

## A Machine Learning based Methodology for Selecting Optimal Location of Hydrogen Refueling Stations

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Hydrogen emerged as a sustainable transport energy source. To increase hydrogen utilization, hydrogen refueling stations must be available in many places. However, this requires large-scale financial investment. This paper proposed a methodology for selecting the optimal location to maximize the use of hydrogen charging stations. The location of gas stations and natural gas charging stations, which are competing energy sources, was first considered, and the expected charging demand of hydrogen cars was calculated by further reflecting data such as population, number of registered vehicles, etc. Using k-medoids clustering, one of the machine learning techniques, the optimal location of hydrogen charging stations to meet demand was calculated. The applicability of the proposed method was illustrated in a numerical case of Seoul. Data-based methods, such as this methodology, could contribute to constructing efficient hydrogen economic systems by increasing the speed of hydrogen distribution in the future.