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## Economic Analysis of Regional Distributed Energy System Bidding for Accessing to the Grid

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### Abstract

This paper focuses on the subject of HDE and near OPEU in Shanghai, compares the economic under the system of DE grid-connected with no power injection at present and bidding for accessing to networks after electric power reform. After the reform, HDE could recycle corresponding operating and maintenance costs by sharing power generation benefits, OPEU could save the electricity purchasing fund obviously. It is shown that the electric power reform program will help to stimulate the vitality of DE market, escort China's regional DE healthy and rapid development.

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### 1. Introduction

DE is a overall energy supply system of combined cooling heating and power, greatly improves its energy efficiency by energy cascade utilization; and because the system is close to the user side, it could effectively reduce energy losses on the way of cooling heating and power long-distance transport and investments in the corresponding transmission and distribution system. It is not only an important way to provide a flexible and energy-efficient integrated energy services for the end user, and It is recognized a core technology to build the next generation of energy systems around the world [1]. Energy Internet has been hailed as another major revolution in the energy sector, and the development of energy Internet "portal" is the promotion and popularization of DE.

To take full advantage and play the role of DE, it need to improve the existing electricity market trading patterns, reasonably and efficiently bring DG into the electricity market transactions. At present,

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the electricity reform program for promoting the development of DE have come out [2,3], the CPC Central Committee, the State Council issued the "a number of opinions on the further deepening reform of the power system([2015]No.9)" and the National Development and Reform Commission and the national Energy Board jointly issued "guiding opinions on improving the regulation of power running and promoting clean energy fully generate more electric power" clearly state that actively develop DE, allow DE involved in electricity trading. This paper focuses on the subject of HDE and near

OPEU in shanghai, compares the economic under the system of DE grid-connected with no power injection on the current and bidding for accessing to networks after electric power reform from both DE itself and the market environment.

## Nomenclature

### Abbreviation

DE	distributed energy
DG	distributed generation
HDE	hotel distributed energy
OPEU	office purchasing electricity user
SP	separate production

### Symbols

$E_{pb}$	peak building electric load
$Q_{pc}$	peak cooling load
$Q_{ph}$	peak heating load
$Q_{pw}$	peak hot water load
$Q_{pt}$	hourly peak total thermal loads
$D_e$	electric demand
$D_c$	Cooling demand
$D_h$	heating demand
$D_w$	hot water demand
$D_{th}$	total thermal demand
$Q_{ht}$	hourly total thermal loads
$Q_{hc}$	hourly cooling loads
$I_{acop}$	absorption refrigerating coefficient of performance,1.2
$Q_{hh}$	hourly heating loads
$Q_{hw}$	hourly hot water loads
$E_{ht}$	hourly total electric loads

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