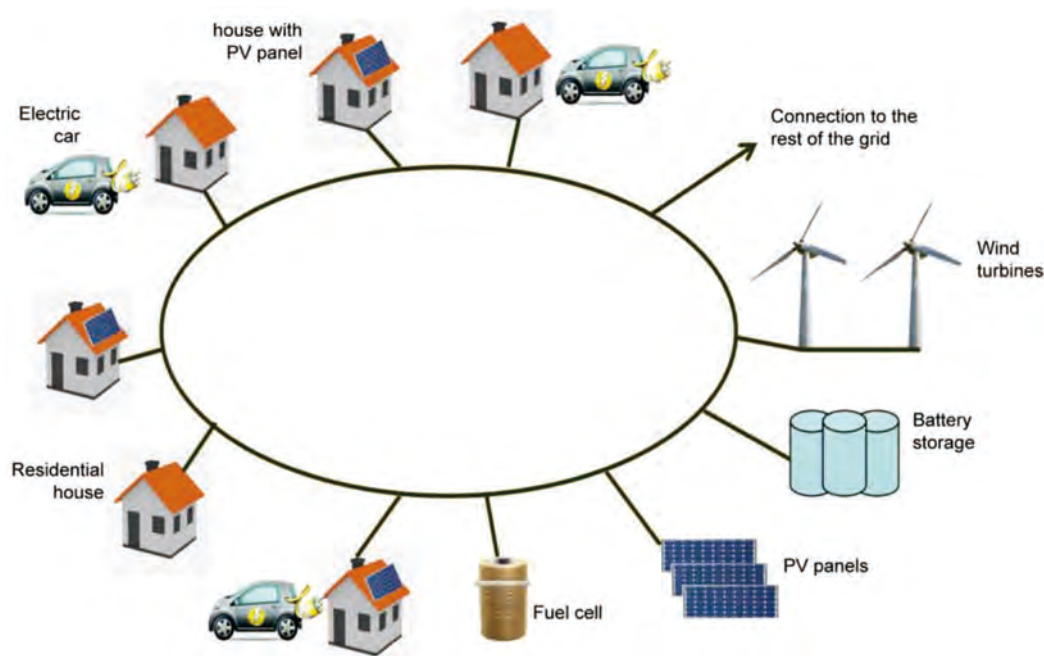




Smart Grid and Renewable Energy



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ability, availability, controllability, responsiveness, and -convenience. Moreover, comprehensive set of performance indicators of a cluster, that relate to environmental, economical and social values, are considered and modeled.

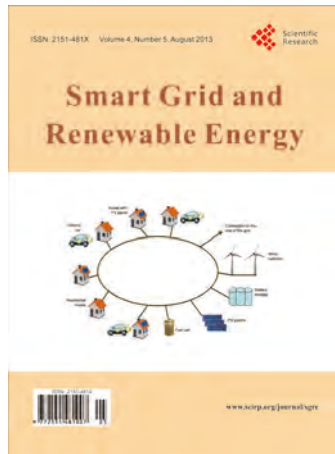
Based on this model, the impacts of adding an energy resource into a cluster is analyzed. We also presented a case study to test our proposed theoretical model which endorsed the strength of the model to evaluate the value an energy resource adds to a cluster. Our model also reveals that the value added by an energy resource depends both on the composition of the cluster and the precedence of the usage of energy resources in the cluster.

Developing appropriate stochastic data that better capture the behaviors of the energy resources could help to analyze the benefits of the valuation model more thoroughly. Further, more realistic and synthetic test cases could be employed to evaluate the proposed valuation model.

Our proposed valuation model can be used as a basis to design optimal composition of a cluster, whereby certain energy resources are added to or removed from the cluster depending on their impact on the desirable performance indicators.

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