credit for the purchase of a hybrid EV, up to $4,713.00.

- In Delaware, retail electricity customers with one or more grid-integrated EVs will be credited in kilowatt-hours for energy discharged to the grid from the EVs battery at the same rate that the customer pays to charge the battery.

- Zero-emissions vehicles sold, rented, or leased in New Jersey are exempt from state sales and use tax.

The purpose of today's joint hearing is to help the Legislature understand the status of EVs in California and to learn of efforts underway by regulators, manufacturers, and energy suppliers not only to meet the new requirements but also embrace the emerging EV technology and related possibilities.