

Abstract

Plug-in electric vehicles (EVs) have shown benefits in reducing gasoline consumption. One of the key domains affecting EV penetration in the U.S. market is the EV charging station infrastructure. Charging equipment varies by charging time, how much a battery holds, types of batteries, and the types of Electric Vehicle Supply Equipment (EVSE). The charging time can range from 15 minutes to 20 hours depending on the above variables (Alternative Fuels Data Center 2015). The most affordable EVs on the U.S. auto market, excluding the Tesla, are able to cover approximately 70–80 miles on a full charge (Schaal 2015). The average range of electric vehicles per charge is much less than that of conventional gasoline vehicles. Currently, the problem is that there are not enough public charging stations to supply the increasing number of electric vehicles on the road. The goal of this thesis is to determine where to install EV charging stations at public facilities of Los Angeles County. The data used in this study are based on existing public facilities of Los Angeles, such as government offices and public libraries and parks. This analysis section is divided into three sub-sections: DC Fast Charging Infrastructure, Public Access Charging, and Workplace Charging. The three approaches are explained in the Methodology section and the results are discussed in the Results section. This study demonstrates how site suitability analysis based on geographic information system (GIS) data can provide information useful for installing public EV charging stations in Los Angeles County. The findings of this study show that, by applying the site suitability method, Los Angeles County would be able to install more EV charging stations at optimal locations and to serve the needs of their intended users.