

Kashiwa-no-ha Smart City

Developed by MITSUI FUDOSAN CO.LTD)

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NSRI
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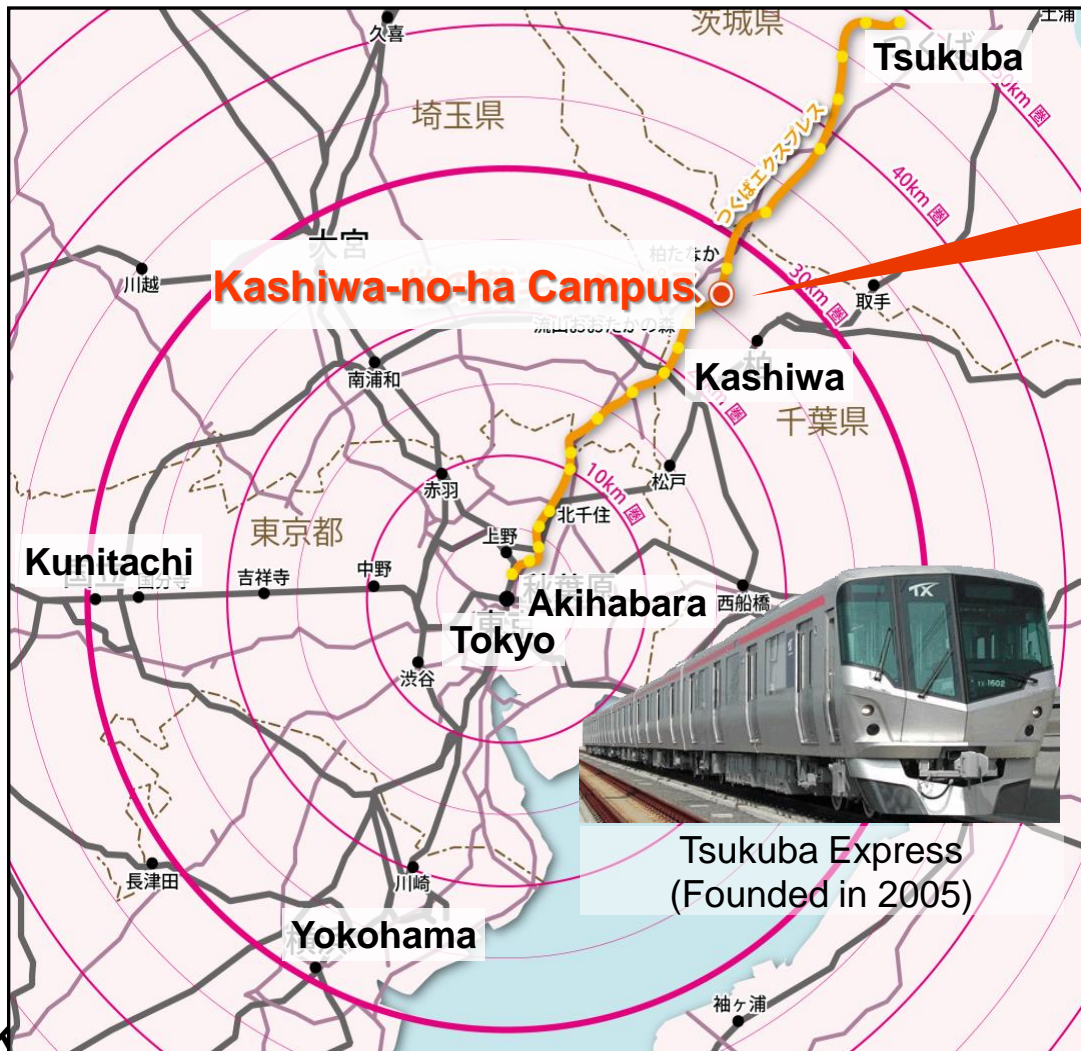
- I . Outline of Development**
- II . Smart City Concept (before / after Great East Japan Earthquake “3.11”)**
- III . Environmental Symbiotic Town**
- IV . Safe, Secure and Sustainable Community**
- VI . Encouraging Quality of Life & Business**



I . Outline of Development

Kashiwa-no-ha Campus Town in Perspective

- 25 kilometers from central Tokyo, midway between Akihabara and Tsukuba
- 30 minutes from central Tokyo by Tsukuba Express



Brand-new 273 hectare town with an estimated population of 26,000



- Utilizing cutting-edge technologies
- Public, Private, Academics and Residents participant through the development

Current Status of Area Development

Aerial photo of site combined with computer-generated images of District 148 and Park City 2nd Town



Kashiwanoha Shopping mall
Since 2006
144,500m²
(180 tenants)

Kashiwa-no-ha Park

“Gate Square”
Site area : 23,344m²
Total floor : 53,277m²
Office, Commercial,
Hotel, Rental residence
Since 2014

University of Tokyo

“Park City 2nd Town”
119,000m² (880 units)

Chiba University

UDCK

Smart Museum

Kashiwa-no-ha
Campus Railway
Station

Tsukuba EXP.

“Park City 1st Town”
Since 2009
144,000m² (997 units)

Development Blocks of Kashiwa-no-ha Smart City

Park City 2nd
[2012 completed]



Housing 119,000m² (880 houses)

Gate Square
[Completed in 2014]

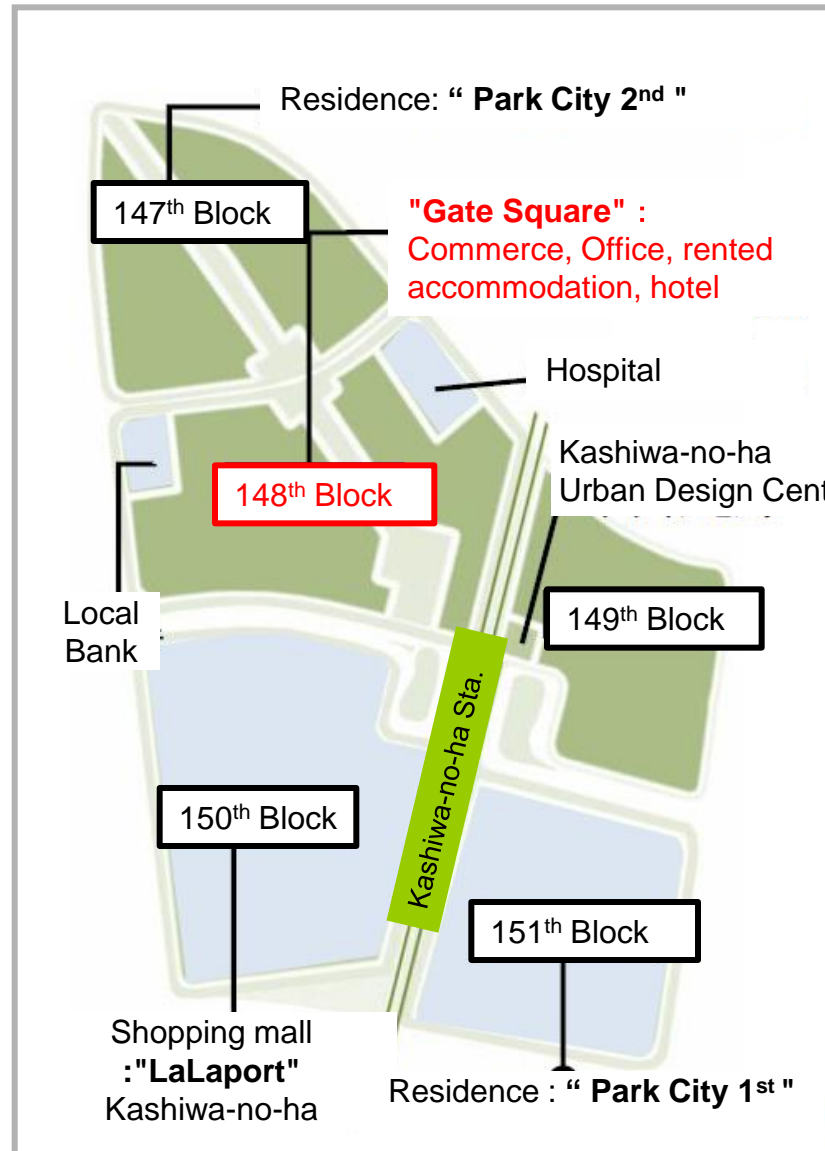


Commerce · Office Building
 Accommodation Building
 (rented accommodation,
 hotel)

Lalaport Kashiwa-no-ha
[2006 completed]



Commerce 144,500m² (185 shops)



Smart City Museum
[Opened in March, 2013]



Urban Design Center(UDCK)
[Opened in Nov, 2011]



Park City 1st
[Completed in 2010]



Housing 144,000m²
 (997 houses)

II . Smart City Concept (before / after the Great East Japan Earthquake “3.11”)

Transform Smart City Concept before / after the 3.11

Before
3.11

Aiming **Low-Carbon and Environmental Friendly Smart City**
(Energy Saving & Energy Creation, Greenery)

[Technology oriented issues]

- **Storage Electricity power**
- **Interactive usage of Electric power**
- **Resilience of infrastructure and buildings**

**Optimum energy use in region
with smart energy network**

[Activity oriented issues]

- **Community risk management**
- **Business & Life Continuity Plan (BLCP)**
- **Smart Service Business**

**Improvement of
quality of life and business**

After
3.11

Realization of Sustainable Smart City in Japan
with integration of regional Energy × Safe / Secure × Smart Services

Kashiwa-no-ha Smart City expects to show a model to solve world's common challenges

Environmental-Symbiotic City

Solution for environmental & energy problems

Health & Long-life City

Solution for aging society

Innovative City for New Industry

Solution for vitalizing the economy



Safe, Secure and Sustainable
in cooperation with
Public, Private and Academic sectors



Smart Center(2F)



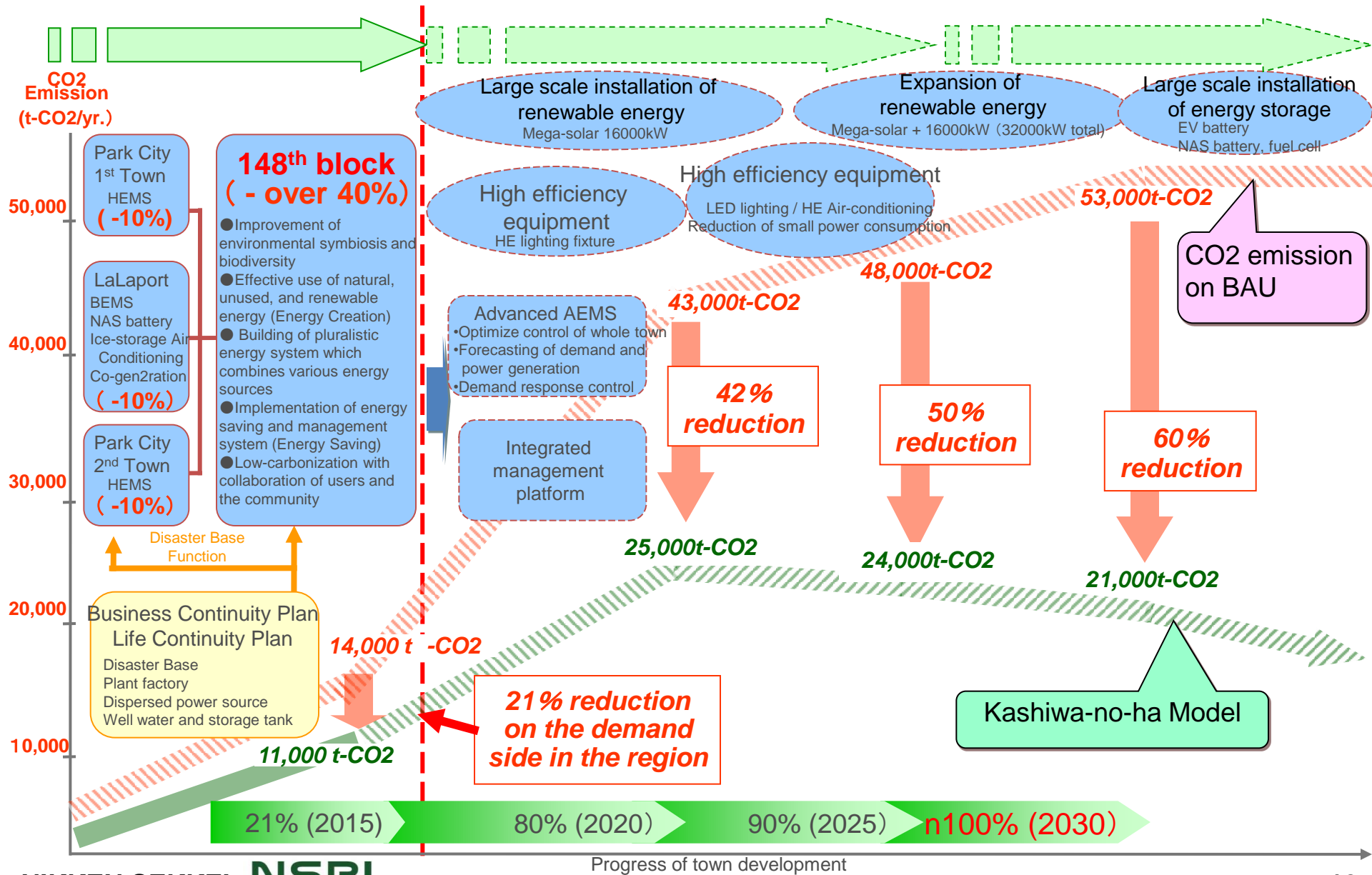
Health & Wellness Station(3F)

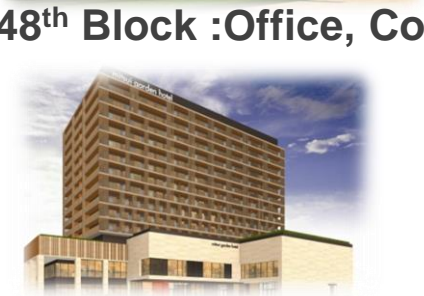


KOIL(6F)

III. Environmental Symbiotic City

Roadmap of CO2 Reduction in Kashiwa-no-ha





Park City 1st, 2nd : Residence

Energy Generation

- >Renewable Energy
 - PV : 716kw
 - Wind turbine
 - Solar thermal
 - Underground heat
 - Geothermal



- >Untapped Energy
 - Biomass
 - Waste heat from CGS

Energy Saving

- >Hybrid with Traditional Passive Design
 - Greenery Facade
 - Sun shading design
 - Natural ventilation
 - Evaporating pavement
 - Cool/heat tunnel



- >EV car sharing



Energy Storage

- >Nas battery :1800kw
- Li battery : 500kw



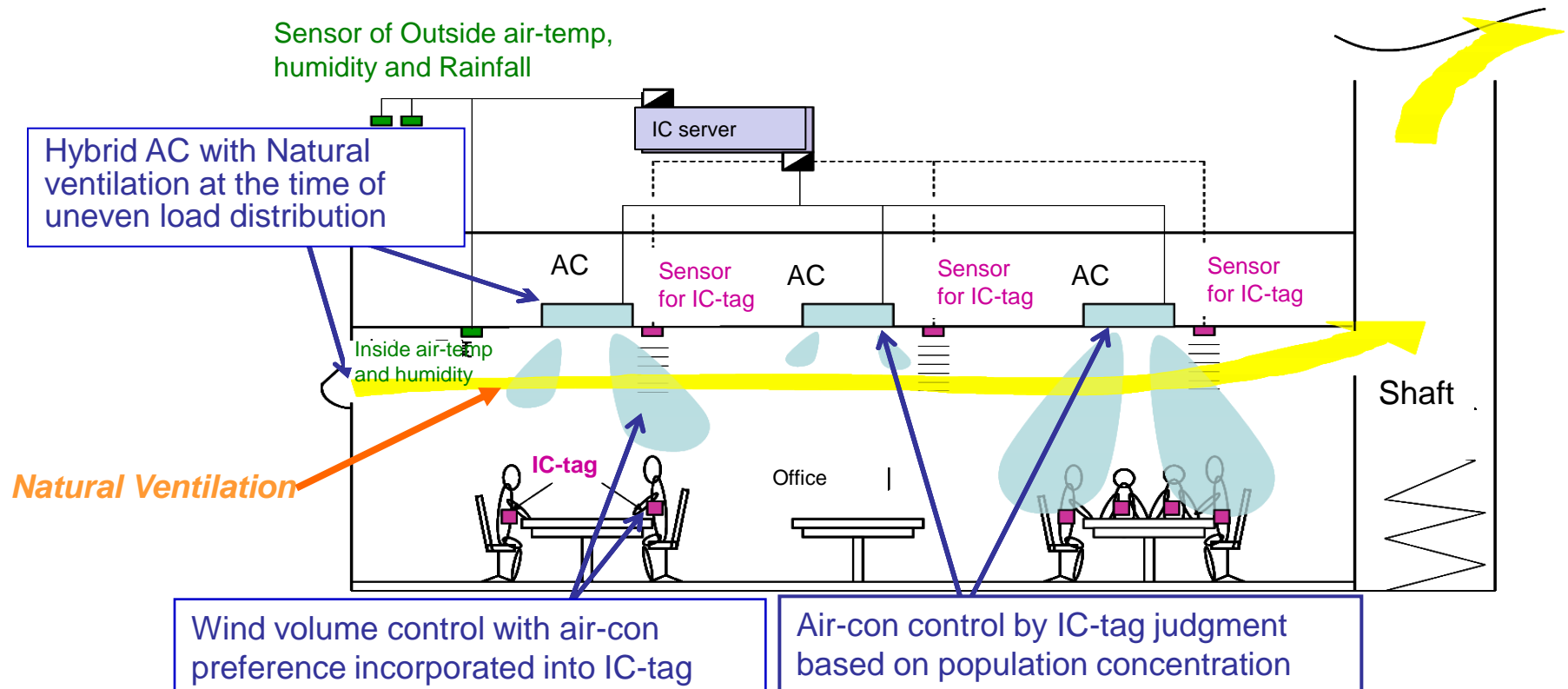
- >Thermal storage by ICE tank

- >Interactive use through car battery



Automatically AC control system for optimizing each work environment status.

- Task-ambient air-con. control system using IC-tag motion sensor
- Desiccant air-con. system using exhaust heat from co-generation
- Optimization of energy use by accumulating and analyzing data utilizing information technology.



Visualization and Advising the Regional Energy Use

Decrease the regional power consumption by controlling the balance between both demand and supply side through the information of regional energy on a real-time basis

【User interface】



(Tenant, resident)

Tablet



(Housing)

Control panel



(Office)

Digital signage



(Common space)

Visualization of energy Navigation and advice energy saving methods

AEMS

Integrated Network

Energy consumption info

HEMS

BEMS

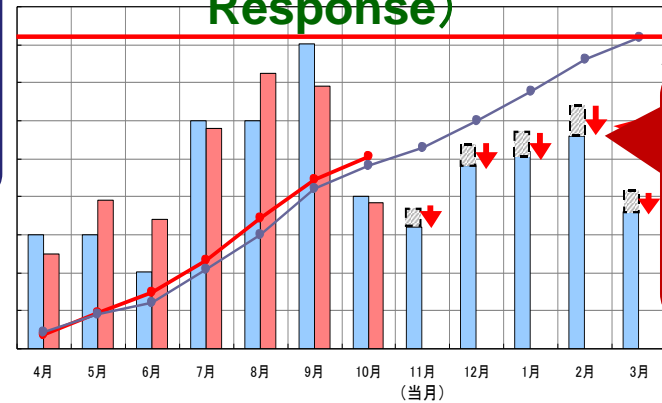
Housing

Hotel

Office

Commerce

Energy Saving Navigation (ex: Demand Response)



Target value

Automatic revision of monthly target value concerning

■ 月別目標値 ■ 実績使用量 ● 本年度実績累計 ● 月別目標累計

Housing

Housing

Commerce



【1st Block】



【2nd Block】



【Lalaport】

Health & Home Energy Management System

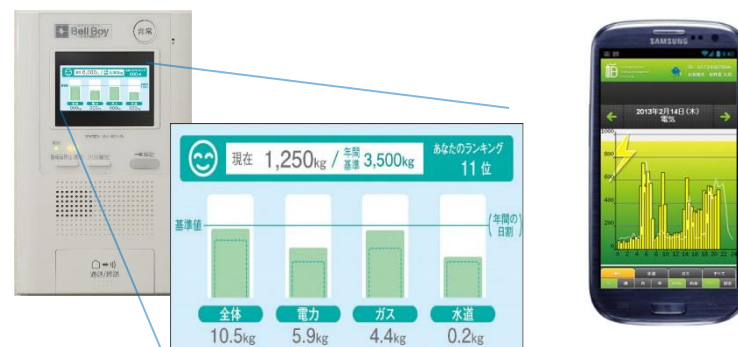
Visualization of health data



- Record daily health info automatically to ITC and check on PC and smart phone
- Use of 24-hour wearable wristband life recorders and body composition scale with telecommunication function

Start demonstration service from Feb 2013

Visualization of energy



- Visualize consumption of electricity, gas and water
 - Enjoy energy saving using ranking and SNS
 - Grant regional points in accordance with amount of energy saved
- Provide all houses at Park City 2nd Block as standard equipment (880 houses)

Electric Vehicle and Motorcycle sharing



- Sharing electric cars and bikes using ICT system
- Started the service from June 2011, and there are approx. 400 members now

Mercedes: Smart × 3, Smart EV × 1
 YAMAHA: EC-03 × 5, PAS × 2
 Kashiwa smart cycle (bicycle) × 50

Digital Signage

Installed 3 signage systems at Kashiwa-no-ha Sta.

Operated from 31st March, 2013

- Deliver town info through ICT
- At normal times, provide life support
- In case of emergency, provide disaster prevention service through EBS

Added disaster prevention function
 “Emergency Energy Supply for Town”
 from 23rd March, 2013

- Added Nissan LEAF and EV Power Station
- Equip a “disaster prevention box” which contains AC power source and lighting at EV power station



Emergency lighting in case of blackout

Charge cell phone and PC

Emergency power supply for disaster prevention equipment

Distribution board

In case of blackout, supply electricity to digital signage
 Disaster Prevention Service for Town

Info. distribution management server

Regional info Town promotion info

Event info Energy supply and demand info

Traffic info EBS (in case of emergency)



Propose new life style
in cooperation with public and
private sectors and
schools led by **UDCK**



Provide system which encourages
Residents to participate in smart city.
Create sustainable community.

Variety of Activities for Settles

- **Urban Design Center (UDCK)**
 - Hub of organizing smart city with public, private and school
- **Kashiwa-no-ha Eco-club and nature kid's club**
 - Hub for activity of eco-friendly life style
- **Kashiwa-no-ha Future village (KFV)**
 - Hub for eco-friendly activity by local people
- **Marche couleur**
 - Station market for local production and consumption
- **Kashi-hana (flower) project**
 - Planting activity at the station by residents
- **Low carbon transportation sharing**
 - Provide eco-friendly transportation
- **Regional economic activities**
 - Eco-point for eco-activity

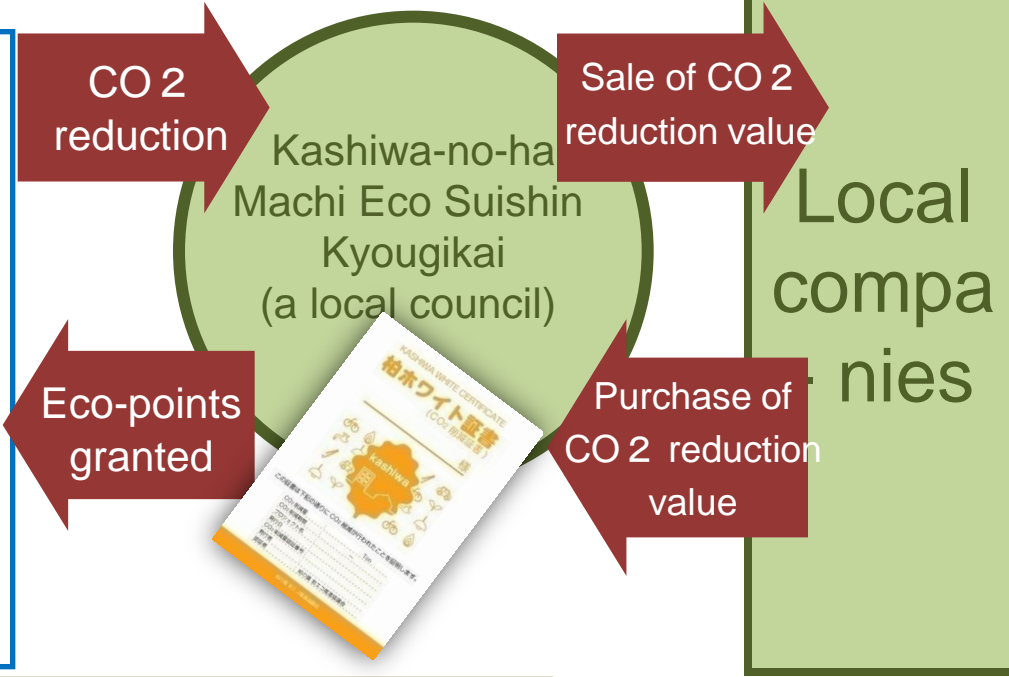
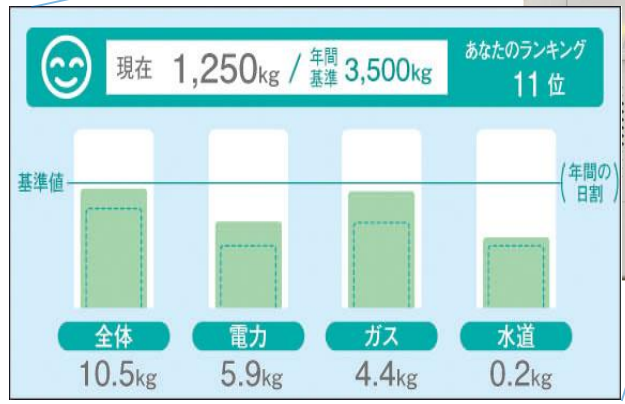


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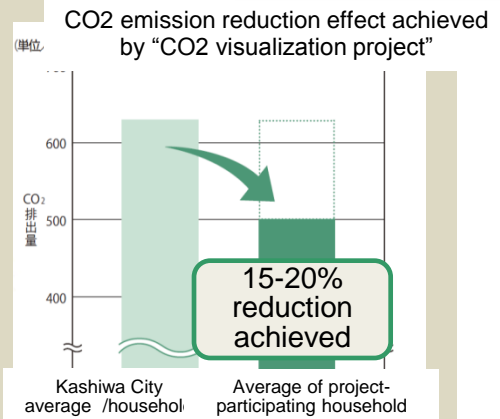
Visualization of Residential Energy and Eco-points program

HEMS will be installed into 2,500 households around the Kashiwa-no-ha campus station and now got to start eco-points

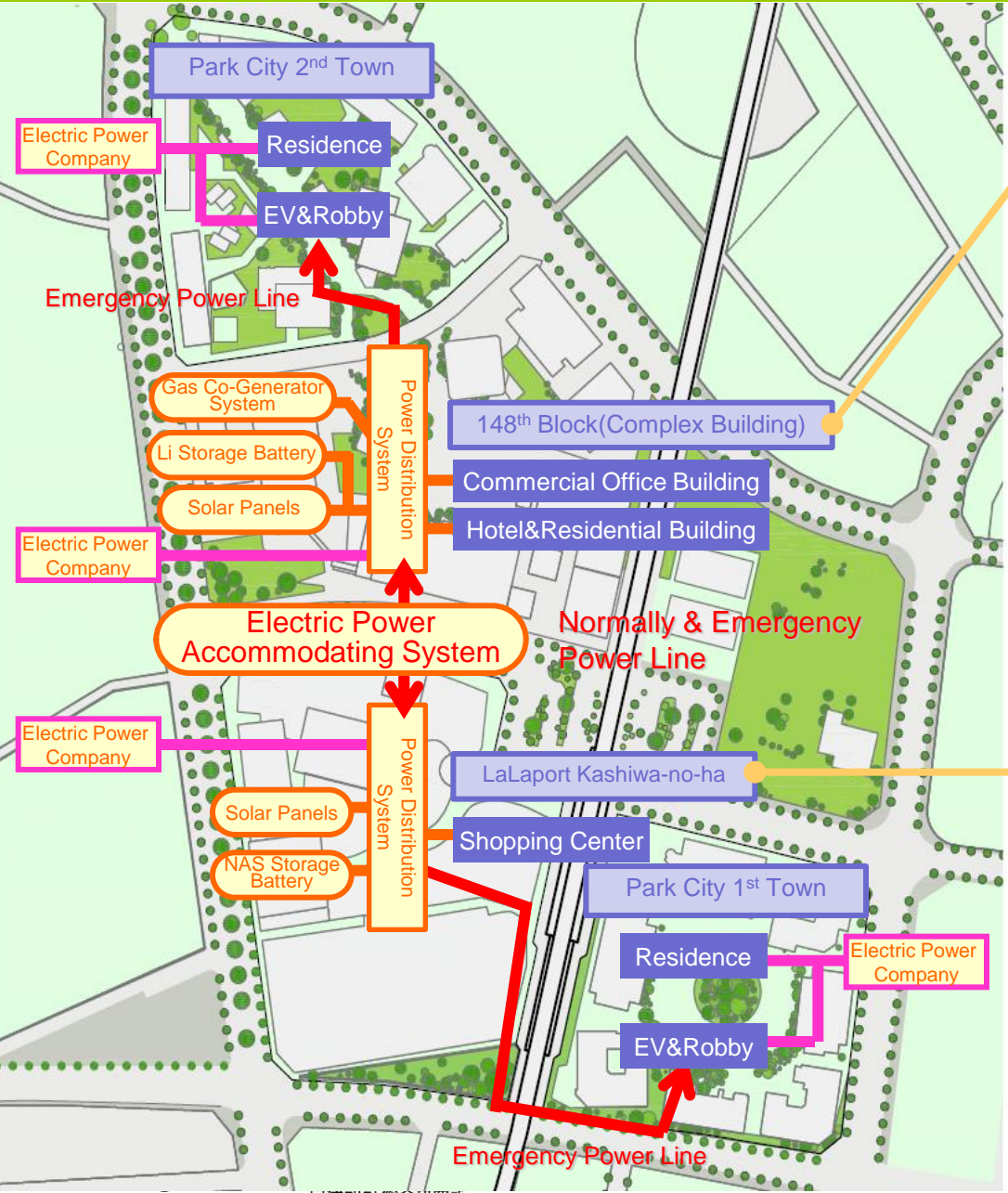
- Monitor the usage of electricity, gas and water at home
- Ranking is displayed on the monitor



Promoted activities of Eco Club” to raise residents’ environmental awareness







**IV. Safe, Secure and Sustainable
City (Business & Life Continuity
Plan after the Great East Japan
Earthquake "3.11")**



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148th Block (Complex Building) Smart Center

<p>Electric Power Accommodating System (1000kW)</p>  <p>Generator System</p>	<p>Storage Battery (500kW)</p> 
	<p>Solar Power System (216kW)</p> 

LaLaport Kashiwa-no-ha

<p>NAS Storage Battery (1800kW)</p> 	<p>Solar Power System (500kW)</p> 
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148th Block (Gate Square) Smart Center

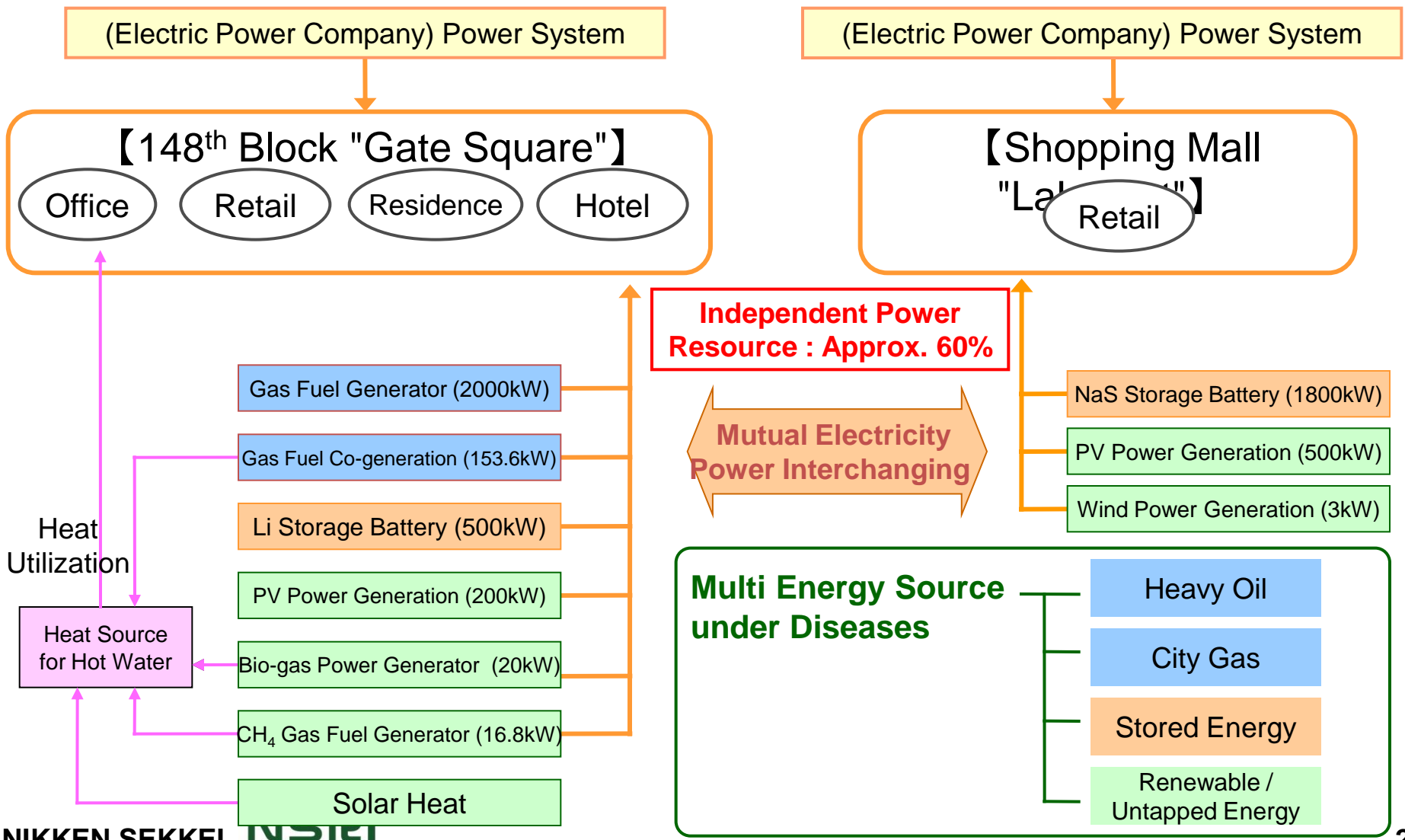
Area Energy Management system (AEMS)

Smart meter/H E M S

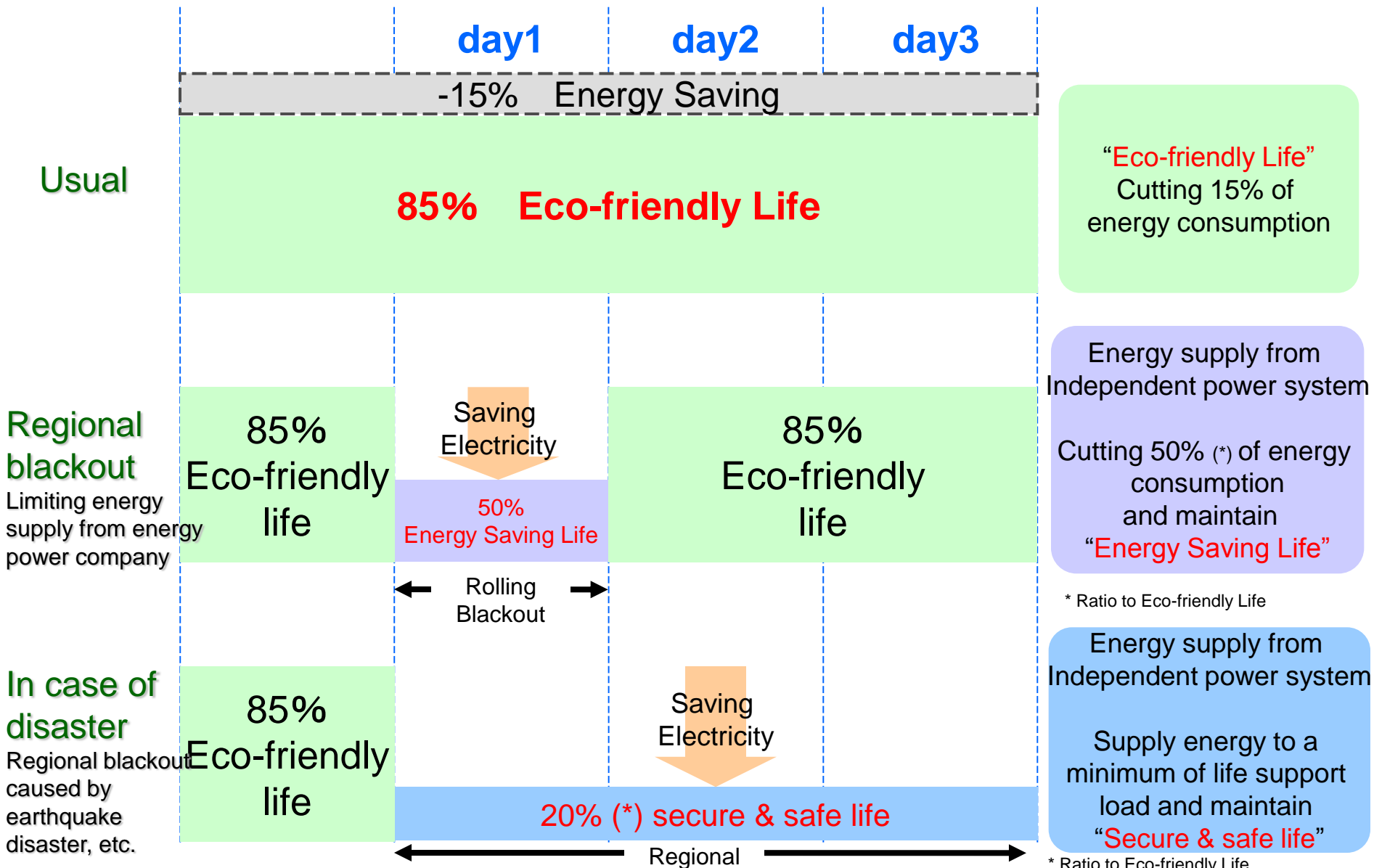
BEMS · BAS

Concept of Power Interchanging (Energy Sharing)

Highly independent energy system utilizing renewable energy, untapped energy, city gas and electric power storage technology, etc.,



BLCP Concept



VI. Encouraging Quality of Life and Business

Social Experiment for Health Visualization Services

Analyze and Visualize Health Data ⇒ Health improvement and Prevention

Obtain health data

Telecommunications infrastructure

Analyze big data

Telecommunications infrastructure

Visualize health information

Wristband activity meter



Obtain exercise and sleep data 24/7 with acceleration sensor

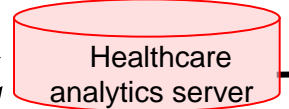
Fitness scale equipped with wireless data communications



Medical institutions database (medical checkup data & electronic treatment records)



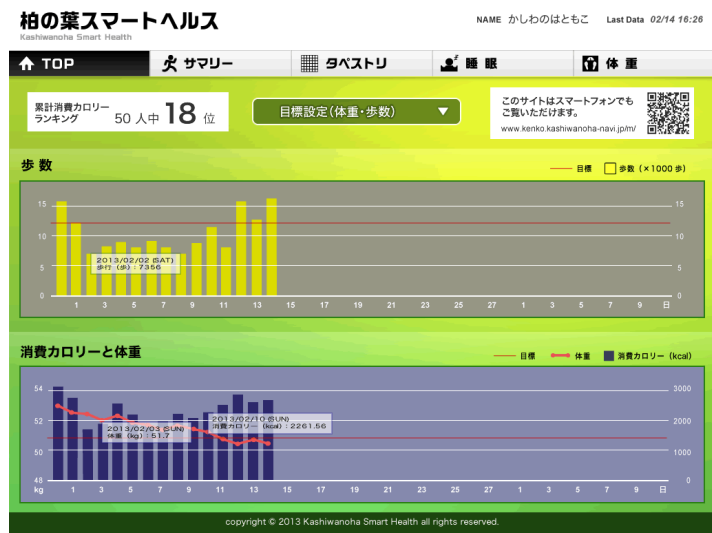
Smart phones and PCs



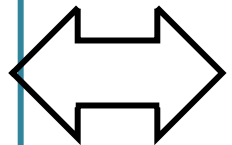
Analyze exercise, sleep and fitness data

- Exercise frequency
- Calorie consumption
- Hours of sleep
- Exercise intensity (METs value)
- Number of steps taken
- Lifestyle pattern
- Weight
- Body mass index
- Body fat percentage
- Base metabolic rate

Smart phones and PCs



ICT-based data integration



Kashiwa-no-ha Open Innovation Laboratory (KOIL)

Completed in spring 2014



KOIL Park



KOIL Laboratory

Key Issues

- >1-minute walk from station
- >Hands-on support by TEP
- >Latest information and active people interaction

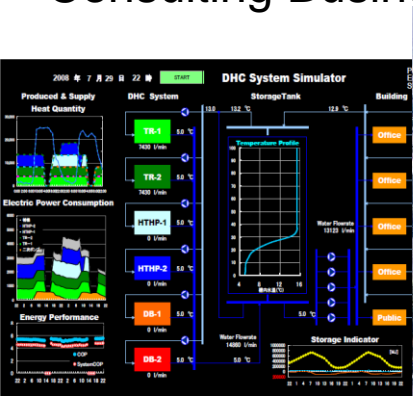
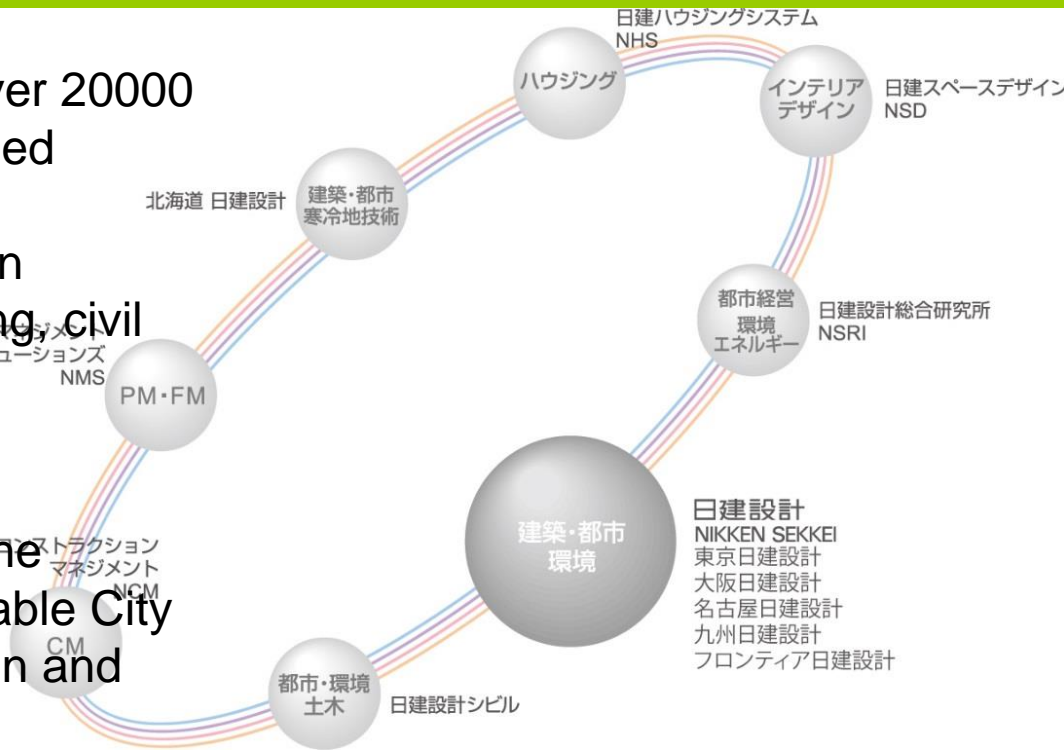
- >Free use of meeting rooms for residents
- >Enriched common facilities such as kitchen and cafe
- >Flexible usage of office space

Nikken Sekkei has founded in 1900, Over 20000 projects have been designed and planned

Around 2,000 experts globally engage in architecture, engineering, urban planning, civil engineering and consulting.

[SERVICES of Research Institute]

- Policy making, Planning, Supporting the Implementation for Smart City, Sustainable City
- Urban Environment and Energy Design and Operation Support
- Analysis, Simulation for environment and Energy
- Consulting Business Scheme (PPP, PFI)



View of Kashiwa-no-ha Campus City in 2030

Thank you for your attention

An aerial architectural rendering of the Kashiwa-no-ha Campus City in 2030. The image shows a dense urban development with a mix of modern high-rise buildings and lower-rise structures. A prominent feature is a large, multi-story building with a blue roof and a glass facade. The campus is integrated with green spaces, including parks, walkways, and a large green field. A train line with a white train is visible, running through the campus. The background shows a vast landscape with more buildings and greenery under a clear blue sky with some clouds.

Annex