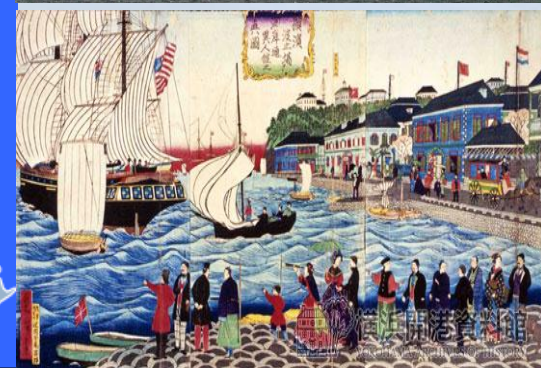
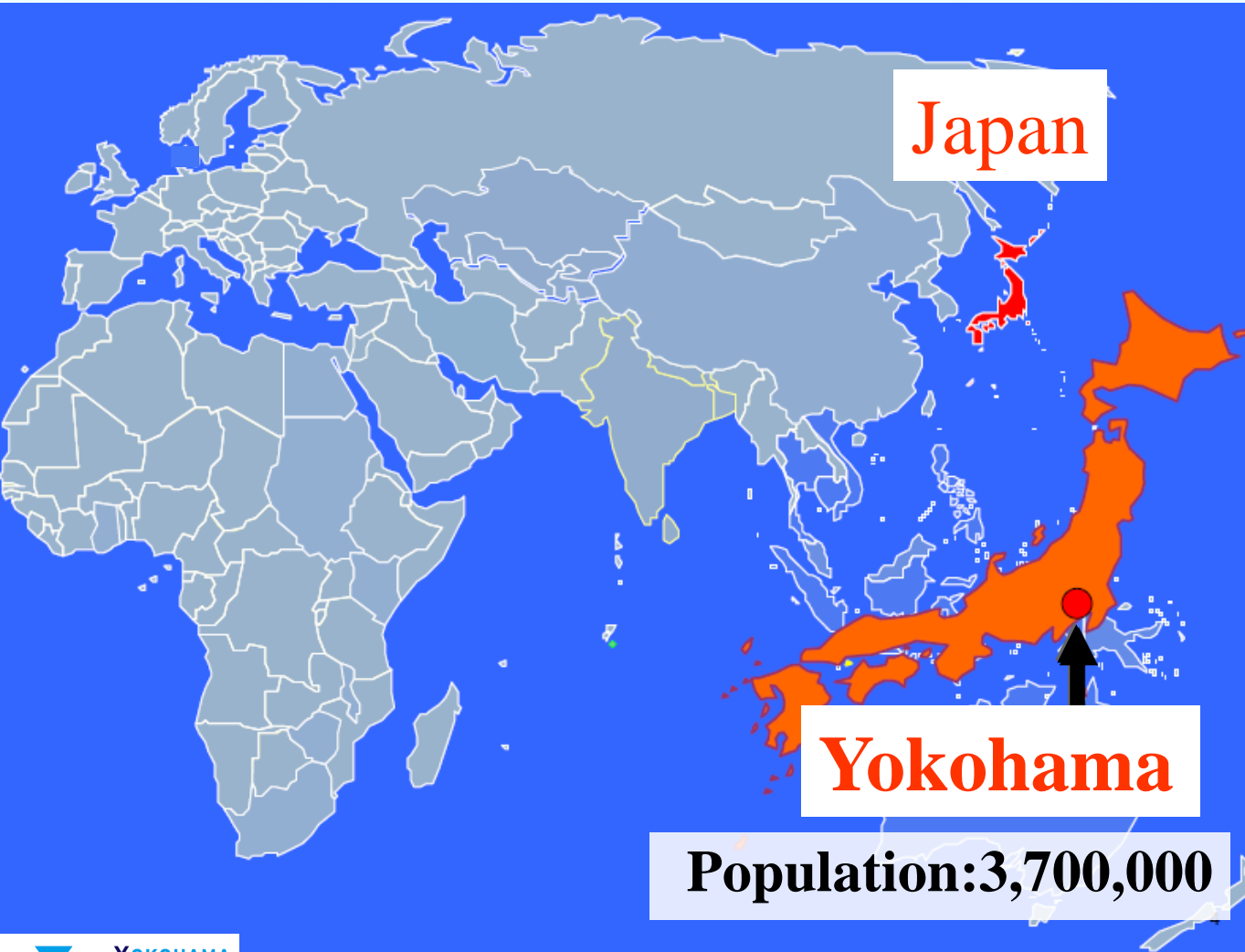


# What is the Smart City in Japan, Yokohama?



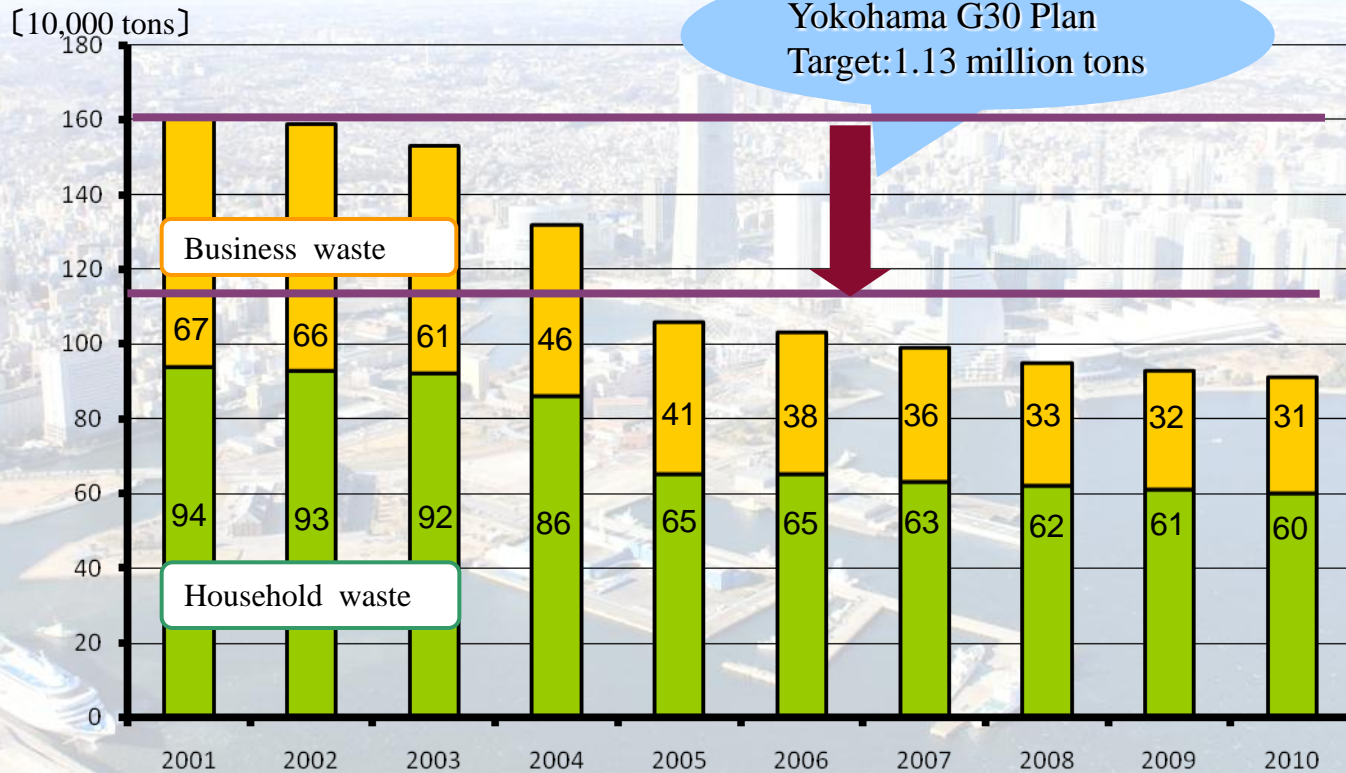
**Frankfurt Representative Office  
City of Yokohama**

# Overview of Yokohama





## Power of Yokohama Citizens



## Experience in Urban Development

Experiences of overcoming pollution and other issues specific to urban cities





## FutureCity Initiative



The diagram consists of five overlapping circles arranged in a cross pattern. A central yellow circle is at the intersection of all five. The top circle is brown and contains 'Environmental Value' and 'Low Carbon / Energy Conserving / Water / Air'. The bottom circle is white and contains 'Economic Value'. The left circle is green and contains 'Creativity/Challenge'. The right circle is purple and contains 'Super Aging Society'. The bottom-right circle is white and contains 'Social Value'. The background features a collage of images: a river with people, solar panels on a roof, and people sitting at a table.

**Environmental Value**

**Low Carbon / Energy  
Conserving / Water / Air**

**Solar Panels**

**Creativity/Challenge**

**Super Aging Society**

**Economic Value**

**Social Value**



# 2011.3.11 14:46 Great East Japan Earthquake

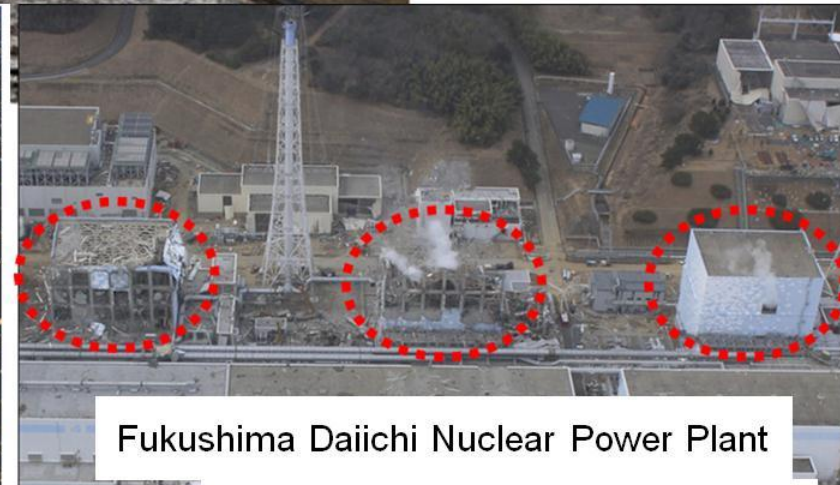
Magnitude 9.0, Ensuring 37.9m Tsunami  
Number of Missing and Dead: 24,988 (as of May 5)



©: Nikkei Net



Rolling Blackout held in Tokyo, March 18 ©Nikkei Net



Fukushima Daiichi Nuclear Power Plant

©: The Wall Street Journal Japan Website

# Yokohama Smart City Project

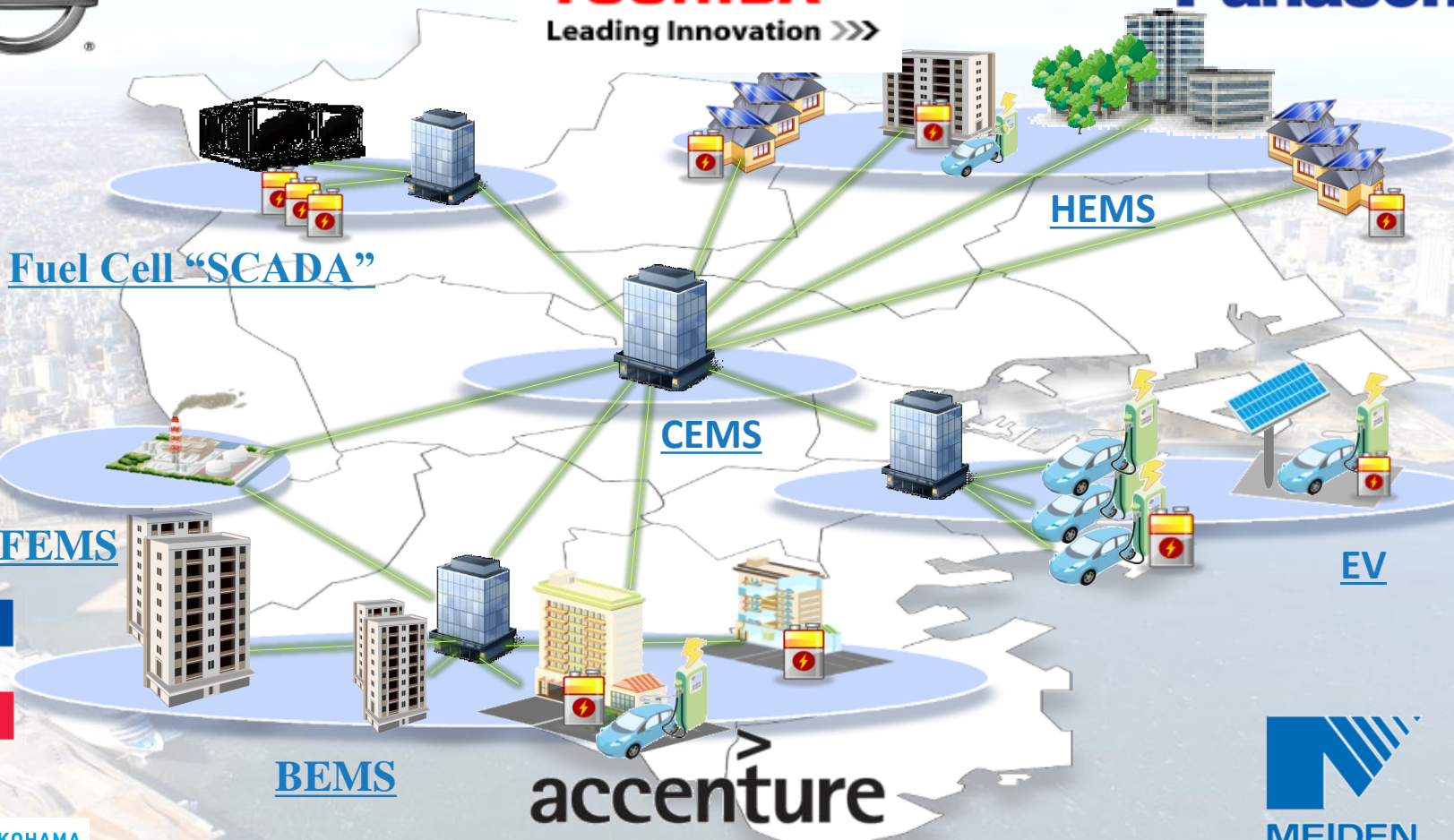


## Making Yokohama the World Leading Smart City



**TOSHIBA**  
Leading Innovation >>>

**Panasonic**



Target by 2014: PV27MW, 4,000 HEMS, 2,000 Electric Vehicles

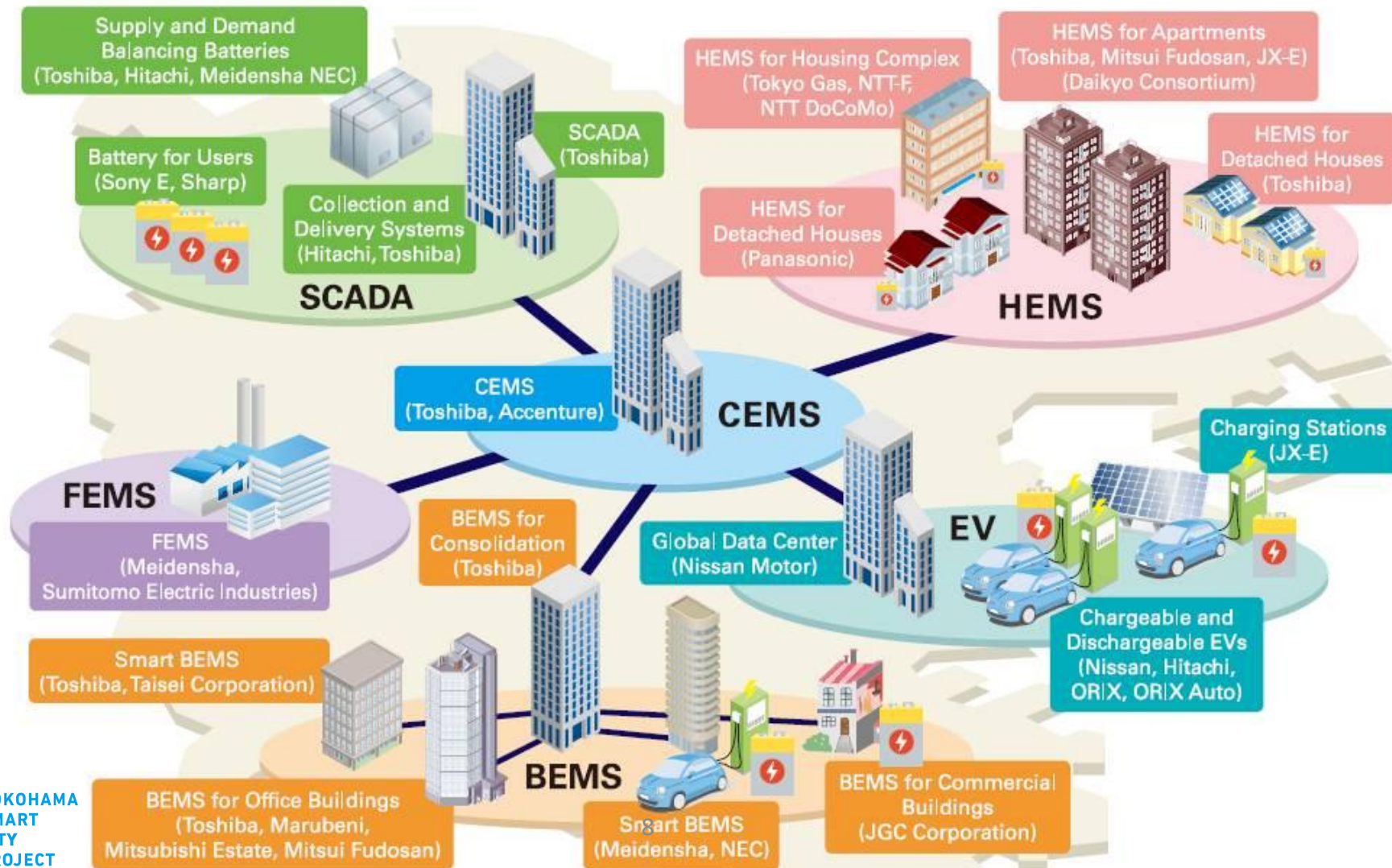


# Overview of demonstration experiments

(Energy management systems)

Target by the end of 2014 PV 27MW / HEMS 4,000units / EV 2,000 vehicles

Target by the end of 2012 PV 19MW / HEMS 995units / EV 887 vehicles





# Example of HEMS

## (Smart House Isogo : Tokyo Gas Co., Ltd. )

- **Demonstration Smart House Collective Housing which can contribution to a low-carbon society**
- **Fiscal year from 2012 to 2013**
- **Building Tokyo Gas Co., Ltd. housing in Isogo Ward**
- **Making energy and Sharing energy**
- **A well-balanced energy use**
- **Comfortable Passive design**
- **Compatibility Eco and Comfort by HEMS**

Page Skip



[Place] Shiomidai, Isogo ward  
[Number of Residence] 24

# Example of BEMS

## (MM Grand Central Tower: Marubeni Corporation /Toshiba Corporation)

- In conjunction with Management center of a group of buildings(Integration BEMS)to run demand response that target the region.(Integration BEMS works with CEMS)
- Major Facilities
  - ① Human sense of image sensors
  - ② Feature set of Management Center for group of buildings (Standard interfaces, Demand response capabilities, Cloud BEMS capabilities)

Page Skip



[Place] Minatomirai , Nishi ward,  
[Building applications] Office, Shop, etc..  
[Scale structure] 26F ground, 2F underground



# Example of HEMS

(Park Homes Okurayama: Mitsui Fudosan Residential Co.,Ltd.,



/Toshiba corporation)



- **Demonstration Energy Management System for condominium building**
- **Optimize the use of energy in the condominium by installing Solar power generation and storage battery**
- **Contribution to regional optimization of energy use in conjunction with the CEMS**

Page Skip

[Place] Okurayama, Kohoku ward

[Number of Residence] 177

[Number of Car Parking] 79(Including 2 car sharing)  
+1 Visitor

[Number of Bicycle Parking] 178+(12 Rental Cycle)



# BEMS – MEIDENSHA: Yokohama World Porters

## Development of next generation type BEMS

### Demand response

- Load pattern prediction & adjustment reserved power management
- Elasticity operation of the energy according to the target.
- Automatic demand response corresponding to the incentives.

### Energy supply optimization

- Control based on the concept of the energy supply efficiency of the whole institution
- Maximization of the supply efficiency by apparatus / output percentage control
- The electricity demand shift by the fixed battery system. Virtual battery system of multi EVs.

### Building cooperation control

- Application in the demand place where multi institutions which are performing individual management exist in the same site.

### Common communication specification

- Standardization of a connection interface

## Development of the fixed large-sized battery system.

- Advancement in High-voltage and large-capacity of a lithium ion battery which have small and the lightweight characteristic.
- The advancement of the control technology in a battery system
- Improvement in flexibility of BEMS energy control.

Page Skip





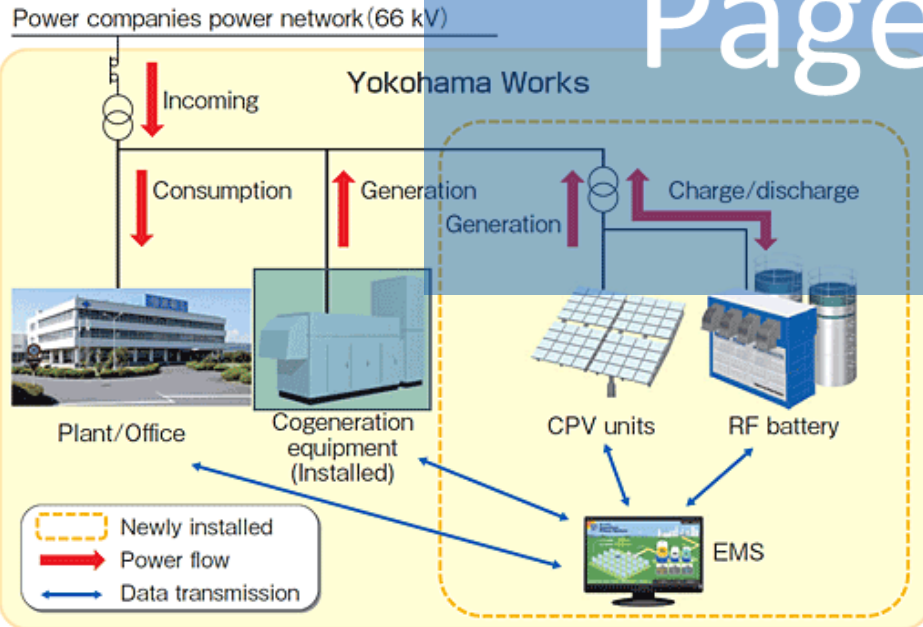
# FEMS – Sumitomo Electric

- **Redox flow battery** (capacity: 1 MW x 5 hours)
  - **28 units of CPV** (maximum total power generation: 200 kW)
  - **EMS** which monitors the amount of CPV-generated electric power, battery storage and power consumption, and stores the measurement data in the central server
- **Peakcut (1MW Demand Control)**
  - **Planned generation of solar power with redox flow battery**

Page Skip

The Megawatt-Class Power Generation/Storage System

(July 2012)



## BEMS (Building Energy Management System)

CEMS:  
Community Energy Management System





# Making Yokohama a City of Electric Vehicles

New Mobility Concept



Page Skip

Not only means of transportation,  
but also function of storage battery

EV sharing in industrial area  
and shopping district





## HEMS (Home Energy Management System)



**Efforts in detached houses**



**Efforts in Apartments**



# Demonstration Project participated by local residents

About 2,000 households will participate in YSCP 'Demand Response' demonstration project starting April 2013

## Preparing Meeting

Date: October 11-22, 2012 / Place: In five wards of Yokohama  
Total Participants: 175



HEMS display: Power supply and demand



# Lessons learned & Challenges for next step

## Development of a New Business Model and Job Creation



## Citizen Participation for Smart Lifestyle



## Contribution to Solving Urban Problems in Other Cities





# Business Matching between Japanese Leading Companies and SMEs - Job Creation

Yokohama  
Smart City Project

**Leading Companies**



NISSAN

TOSHIBA  
Leading Innovation >>>

accenture

Panasonic

MEIDEN

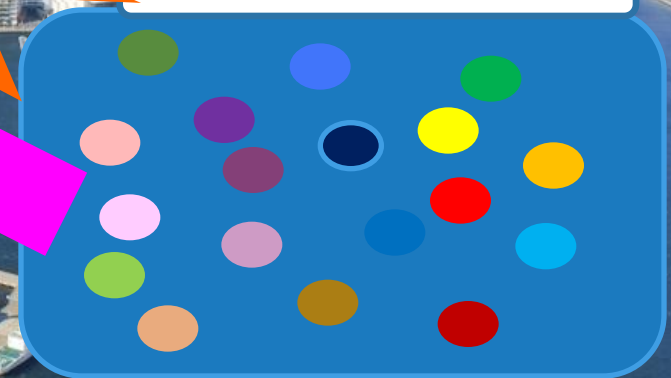


**Demonstration of cutting-edge  
Technology**

**New Business  
&  
Job Creation**

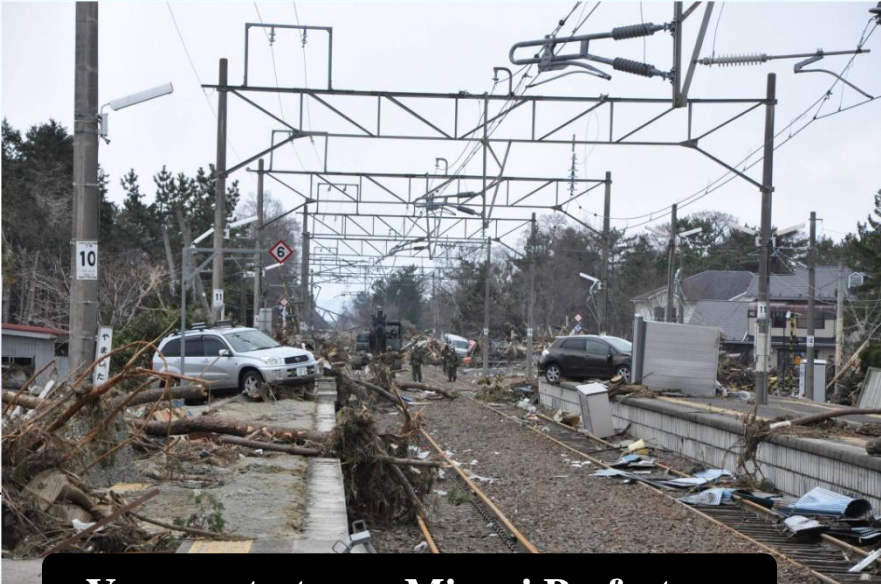
**SMEs in Yokohama**

**Unique Technology  
of SMEs**



Yokohama Green Valley Project

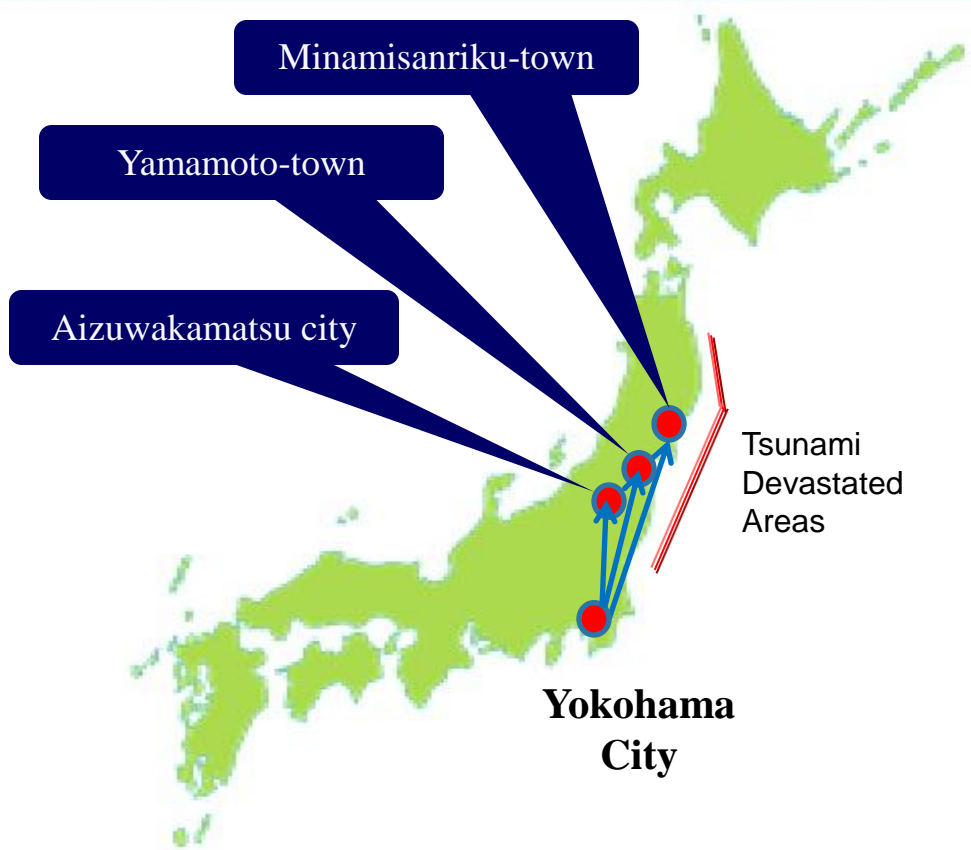
# Great East Japan Earthquake - Assistance for disaster areas



**Yamamoto town, Miyagi Prefecture**



**Minamisanriku town, Miyagi Prefecture**



**City of Yokohama assists disaster areas by joining the advisory boards and developing plans**



# Contribution for urban problem all over the world



The first 6 “Eco 2 Cities”  
Yokohama (Japan), Brisbane (Australia)  
Curitiba (Brazil), Stockholm (Sweden),  
Singapore, Auckland (New Zealand)



C40: International Group for environmental issue

# CITYNET



First winner of the World Smart City Awards in Barcelona, Spain (2011)



‘FutureCity’ Yokohama in Rio de Janeiro, Brazil (Rio+20, 2012)



Asia Smart City Conference, Yokohama, (October, 2012)





# Thank you



For Smarter Cities, For a Smarter Earth

