



# ISSUES AND CHALLENGES OF POWERING NEW GENERATION ELECTRIC VEHICLE

By 2025, there may be as many as 1 million electric-powered vehicles on roads and highways in countries like India & United States. That's the target set by countries like India & America in their 2011 State of the Union address. Although skeptics question whether a country like India could make 1 million vehicles target achievable by that date, automobile manufacturers are moving to bring electric vehicles (EVs) to the market as quickly as possible. In fact, it is estimated that over 30 different EV models will be available for sale in India car dealerships by the end of 2025.

The rapid and dramatic increase in the number of EVs on the road will bring about many changes, not the least but the stationing of an infrastructure to power this new generation of high-technology vehicles. Already, pilot programs are underway throughout the United States to install electric vehicle charging stations (EVCSs), timed to support the new EVs that are rolling out of dealer showrooms. Further, owners of EVs will require the installation of EVCSs where they garage their vehicles. Some calculations place the number of EVCS required to support a fleet of 1 million EVs at more than 2.5 million units.



The introduction of electric-powered vehicles presents significant growth opportunities for automobile manufacturers as well as the manufacturers of power systems used to build and fuel America's new EV fleet. At the same time, the installation and maintenance of potentially millions of EVCSs present logistical and training issues for the technology companies that manufacture and service such equipment. Finally, consumers are likely to seek reassurances regarding the safety of electric-powered vehicles and the systems used to charge them.

This white paper provides an overview of the general issues regarding the introduction of EVs and reviews the various types of EVs and the technology components required to power them. The white paper then discusses potential issues related to the widespread deployment of EVs, including the development of an EV power structure, safety concerns addressed by regulations and consensus standards, and the training needs of designers, field installation specialists, and enforcement officials. The white paper concludes with a preview of prospective issues facing manufacturers of EVs and EV charging equipment.