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Parametric analysis for cost-optimal renewable energy integration into residential buildings: Techno-economic model

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1 ***Parametric Analysis for Cost-Optimal Renewable Energy Integration***
2 ***into Residential Buildings: Techno-Economic Model***

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6 **Abstract**

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8 Determining the optimum penetration of renewable energy systems and their
9 associated aggregated technical and economic benefits is a growing concern for both
10 researchers and policy makers. The purpose of this paper is to evaluate the cost-
11 optimal pathways for a university campus in Illinois, USA to install solar PV systems
12 by performing parametric analyses. Here we suggest cost-optimal solutions to deploy
13 solar photovoltaic systems under two different finance scenarios: the Single Party
14 economic model and the Two Party economic model. In addition, critical economic
15 factors are highlighted by incorporating them into an energy performance model.
16 This case study can be a replicable model for other academic institutions to actively
17 implement renewable technologies and greatly support their decision-making
18 processes.

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20 **Key Words: photovoltaic system; energy optimization; energy management;**21 **parametric analysis; campus sustainability**

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