

Transformation Towards Low Carbon City Infrastructure -The Challenges of Yokohama, Environmental Model City



Tetsuya Nakajima
Vice Executive Director,
Climate Change Policy Headquarters
City of Yokohama

あなたの毎日に、エコをプラスしよう。

Yokohama **エコ活。**

Overview of the City of Yokohama

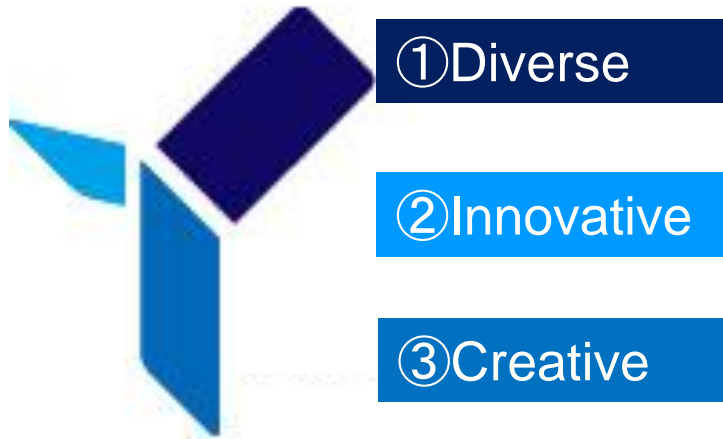


Population	3.7 million (largest city in Japan)
Number of Households	1.59 million
Participation in Neighborhood Associations	Percentage of participation 80% (second among major cities in Japan)
Number of registered NPOs	Approx. 1,100



Citizens with a High Level of Public Spirit₂

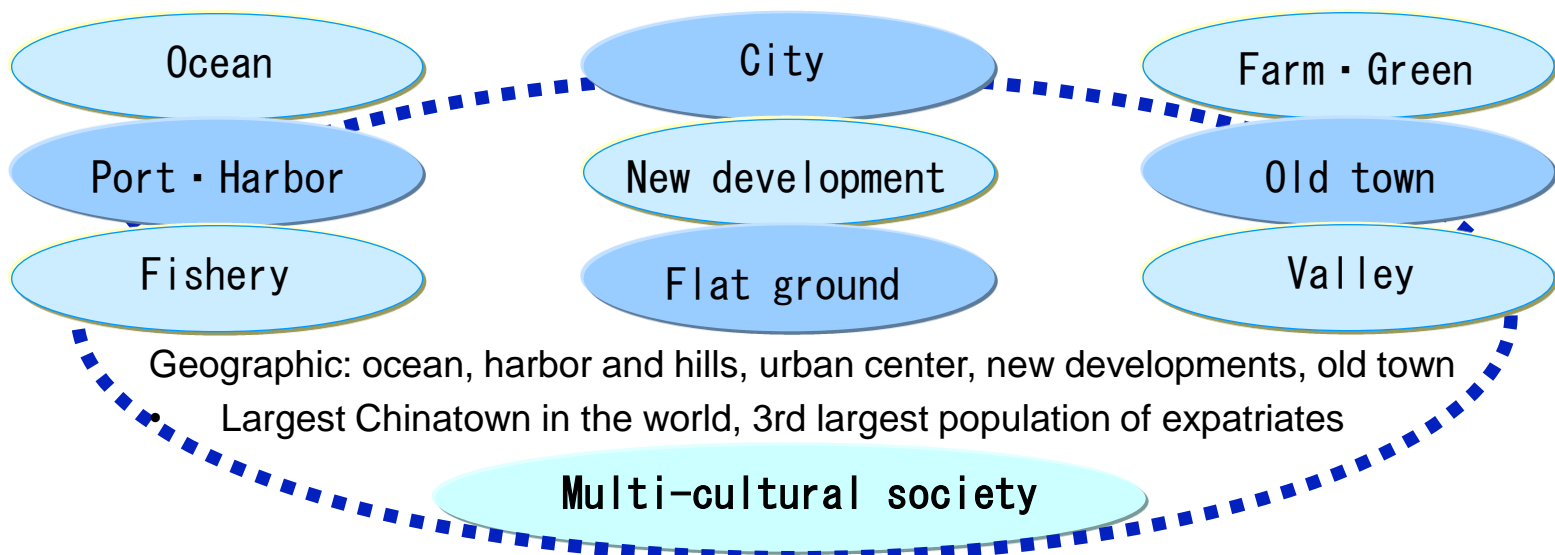
Yokohama is ...



Yokohama, is the first harbor city introduced to the world as the entrance to Japan. Since the time its port was opened 152 years ago, Yokohama has been vigorously acquiring new cultures and information from foreign countries and introducing to Japan our country's first-time-ever things.

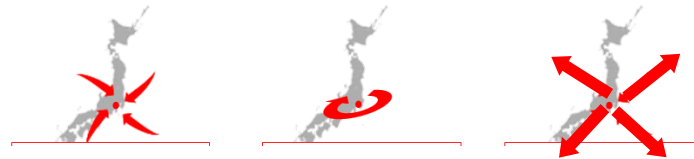
The Yokohama, referred to as “Hamakko” in Japanese, has been very cheerful at enjoying life and willing to adopt whatever is good. Such a tradition of the “Hamakkos” cultivated long ago has been incorporated into the present fashionable and sophisticated streetscape.

1. **Diverse** – Geographic, Culture, industry



2. **Innovative** – City was made with bold challenges

- Port of Yokohama opened 152 years ago
- Home for multi-nationals, local venture industries
- Birthplace in Japan of silk, telephone, railway, sewage system, ice-cream, dry cleaning



3. **Creative** – Citizens power

- City where people came to create change
- 80% participation rate in Neighborhood Associations
- 9th in the nation for NPOs, Yokohama Eco School
- 1000 participants in Open Yokohama event

YES

NPO/Citizen Group

OPEN YOKOHAMA

Creative city

The Evaluation of the City of Yokohama



Environmental Model Cities

In July 2008, Yokohama has been selected by the national government as one of the 13 **“Environmental Model Cities”** in Japan to pioneer and environmental action by cities, and it is cooperating with citizens to protect the environment at all levels, ranging from the daily living environment to the urban environment and global environment.



The first 6 “Eco 2 Cities”

Yokohama(Japan) , Brisbane(Australia) , Curitiba(Brazil)
Stockholm(Sweden), Singapore, Vancouver(Canada)

In 2010, Yokohama, the only Japanese city was selected by the World Bank as one of the first six **“Eco2 cities”** embodying success of G30, the countermeasures for environment and the city development.

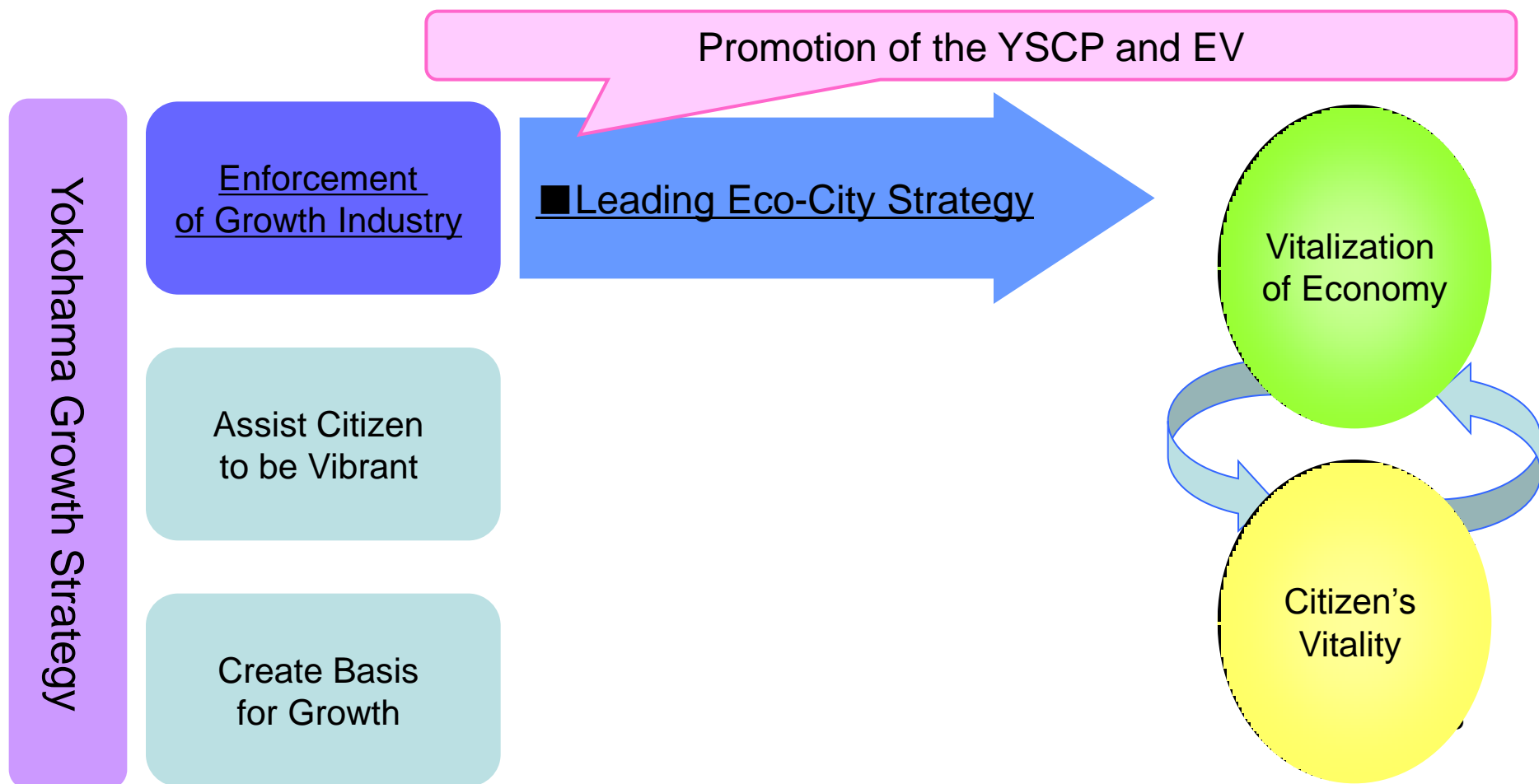
【Member of the international group for environmental issue】



From 2005, representatives of leading 40 world cities to discuss joining forces to tackle global warming and climate change. The representatives saw the need for action and cooperation on reducing greenhouse gas emissions and pledged to work together towards achieving that goal. Yokohama joined this group from 2009.

New Midterm Four-Year Plan (2010~2013)

Upwardly revised reduction targets of GHG
To Reduce by 25 % by 2020 and 80% by 2050



Growth Strategy Yokohama Version

-Urban Strategy Towards a Cutting-Edge Environmental City-

Yokohama leads and promotes the global warming prevention, and makes the best possible use of the power of local businesses and boost development of vibrant city economically.

Provide business opportunities through demand creation

Households : Eco-Friendly Activities

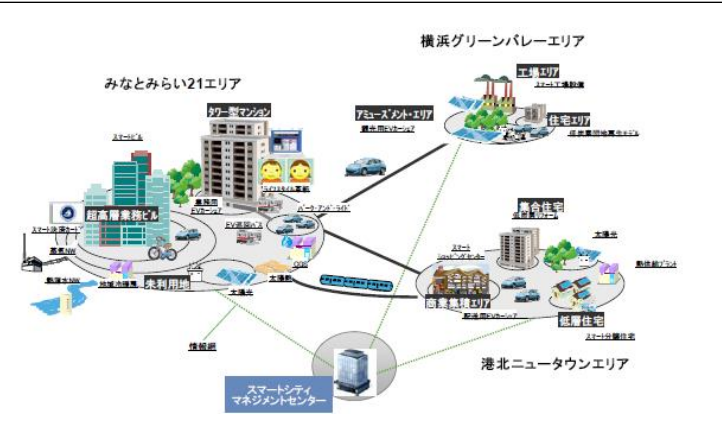
Households : Rapidly Expanding Diffusion of EV

Public : Regeneration that pays attention to the infrastructure environment

Private : Investment expansion by considering the environment

Private : Expansion of the Yokohama Smart City Project

- Massive introduction of renewable energy such as sunlight, solar heat, and wind power
- Promotion of development and introduction of energy management system
- Massive introduction of electric vehicles and building of energy cooperation system



Promote technological innovation of corporations within the city

Growth support of small- to medium-sized corporations within the city in the environmental field

Leading Efforts: Promotion of Yokohama Green Valley

Attracting Environment-related Corporations

Creating New Business Opportunities

YSCP Vision and Objectives

YSCP aims to build the "Next Generation Energy Infrastructure and Social System" that maximizes CO2 reduction in the forefront of innovation.

Background

Increasing need for energy security

Economic development (green innovation)

Cities as center of CO2 emissions

Environmental Model City

⋮

Vision and Objectives

Ambitious CO2 reduction target (64,000t-CO2 by 2014)
Export overseas as a city scale infrastructure package

Assemble Advanced Knowledge, Build in Yokohama, Expand Abroad



Assemble Advanced Knowledge



Build in Yokohama



Expand Abroad

Build the existing urban model solutions by citizen participation
Aim to Expand to APEC regions after APEC 2010 in Yokohama

Next Generation Energy and Social System

One of four cities* selected to by the Ministry of Economy Trade and Industry as Next Generation Energy and Social System Pilot

Yokohama Smart City Project (YSCP) Targets

Introduce large quantities of Renewables

PV: 27MW, Solar Heating

Home Energy Management Systems

HEMS: 4,000homes

Building Energy management Systems (BEMS)

BEMS: 160M square meters

Next Generation Transportation

EV: 2,000
Charge & Discharge EV

Community Energy Management System

Energy management in 3 areas

Heating

Factory waste heat and river water heat

Lifestyle Change

Governance Structure

2009

2010

2011

2012

2014

● Concept development

Planning

Small start

Expansion & Verification

* Four pilot cities:Yokohama, Kitakyushu, Keihanna, Toyota

2011.3.11 14:46 Great East Japan Earthquake

Magnitude 9.0, Ensuring 37.9m Tsunami

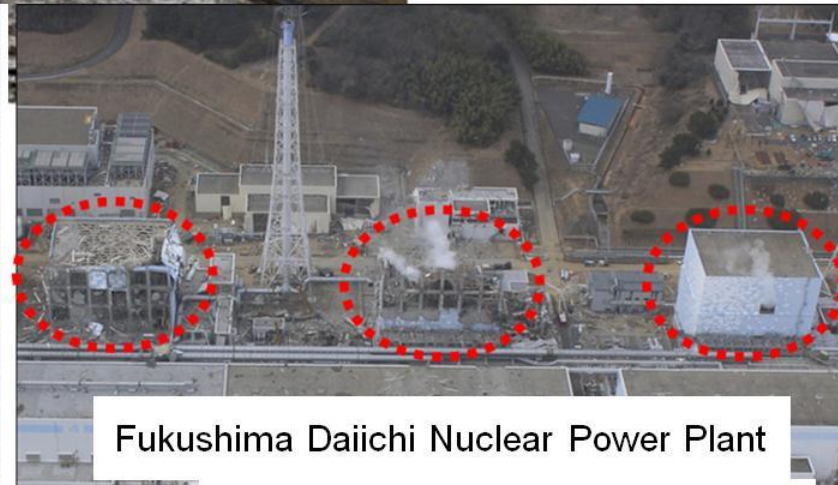
Number of Missing and Dead: 24,988 (as of May 5)



©: Nikkei Net



Rolling Blackout held in Tokyo, March 18 ©Nikkei Net



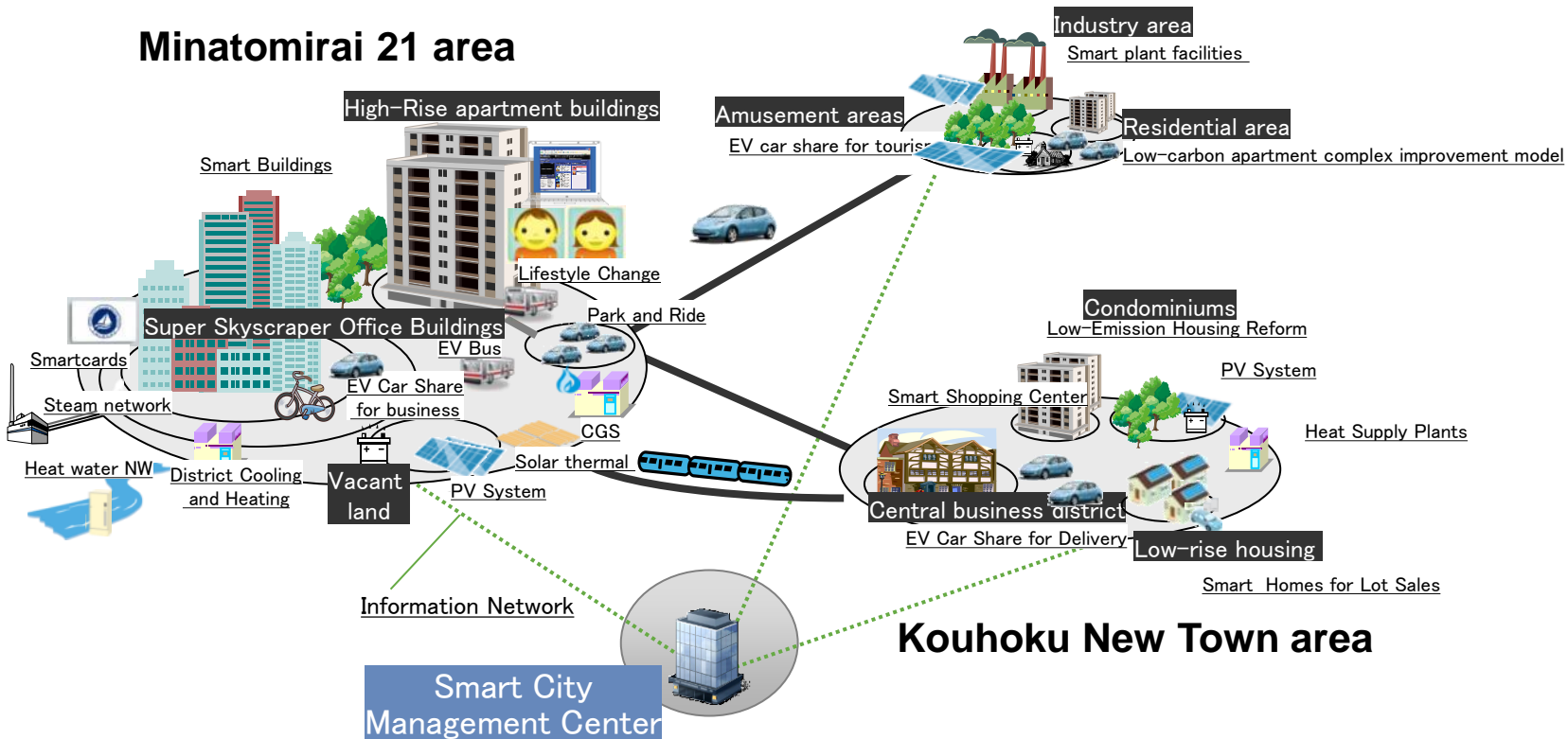
Fukushima Daiichi Nuclear Power Plant

©: The Wall Street Journal Japan Website

YSCP Overview

Yokohama Green Valley area

Minatomirai 21 area



Project Members

City of Yokohama, Accenture, Tokyo Gas, Tokyo Electric Power Company, Toshiba, Nissan, Panasonic, Meidensha, etc.

Project Areas

Minatomirai 21Area, Kohoku New Town Area, Yokohama Green Valley Area, etc.

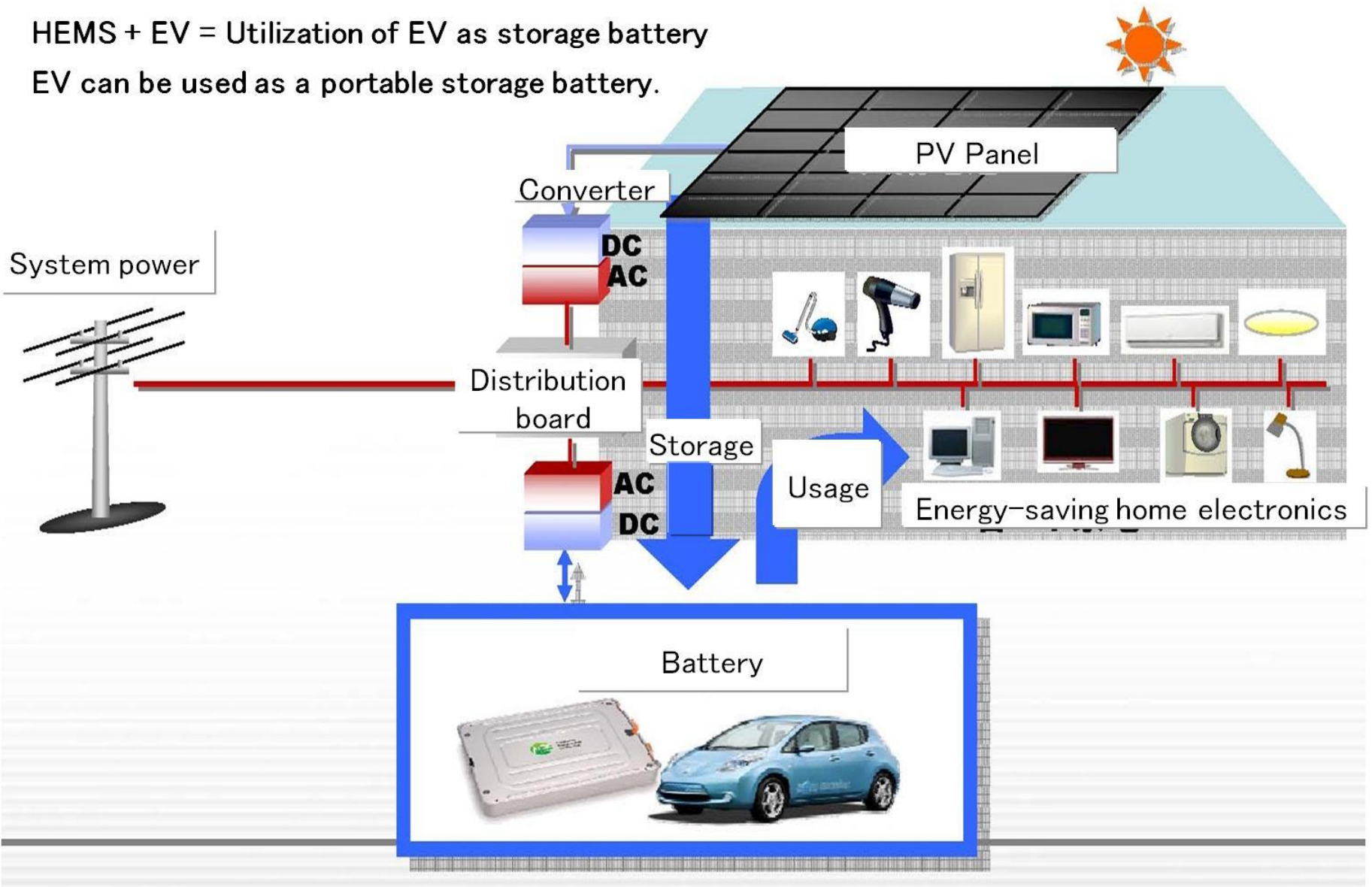
Area Statistics

Population 420,000, Approx. 60km²

EV linkage with HEMS

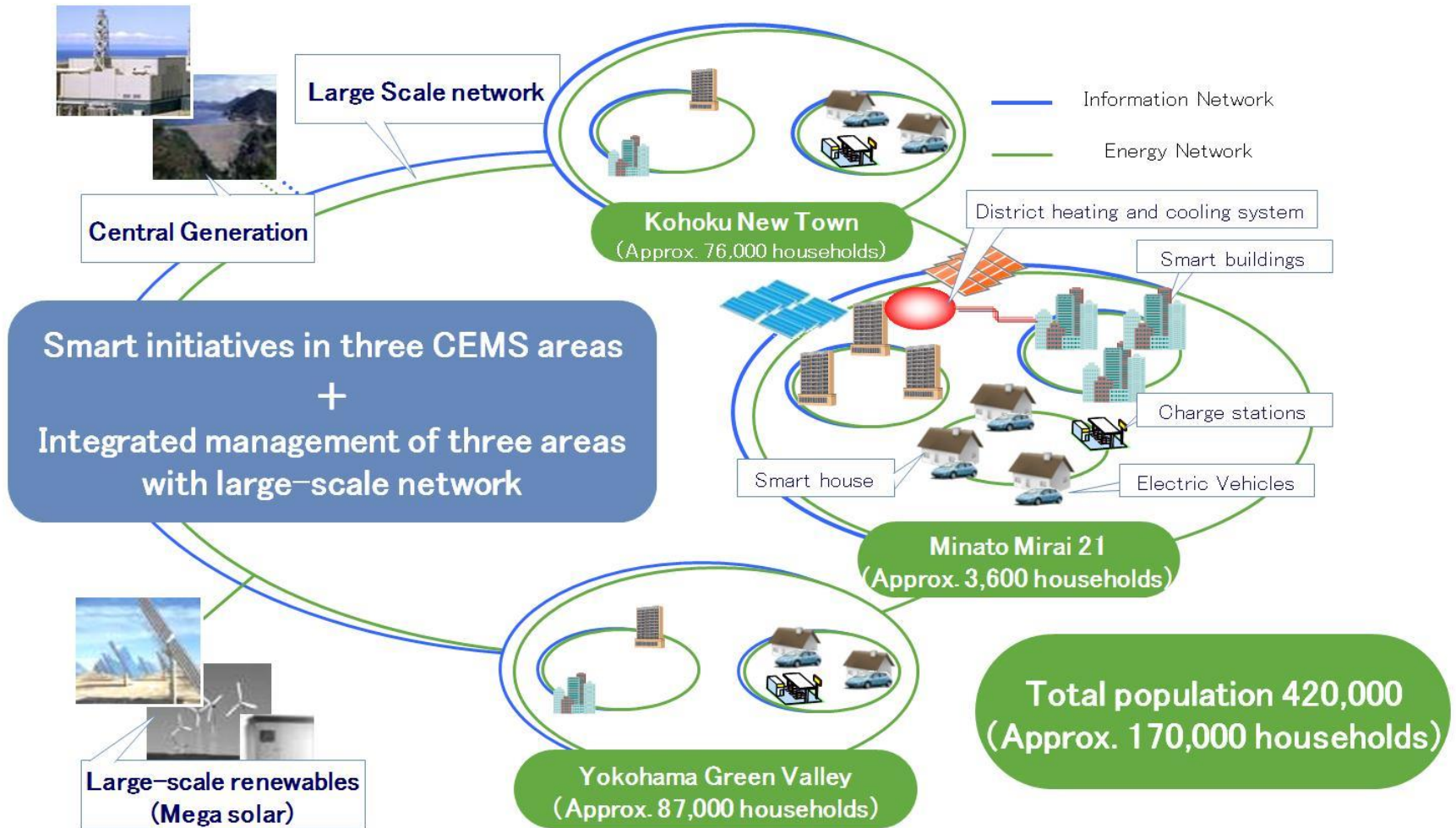
HEMS + EV = Utilization of EV as storage battery

EV can be used as a portable storage battery.



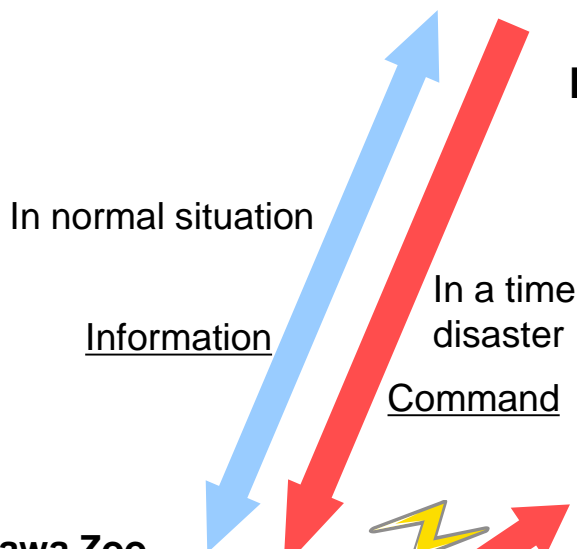
Community Energy Management System

Absorbs power output fluctuation from renewables by integrating a stationary battery with HEMS and BEMS

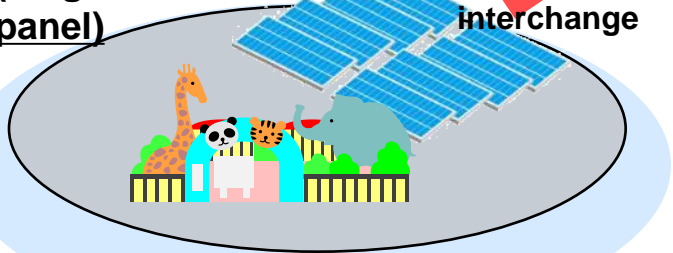


Achieves efficient energy management by managing both demand and stationary energy storage

Energy supply in a time of disaster utilizing CEMS (image)

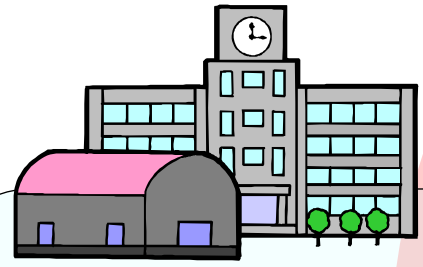


**Kanazawa Zoo
(megawatt solar
panel)**



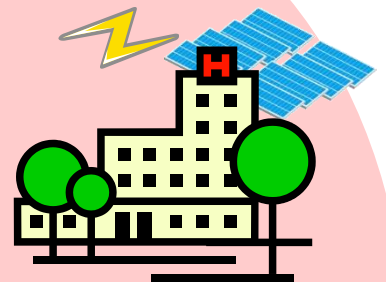
Electricity supply in normal situation

Local disaster preparedness center etc.

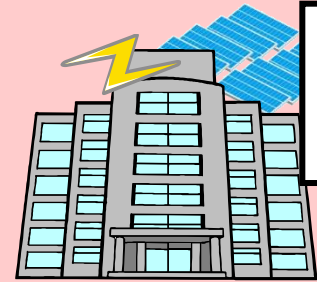


**Disaster-prevention and
medical care facilities**

In addition,
3 facilities have solar panels
(10kW)



City University Hospital



**Kanazawa
Ward Office**

**Self-
sustained
operation**

Provisions of Reconstruction Assistance to Devastated Area

The City of Yokohama will make appropriate contribution to the early recovery and reconstruction of the cities which were devastated by the Great East Japan Earthquake, through the establishments of cooperation between Yokohama and local governments in the disaster-stricken regions with the developed leading-edge technologies and accomplishments of the YSCP and the knowledge of the environmental administration which we have accumulated.

City of Yokohama

Establishment of
Cooperation System

Devastated Area

Reconstruction though YSCP

- Development of Smart Town for simulating the acceptance of the victims of the Great East Japan Earthquake
- Establishment and management of the Cloud Computing Network Data Center for local governments

- Contribution for planning reconstruction
- Reconstruction and management of tap water and sewage infrastructure though PPP

Aizuwakamatsu-City
Fukushima Prf.

Yamamoto-Town,
Minamisanriku-Town
Miyagi Prf.