

## عنوان مقاله:

Spatial Study for Determining the Optimum Scenario for Generating Solar Electricity by Predicting the Land-Use Changes: Case of Alborz Province, Iran

## محل انتشار:

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## خلاصه مقاله:

Land-use change is one of the most important spatial phenomena that can affect the usage of energy technologies. In this study, land-use change in barren and residential areas in Alborz province in Iran was modeled using the cellular automata combined with the Markov Chain from ۲۰۰۱ to ۲۰۳۱. Due to adaptability to the environmental considerations, all protected areas were removed from the study area. Then, an economical and performance-based optimization model was developed; then, by using the status of the two land-use classes in ۲۰۳۱, an optimum scenario was identified for generating solar electricity. Based on the results, the optimum scenario involves installing distributed photovoltaic modules in ۱۸.۳۷ % of residential areas and setting up concentrated solar systems in ۰.۷۴ % of barren areas, simultaneously. Economic investigation of the optimum scenario showed that although there were some environmental and political benefits for using the solar electricity such as reduction of air pollutants and more energy safety, the optimum scenario will be costly and non-economical without the government's financial supports.

## کلمات کلیدی:

sustainable development, Solar Electricity, Landuse Changes, Cellular Automata, Future Study

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