Japan’s policy on Smart Communities

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Ministry of Economy, Trade and Industry
Agency for Natural Resources and Energy
Structural Changes in Demand and Supply of Energy by Smart Communities

Traditional energy system

Unidirectional type

Supplied from concentrated power sources in accordance with demand

Future energy system

Bi-directional type

Supply and demand are balanced, based on receiving supply from concentrated power sources and carrying out power generation and consumption in homes and regions based on distributed power sources.
Energy Situation and Smart Communities After the Disaster

1. Large-scale induction of renewable energy, the quality of electricity becomes a problem

2. Saving energy and cutting back during peak periods becomes issues.

3. Technological development for efficient use of energy/energy management based on ICT technology
Demonstration of Smart Communities in Japan (2011-2014)

**Housing complex**
- 700 households and HEMS
- Consulting business about saving energy.

**Kitakyushu City**
- Designated supply area
  - Power is supplied by Nippon Steel & Sumitomo Metal Corporation.
  - Dynamic pricing system for 180 households.

**Keihanna Science City**

**Wide-area metropolis**
- 4000 households and HEMS
- 10 large-scale building and BEMS
- Multiple storage batteries.

**Yokohama City**
- Separate housing
  - Local production for local consumption
  - 67 households equipped with solar panels, household fuel cells, storage batteries.
  - Advanced transportation system (EV, PHV)

**Toyota City**
Components of Smart Community

Component 1: Energy Management System
- HEMS
- BEMS
- FEMS

Component 2: Communication Interface

Component 3: infrastructure for utilizing Big Data
- PV, Cogeneration, FC
- energy saving device
- storage battery

Component 4: Demand Response

Component 5: life Support Services
Establishment of core technologies

Ex1. Development of CEMS

CEMS at Kitakyushu (Fuji electric)

Ex2. Establishment of standard interface

Power company
OpenADR
Aggregator
Smart meter
HEMS
ECHONET-Lite
B route
1. Demand response for residential (Price-based DR)

The Electricity Market Reform enables power companies to set the electricity prices flexibly.

2. Demand response for industry and commercial (Incentive-based DR (Negawatt trading))

By the end of this March, METI will set the guideline to trade negawatt.

Through the Electricity Market Reform, trading chance is expected to increase.

- **Control the power demand smartly by DR**

- **Electricity Demand (kW)**

- **In the peak time**

- **In the daytime**

- **In the night**

- **Let’s reduce our use of electricity!**
## Price-based DR

### Kitakyushu City

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<th>Electricity price</th>
<th>Summer of 2012</th>
<th>Winter of 2012</th>
<th>Summer of 2013</th>
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<td>Statistical significance</td>
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Thank You For Your Attention!

Japan Smart City Portal

http://jscp.nepc.or.jp/en/