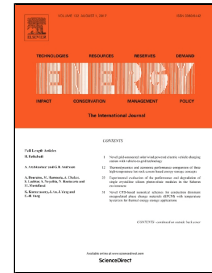


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Decision-making of compressed natural gas station siting for public transportation: integration of multi-objective optimization, fuzzy evaluating, and radar charting

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Abstract: Application of compressed natural gas in public transportation has attracted environmental and social concerns worldwide, for its low air pollutants emission, low cost, and availability. Formulating a suitable compressed natural gas network for public transportation in a certain city has become an important topic in the theory and practice of applying the compressed natural gas, which is considered as the main measurement to solve the energy crisis and city congestion. The present paper proposed an integrated decision-making process of compressed natural gas siting for public transportation, basing on the method of multi-objective optimization, fuzzy evaluating, and radar charting. Multi-objective optimization is used to find the initial feasible solution under the city's requirement in economic, availability, safety and so on. Fuzzy evaluation then provides the criteria of decision-making. Radar charting presents a clear vision of all the candidate solutions for decision-making based on the different feature of the city condition. To illustrate the proposed process, the present paper takes the city of Wuhan, China as the case study.

Keywords: compressed natural gas; station siting; public transportation; decision making; multi-objective optimization; fuzzy evaluation; radar chart

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