

전기차 확산에 따른 공동주택단지 충전설비 설치기준 개선연구

Study to Improve Standards for Installing EV Charging Facilities in Apartment Complexes

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This research aimed to propose policy improvements from an architectural and urban planning perspective, based on an analysis of the current state and expansion conditions of electric vehicle (EV) charging facilities in apartment complexes. The main findings are as follows:

Firstly, the study analyzed the expansion policies for EV charging facilities and the current installation and usage patterns in apartment complexes. The government has been consistently raising the targets for the expansion of EV charging facilities to support the spread of EVs. The study found that the distribution of EVs and charging facilities varies by region. Most charging facilities are located in apartment complexes, with slow chargers being used more frequently than fast chargers. Usage patterns show higher utilization of slow chargers at night and fast chargers in the evening.

Secondly, a survey was conducted among management offices of apartment complexes regarding the mandatory installation of charging facilities. The survey results revealed varying conditions for installing charging facilities across different types of apartment complexes. Especially, complexes built before the 1990s face difficulties in securing

space for these facilities, and challenges vary depending on the building structure and complex layout. The study also found that the installation, operation, and management of charging facilities are being conducted in various ways due to the lack of standard guidelines.

Thirdly, through literature reviews, analysis of domestic and international cases, and expert panel consultations, key elements for improving the installation standards of EV charging facilities were identified. The study analyzed the quantity, location, performance, and operational management standards of charging facilities, referring to international guidelines, and derived key elements for installation standards. These were refined through expert opinions to suit the conditions of Korean apartment complexes. An AHP analysis was conducted to organize policy and legal system improvements related to the installation standards of EV charging facilities in apartment complexes.

Fourthly, the research proposed improvements to related laws and regulations for the expansion of charging facilities in apartment complexes. It summarized the current status and issues of legal systems based on the analysis of the current status and installation conditions of charging facilities in apartment complexes and the identified elements for improving installation standards. The policy improvement suggestions included considering the conditions of apartment complexes for charging facility installation, diversifying facilities according to spatial characteristics, and establishing guidelines for EV charging facilities. Legal improvements suggested included enhancing installation standards and revising concepts for exclusive parking zones and charging facilities.

This study utilized a multifaceted analytical methodology, including the analysis of the current status of charging facility installations, user data-based behavior analysis for charging facility usage, and the examination of international guidelines for electric vehicle (EV) charging facility installations. Through this comprehensive approach, the research derived improvement strategies for the installation standards of charging facilities in apartment complexes. Based on these findings, the study establishes a foundation for the enhancement of related legal and regulatory frameworks, thus holding significant academic and policy implications.

Keywords :

Electric Vehicle Charging Facilities, Apartment Complexes, Improvement of Charging Infrastructure Expansion Policy, Charging Facility Installation Standards, Usage Patterns of Charging Facilities