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Household electricity demand after the introduction of solar photovoltaic systems

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Abstract

This study quantitatively evaluates the effect of solar photovoltaic system (PV system) installation on the actual amounts of electricity usage in Japanese households. Using consumer-level data, the effects of installing a PV system on the electricity demand are estimated in terms of the impact of the technological performance which was a direct contributor to a reduction in the electricity demand. Also, we confirm the effect of peoples' electricity consumption behavior by installation of the PV system. As a result, we estimate that the technological performance of PV system had a major effect on the reduction of the electricity demand after the installation of a PV system. Furthermore, for each additional 1 kW increase in battery capacity, the average electricity fee savings per month are approximately 517 Japanese yen per month in the summer, 152 Japanese yen per month in the winter, and approximately 334 Japanese yen annually.

Keyword: solar photovoltaics; save electricity; behavior change; feed-in tariffs

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