

Analyzing the Diffusion of Dispersed Power Generation with an Energy Supply-demand Technology Mix Model for Japan

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The energy supply-demand technology mix model developed earlier by the authors is expanded to analyze consumers electricity prices and their impact on the diffusion of dispersed power generation systems in residential and commercial sectors in Japan up to 2030. The analysis will show the difference in dispersed power generation installations estimated between two cases: the case of a time-fluctuating electricity price according to the marginal cost of utility power generation at each month and hour, and the case of a constant electricity price regardless of month/hour, which roughly reflects the ordinary price system in Japan. The analysis will also show the condition on the discount rate of consumers energy investments for the autonomous diffusion of dispersed power generation.

Keywords:

Decentralized power generation, cogeneration, energy systems model, linear programming