

Renewable energy spread by the public-private cooperation -for a sustainable city-



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Odawara mega solar citizen power plant completion ceremony (2014.10)

Access



1. Odawara City

Location: West part of Kanagawa Pref.

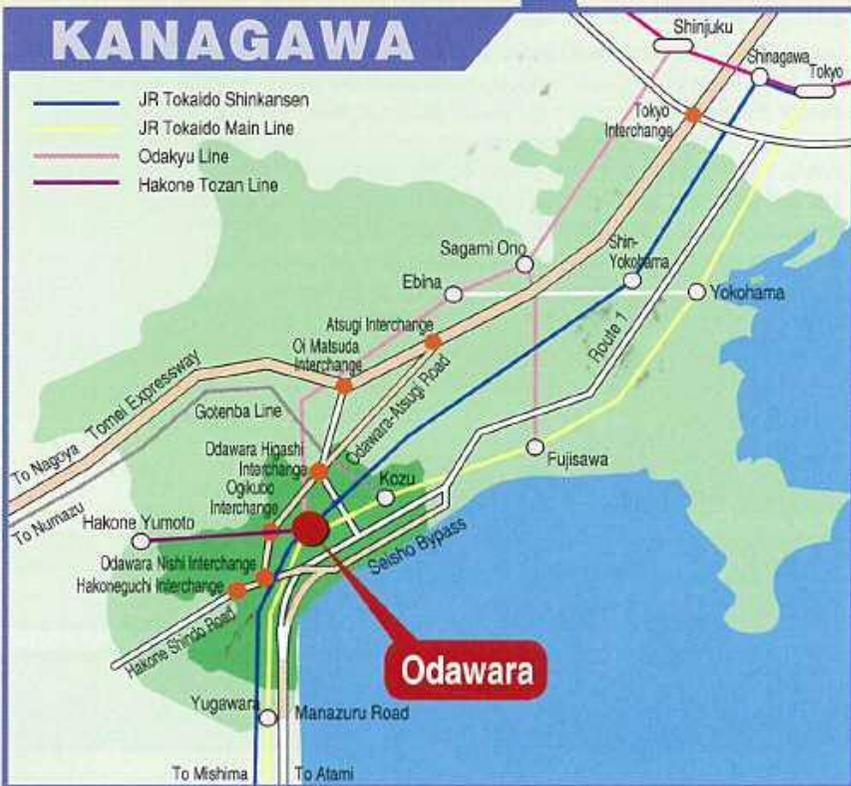
40 minutes from Tokyo central area by train

Terrain: Facing Sagami Bay, surrounded by forests and mountains including Hakone

Temperature: Average yearly temperature 16°C, rainfall about 2000 mm, warm and livable climate

Population: 193,515

Area: 113.81km²



Symbol of Odawara

Odawara Castle

2. The efforts of Odawara after 3.11

2011.3.11

the Great East Japan Earthquake



- Accident at the Fukushima nuclear power plant
- Rolling blackouts



- ◆ Tourists decrease
- ◆ Factory stop
- ◆ Detection of radioactive cesium from tea of local production

Re-recognize the vulnerability of intensive production system of energy

2011.7.14

Mayor and Mr. Iida Tetsunari (Institute for Sustainable Energy Policies) published interview

2011.11

Adopted by the Ministry of the Environment commissioned business

2011.12.7

Council Established

- renewable energy business of the examination organization
- member: citizens involved in environmental administration, local financial institutions, Chamber of Commerce and Industry, energy companies



3.The establishment of the company

Establishment of Houtoku Co., Ltd.

- Business entities to achieve a "**solar power generation business plan,**" which was formulated by the Council (2012.12)
- Investor: **24 companies** in Odawara
- "**Hotoku thought**" incorporated into the management philosophy, capital and management, ranging from the construction of the facility, aims to management that **take full advantage of the power of the region.**



Company establishment press release (2012.12)

Business

- ◆ For power generation rent a public facility roof [**Solar power roof borrowed business**]
- ◆ "**Mega Solar power plant Business**" in the city forest
- ◆ Business development **funded by citizens**

4. solar power roof lending business

- PV is introduced into 5 facilities including **3 primary schools** to date. (2013.3~)
- **Elementary school** is designated as a **shelter** in the event of a disaster

Future developments: by installing a set of **PV** and the **storage battery**, to strengthen the power ensure at the time of power failure



| Power generation output | |
|---------------------------|----------|
| Elementary School : 3 | 125.72kW |
| Other public facilities:2 | 40.65kW |
| total | 166.37kW |

«Characteristic»

Contract so that the electricity can be used from the **outlet** at the **shelter** in the event of a **power failure**



5. The enactment of the Ordinance

- Ordinance for the Promotion of the Use of Odawara renewable energy (2014.4.1)
- Purpose: show a clear attitude of the city towards the promotion of the use of renewable energy

The basic philosophy

- ◆ Renewable energy is " **regional-specific resources** "
- ◆ Renewable energy, in principle rooted in the community, should be utilized in **regional activation** and **disaster prevention measures**.

Support for renewable energy business

- ◆ For "renewable energy project" to be implemented in the city, it makes the **grant of incentives**.

Certification and support for civic participation type renewable energy business

- ◆ **Certification requirements:** investment of citizens, contribute to the local disaster prevention, activation of the regional economy etc.



Odawara mega solar citizen power plant sky photo

6.Support for renewable energy business

Renewable energy business incentives

- In Japan, collect the tax depreciation assets as **city tax**
- **Incentives:** to renewable energy businesses, **cash back** the depreciable assets **tax** of power generation equipment
- **Delivery period: 3 years**



Solar sharing (green tea) 49kW (2014~)

Certification and incentives : Civic participation type renewable energy business

- ◆ Order to take advantage of the **renewable energy** as a **regional-specific resources**, **certifies businesses** that contribute to citizen participation and local economy, **greatly encourages**
- ◆ **Delivery period: 5 years**

7. Development of Odawara energy plan

Based on "Ordinance for the Promotion of the Use of Odawara renewable energy"

Odawara energy plan

The goal with a long-term view

For renewable energy, the city, citizens, businesses have shown what to do

The goal is a



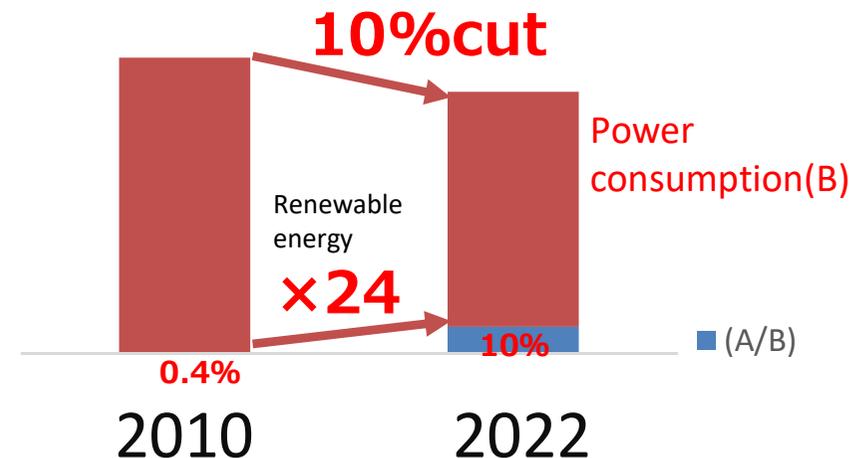
"sustainable city that the energy self-sufficiency in the region".

<Numerical goal>

Power generation from renewable energy: **Increase to 10%**(City power consumption)

Energy Conservation : **10% cut** from the power consumption of 2010

| In odawara city | 2010 | 2022 |
|---|-------------------|-------------------|
| Renewable energy power generation capacity(A) | 5,112,000 kWh | 123,359,000 kWh |
| Power consumption(B) | 1,370,904,000 kWh | 1,233,814,000 kWh |
| The proportion of renewable energy power generation amount(A/B) | 0.4% | 10% |



8. Leading project of the energy plan

1 Promoting the introduction of renewable energy

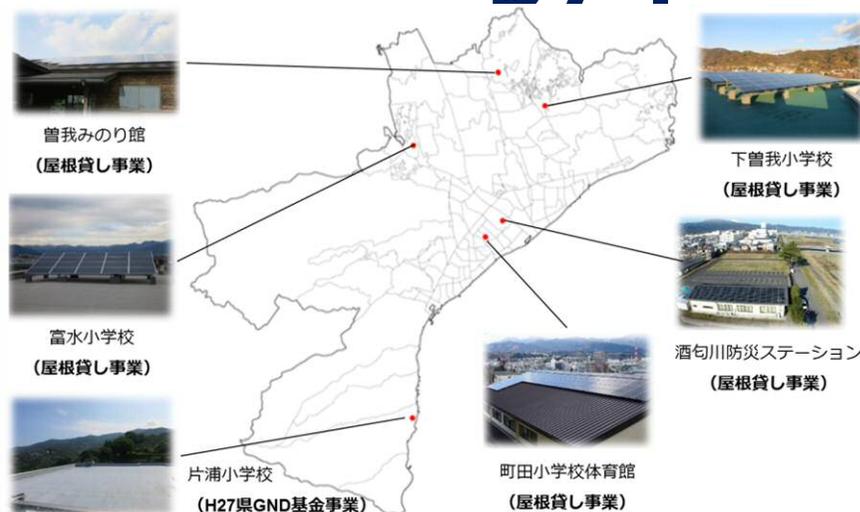
- ① Initiative introduced to the public facilities and shelter
- ② Smooth introduction of renewable energy
- ③ Promotion of citizen participation
- ④ One in the area! Regional renewable energy project
- ⑤ Realization of energy-tourism
- ⑥ Promotion of the use of renewable energy heat

2 Promotion of energy saving

- ① Initiative behavior in public facilities
- ② Efficiency of household energy consumption
- ③ Efficiency of business energy consumption
- ④ Energy management in the region

3 Training of leaders

- ① Implementation of environmental energy education
- ② Training of people to lead the citizens and businesses
- ③ Infrastructure development to advance the use and energy saving of renewable energy



The role of the city

- To understand the progress of the plan, validate, review the plan for goal achievement

- Promote an aggressive introduction to public facilities
- To raise awareness of renewable energy and energy-saving

Role to expect citizens

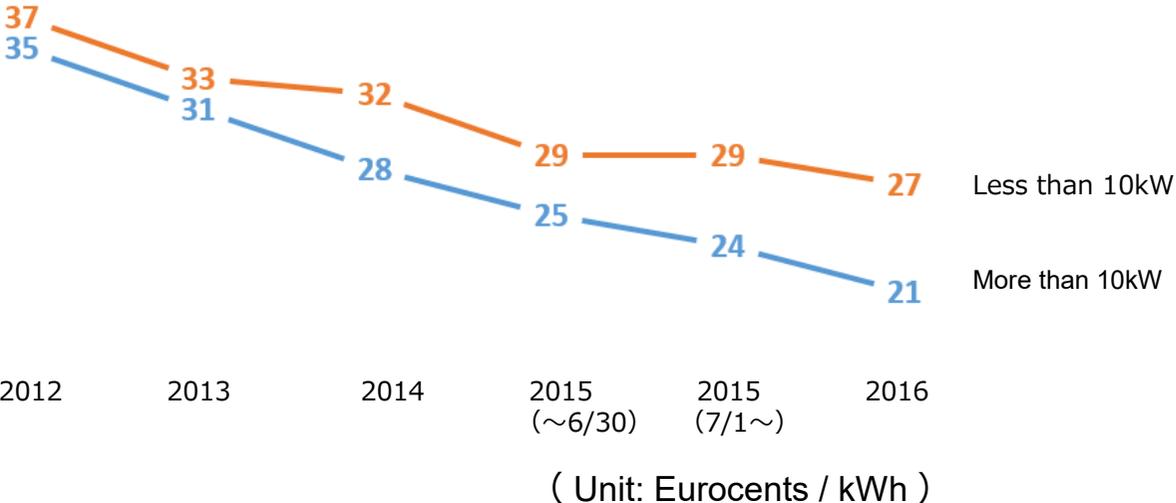
- Aim aggressive use of renewable energy in daily life
- Practice a life to reduce the environmental impact
- To cooperate in efforts to renewable energy by businesses and the city

Role to expect in business

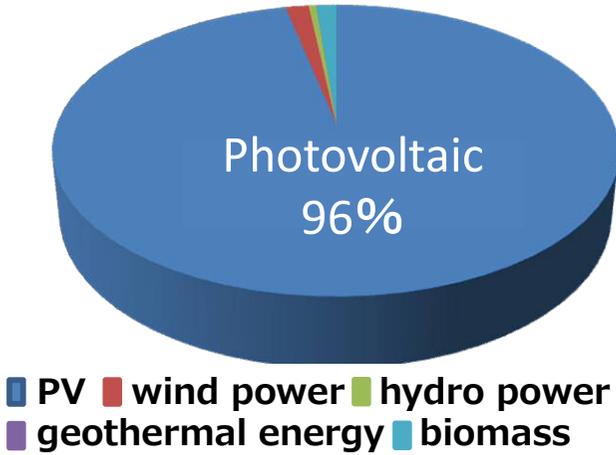
- Aim aggressive use of renewable energy in the day-to-day operations
- Such as the introduction of energy-saving equipment, keep in mind the efforts to reduce the environmental impact
- To cooperate in efforts to renewable energy by the citizens and the city

9. Trend of feed-in tariffs

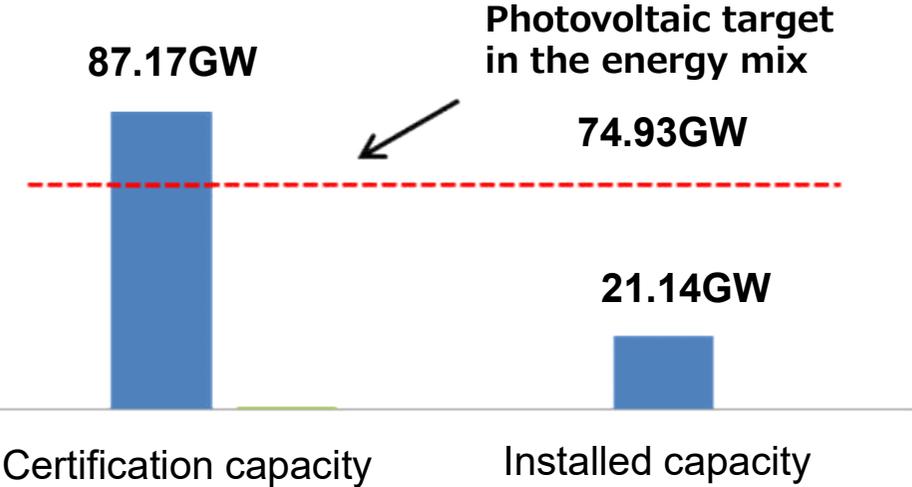
Reduction of the solar power purchase price by FIT



Power Generation from Renewable Energy by FIT (2016.3)



Power Generation from Photovoltaic by FIT (2016.5)



Promotion of renewable energy is dependent on the FIT
: Expensive purchase long-term

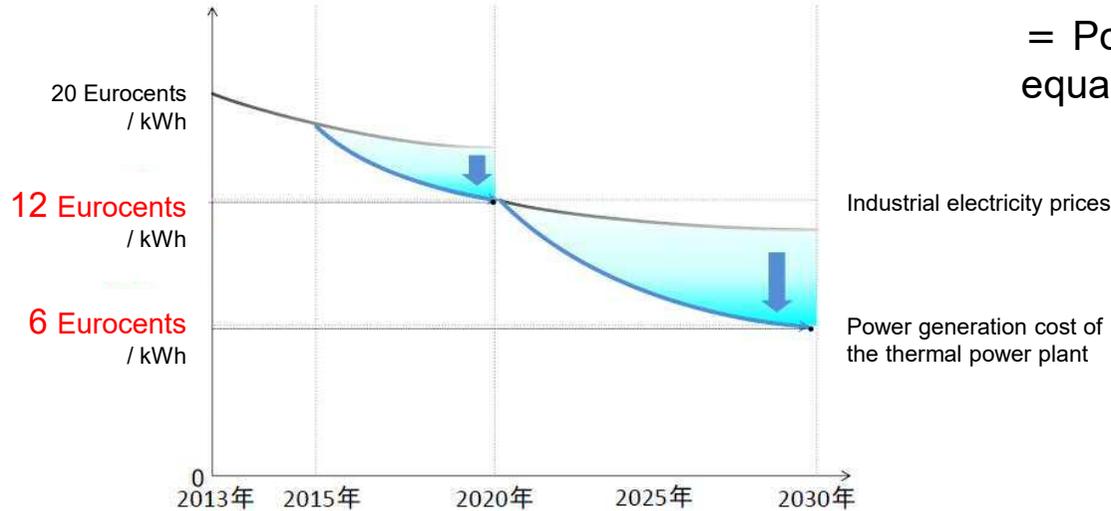


The future of the promotion measures :
To consider **the efficient consumption in the region**

10.To take full advantage of the renewable energy in the region

Solar power cost reduction targets by NEDO (Industrial)

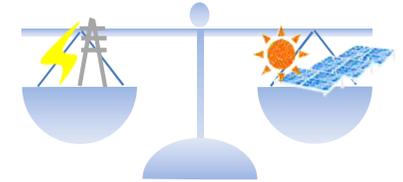
(power generation cost: Eurocents / kWh)



Source : New Energy and Industrial Technology Development Organization

Grid parity

= Power generation cost of renewable energy, be equal to the cost of thermal power generation



Household power will achieve grid parity in early.

It decreases the power generation cost of renewable energy, if the established grid parity, there is no merit to be sold to the power company.

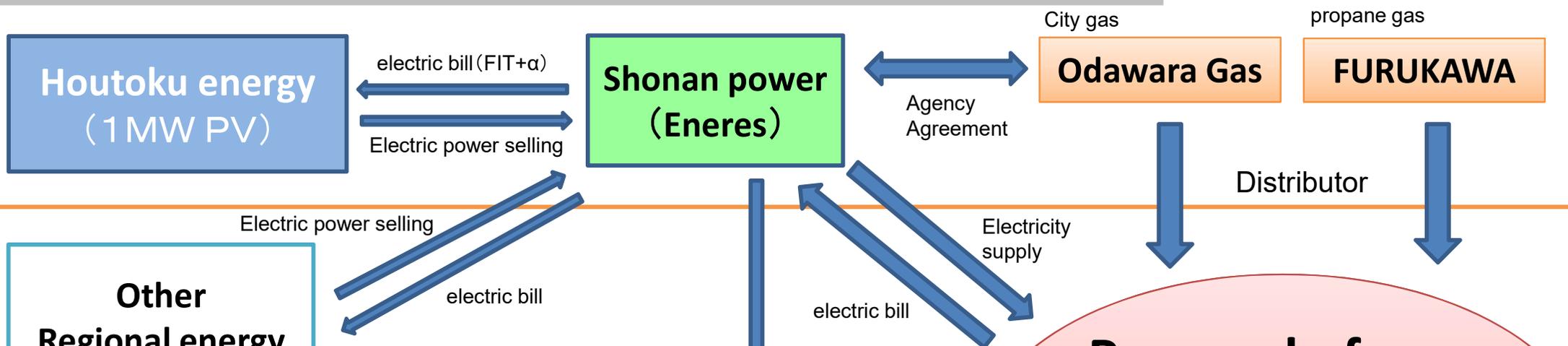
In the areas with low transmission loss, it is important to renewable energy consuming self.

Future challenges for renewable energy spread

- The electricity generated by renewable energy, efficiently be **consumed in the region** it is important
- Solar power generation equipment for residential, by FIT, it is possible to sell electricity in the 10-year fixed-price. After lapse of 10 years, because the purchase price will be cheaper, it is expected that the advance in the direction of **self-consumption**.
- Take advantage of the **storage battery** and **energy management**.
Promote an optimized energy saving according to the characteristics of the solar power.

5. New Business Model by Local Business Alliance : Energy generation and consumption within the region

Energy consortium of Hakone Odawara (ECHO)



Proposal of new energy lifestyle
household / corporate / municipality

【Regional contribution】
Municipality
Chamber of Commerce and Industry
Nonprofit Organization

Cooperation



Photo session in the press release (2016.8)