Abstract

Efficient Installation and Operation of Electric Vehicle Charger in Gyeonggi-Do

It is necessary to promote the popularization of electric vehicles along with the Green New Deal and 2050 carbon neutral policy. Expansion of EV charging infrastructure and efficient installation and operation are required. There are 7,628 electric vehicle chargers in Gyeonggi Do(22% compared to 34,630 nationwide), which is the most established in the country, but it is still insufficient compared to the charging demand. Since the operating facilities mainly focus on publicity, there is a limit to the spread of electric vehicles due to lack of efficiency.

The study was carried out with the aim of establishing alternatives so that Gyeonggi-do can efficiently install and operate electric vehicle chargers by specifically presenting the complementary directions related to the existing excessive and under-installation, new installation plans, and plans to revitalize the private market.

Installation sites and regions are being installed and operated inefficiently without effectively responding to charging demand. It was too concentrated in public facilities and commercial facilities, which resulted in not being able to properly build parking facilities, rest facilities, residential facilities, business facilities, gasoline and LPG(CNG) charging facilities with high demand for charging.

In the case of Gyeonggi-Do, the proportion of fast charger installations compared to the whole country is 17.3%, but the proportion of actual charging is only 7.3%. It tends to be operated without efficient installation in locations or areas with high demand for charging.

The number of electric vehicles in charge of each fast electric vehicle

charger in Gyeonggi-Do is 14.6 units, which exceeds the appropriate number of 10 units by 4.6 units, which is much shorter than the number of electric vehicles supplied. The charging infrastructure is very weak in living bases such as residential facilities and business facilities with high demand for charging.

In the introduction period(~2020), the emphasis was placed on publicity and equity, but in the diffusion period(2021~), the installation should be expanded based on efficiencies such as accessibility, convenience, charging quantity and demand for charging.

In the case of installation sites, rapid chargers should be further expanded at transportation bases such as gas and LPG (CNG) charging facilities, parking facilities, and rest facilities. Slow chargers should be expanded to living bases such as residential facilities, business facilities, resident convenience facilities, and medical facilities. EV chargers related to the installation area should be expanded preferentially in cities and counties that have a large amount of charging and demand, cities and counties that have a large amount of origin and destination(OD) traffic, and cities and counties that lack EV chargers compared to the number of electric vehicles supplied.

In order to achieve the goal of 180,000 battery electric vehicles and 44,200 public electric vehicle chargers in Gyeonggi-Do by 2025, it is necessary to continuously increase the budget. It is necessary to transfer the private charging market sector in the long-term through the establishment of a profit creation structure in the private market, such as the popularization of 300,000-500,000 electric vehicles, and retrofit and upgrade the old fast electric vehicle chargers owned by Gyeonggi-Do.

Keyword EV charger, Battery electric vehicle, EV charging infrastructure, EV charging amount, Installation site