

Issues, Problems, Solutions and Challenges in Transforming Infrastructure for Electric/Alternative-fueled Vehicles

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There is much reason to believe that vehicles of many individuals and organizations will be transformed to vehicles that utilize alternative fuels which are more sustainable. The electric vehicle (EV) is a good candidate for this transformation, especially which “refuels” by exchanging its spent batteries with charged ones. Unfortunately, although there is much research gone into technologies of EVs and alternative-fueled vehicles, little effort have gone into designing the “refueling” infrastructure. This presentation discusses the design and operational issues that must be addressed, principally the issues related to the limited driving range of each electric vehicle’s set of charged batteries and the possible detouring for battery exchanges. In particular, the talk will address the optimization and analysis of infrastructure design alternatives dealing with (1) the routing of vehicles from origins to destinations, (2) the optimum locations of battery-exchange stations, and (3) the recharging capacity and operations management of battery-exchange infrastructure. Some infrastructure design and optimization models, and some results, will be discussed in this talk as well as challenges that lie ahead.



<http://goo.gl/A9e8aq>

