

Outline of Kashiwa-no-ha Smart City (Focusing on disaster prepared measures)

HITACHI
Inspire the Next



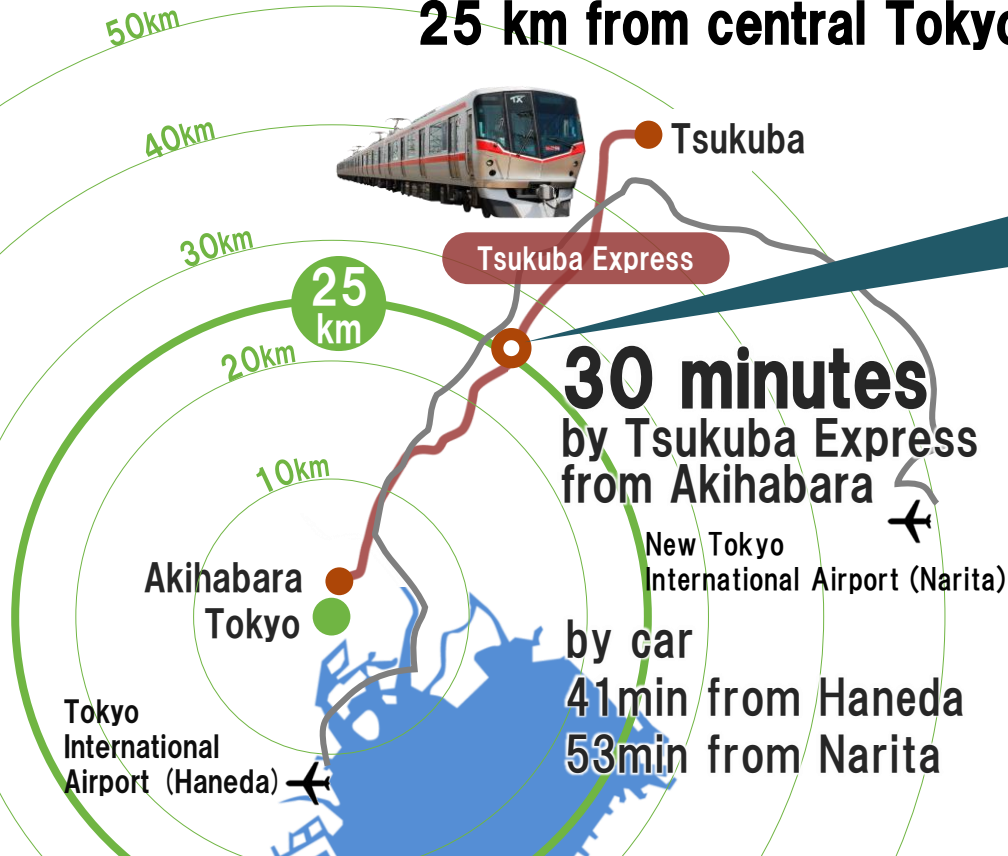
**Society 5.0 Promotion and
Urban Solution Development
Division**

**Social Innovation Business
Division**

Hitachi, Ltd.

1. Kashiwa-no-ha Smart City

Transit Oriented Development 25 km from central Tokyo

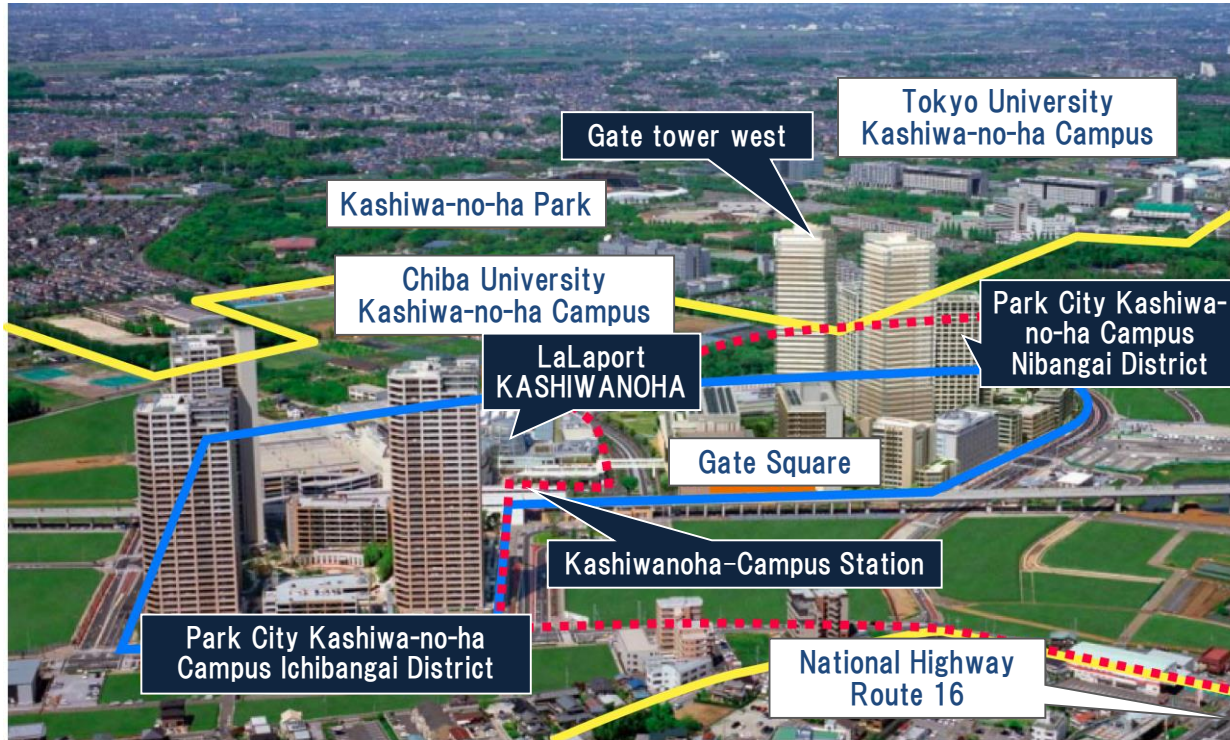


Kashiwa-no-ha Campus



- 2005 Tsukuba Express open
- 2009 Smart City project start
- 2011 Great East Japan Earthquake
- 2014 1st stage of the development completed

2. View of 1st Stage



Developed step by step

- 2005 Kashiwanoha Campus Station
- 2006 Shopping mall "LaLaport KASHIWANOHA"
- 2009 Condominiums "Ichibangai"
- 2011 **Great East Japan Earthquake**
- 2012 Condominiums "Nibangai"
- 2014 Shop & Office, Hotel & Residence "Gate Square"
- 2018 Child care generation support type rental apartment "Gate tower west"

3. Kashiwa-no-ha Urban Development Concepts

**We work on social design with partners, that is,
Developer, Local government, Universities and Citizens**

A new vision for the cities of tomorrow

**Formulated three urban development concepts to help Japan fulfill
its commitment to tackling challenges for the future of the world**

**Environmental-
Symbiosis**

**A city that is people and
environment-friendly and fully
disaster-prepared**

Health and Longevity

**A city in which people of all
ages can enjoy healthy and
secure living**

**New Industry
Creation**

**Fostering growth fields that
become sources of new
vitality for Japan**

**Hitachi joined
this project first**

4. Kashiwa-no-ha AEMS: Multiple Energy Sources

In Kashiwa-no-ha, systems for “energy creation”, “energy saving” and “storage of energy” have been implemented one by one, according to the step-by-step construction.



A: Shopping Mall
“Lala-Port”




B: Shop & Office,
Hotel & Residence
“Gate Square”






C: Residence



Energy creation

Item	Place
<ul style="list-style-type: none"> ■ Natural energy <ul style="list-style-type: none"> - Solar power generation A:500kW, B:220kW - Solar water heating - Use of geothermal heat - Hot-spring heat 	<p>A,B</p> <p>B</p> <p>B</p> <p>B</p>
	
<ul style="list-style-type: none"> ■ Unutilized energy <ul style="list-style-type: none"> - Power generation by raw-garbage biogas - Exhaust heat from co-generation 	<p>B</p> <p>B</p>
<ul style="list-style-type: none"> ■ Emergency generation A: heavy oil 1000kW B: city gas/ heavy oil 2000kW 	<p>A,B</p>

Energy saving

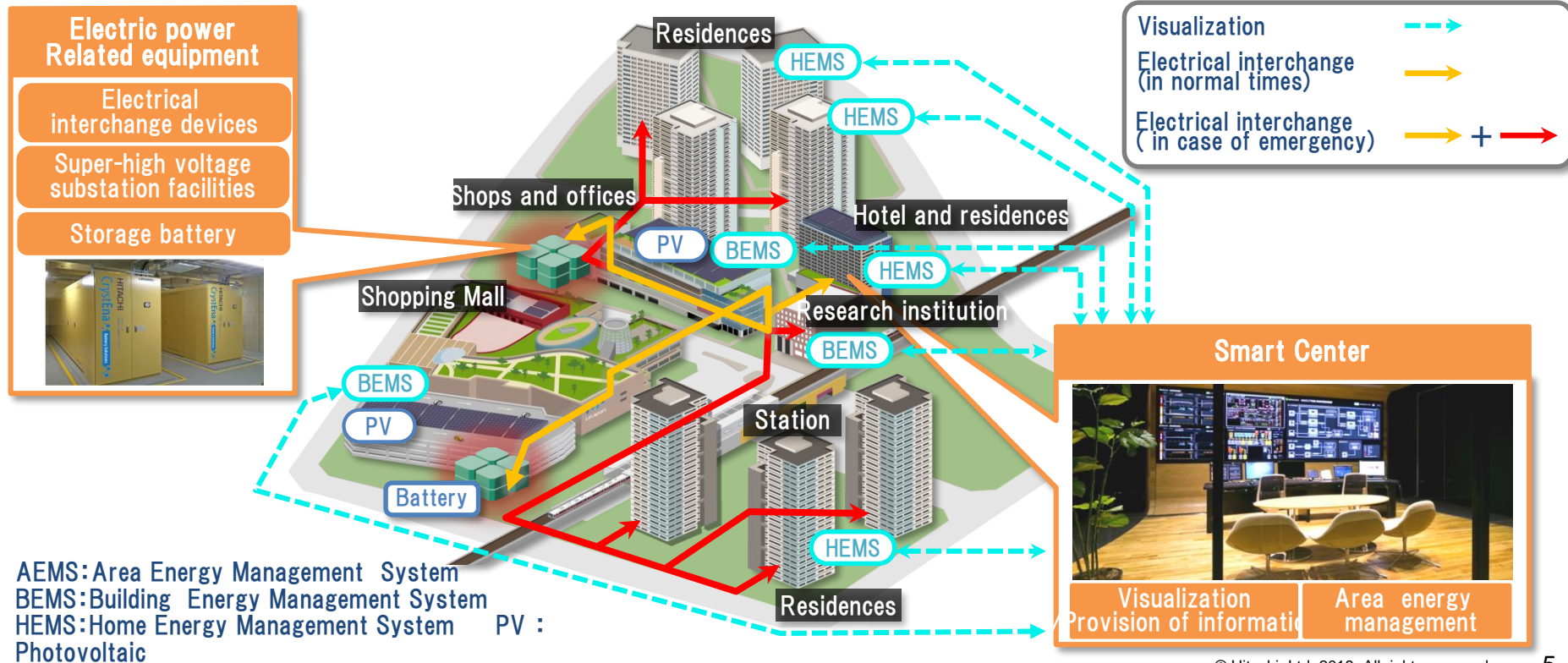
Item	Place
<ul style="list-style-type: none"> ■ Roof/wall greening 	<p>A,B</p>
	
<ul style="list-style-type: none"> ■ Energy monitor 	<p>B,C</p>
	
<ul style="list-style-type: none"> ■ Car sharing 	<p>B</p>
	

Storage of energy

Item	Place
<ul style="list-style-type: none"> ■ Large storage battery A: NAS 12.96MWh B: Li-ion 3.8MWh 	<p>A,B</p>
	
<ul style="list-style-type: none"> ■ Ice-thermal-storage 	<p>A</p>
<ul style="list-style-type: none"> ■ EV battery Sharing of EV cars 	<p>B</p>
	

5. Kashiwa-no-ha AEMS: Overall View

Kashiwa-no-ha Area Energy Management System (AEMS) can efficiently operate, monitor, and control energy across the entire region.



AEMS: Area Energy Management System
BEMS: Building Energy Management System
HEMS: Home Energy Management System PV :
Photovoltaic

- **Maximum use of regional energy**
 - Promoting energy-saving activities of electric power, gas and other energy sources being consumed.
 - Optimizing energy usage by managing energy information.
- **Japan's first area applying electrical interchange between blocks**
 - Coordinating electric power generated from renewable energy, batteries, and the power company.
 - Cutting peaks of electric power consumption of each block and reducing CO₂ emissions.
- **Continuation of “Blocks” energy functions in case of emergencies**
 - Keeping business and life running in case of emergencies such as natural disasters by emergency generators and renewable energy.

7. Waterfront Space (Retention Basin) “Aqua Terrace” (1)

- A waterfront space created by the large-scale transformation of a flood control reservoir
- With the aim of adding further vigor to the city by creating an interactive space for local citizens and workers



Source :
kotobuki home page

Source : Urban Design Center Kashiwa-no-ha

Appendix

「Smart City Anatomy at Kashiwa-no-ha」WEB version

The 2nd report : Japan's first energy management system (Kashiwa-no-ha AEMS)



Wall greening
(Lobby of Mitsui garden hotel
at Kashiwa-no-ha)



Smart Center
(Kashiwa-no-ha
AEMS)



Energy monitor at an office



Signage for Energy monitoring



Li-ion battery

[WEBURL http://emira-t.jp/special/theme/3376/](http://emira-t.jp/special/theme/3376/)

- Mitsui Fudousan & UDCK has earned the LEED® Neighborhood Development (LEED-ND) Platinum certification in Nov., 2016
- The first Japanese project to receive the LEED-ND Platinum certification
- Ranks among the largest LEED Platinum-certified projects in the world (42ha)
- **Major Merits**
 - Urban development through public-private-academic partnership
 - Smart location for creating a city that does not depend on automobiles
 - Innovative initiatives unique to the Kashiwa-no-ha area
 - Proximity to an ecologically sound park offering a rich natural environment
 - Guidelines that require new buildings to provide a certain level of environmental performance



**Future Plan
(Certificated Area)**

LEED®—an acronym for Leadership in Energy and Environmental Design™—
is a registered trademark of the U.S. Green Building Council®.

UDCK: Urban Design Center Kashiwa-no-ha

Source : Mitsui Fudousan

HITACHI
Inspire the Next 