

**Panasonic**

# Panasonic Environment Vision 2050 activities

Mar. 9<sup>th</sup>., 2021

Panasonic Corporation

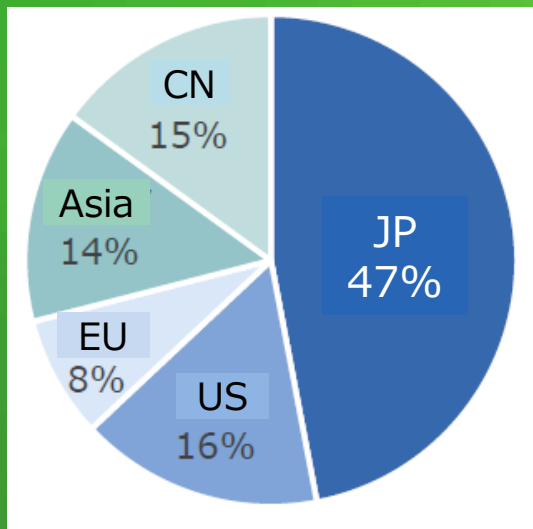


# Company Overview

Foundation	:	Mar. 7 <sup>th</sup> ., 1918
Sales	:	749.06 Billion JPY (FY2019 Consolidated Performance)
Operating Profit	:	29.38 Billion JPY (FY2019 Consolidated Performance)
Employee	:	259,385 (at Mar. 31 <sup>st</sup> , 2020)

## Panasonic Corporation Head Quarter

### Sales in each region (FY2019)



<b>Appliance Co. (AP)</b> <p>Air Conditioner Hair Dryer TV Showcase</p>				<b>Internal Company</b> <b>Life Solutions Co. (LS)</b> <p>照明器具 配線器具 空気清浄機 システムキッチン</p>			
<b>Connected Solutions Co. (CNS)</b> <p>Entertainment system Line Management Projector PC/Tablet</p>				<b>Automotive Co. (AM)</b> <p>Cockpit System Li-ion Battery</p>			
<b>Industrial Solutions Co. (IS)</b> <p>Controller FA Device Electronics Board Material Battery Battery Module</p>						<b>China and North East Asia Co.(CNA)</b> <b>US Co.</b>	

# Panasonic Founder's Management Philosophy and View Toward the Environment

## Management Philosophy

We will devote ourselves to the progress and development of society and the well-being of people through our business activities.

## View Toward the Environment

A company is a public entity.  
It would be like putting the cart before the horse for industrial development, destroying nature and take away people's happiness.



\*Source: Konosuke Matsushita; "Corporate Social Responsibility" (1974)

# Panasonic Environment Vision 2050

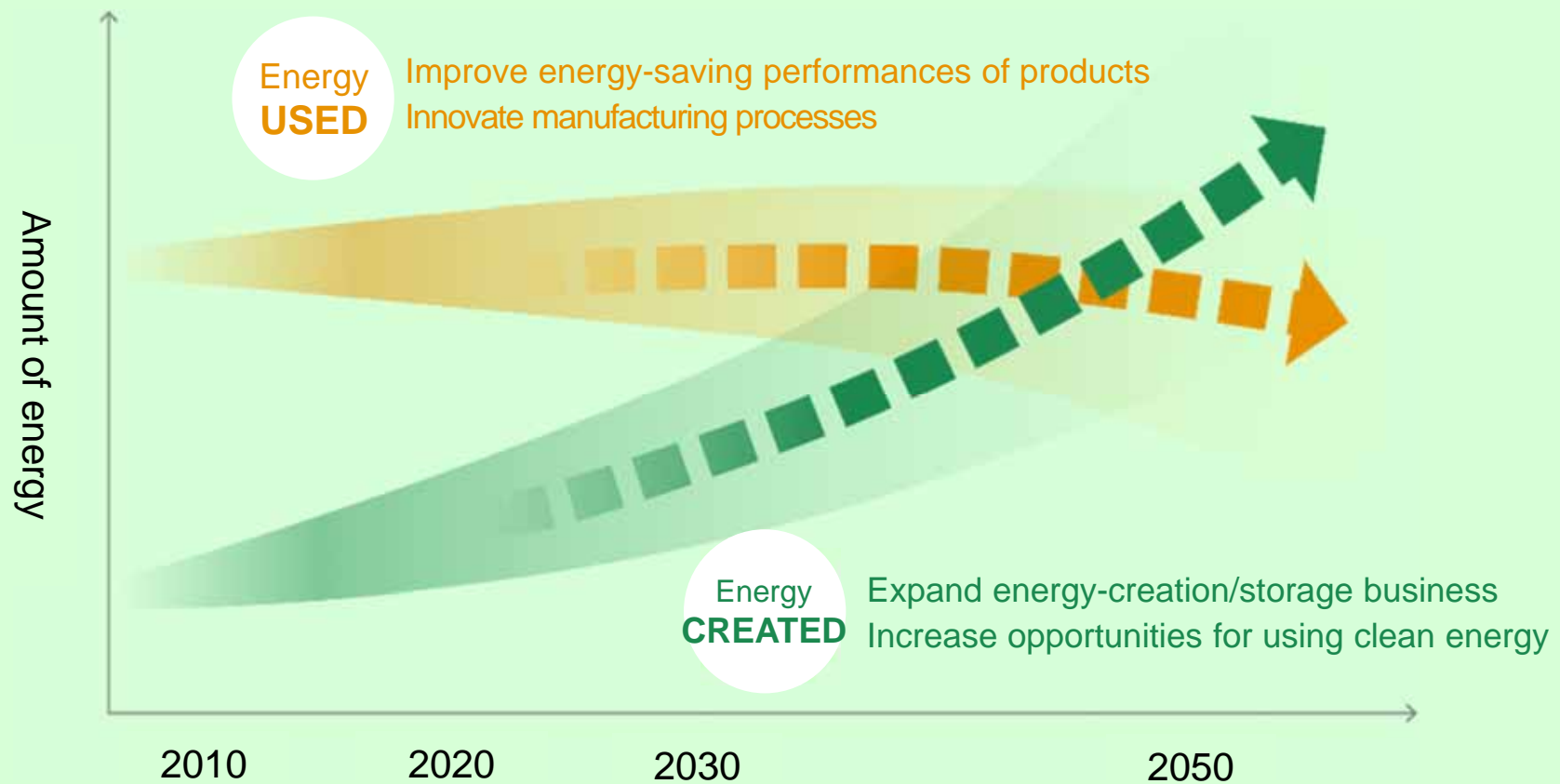
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Formulated in June of 2017

**To achieve “a better life” and “a sustainable global environment,  
” Panasonic will work towards  
creation and more efficient utilization of energy  
which exceeds the amount of energy used,  
aiming for a society with clean energy and a more comfortable lifestyle.**

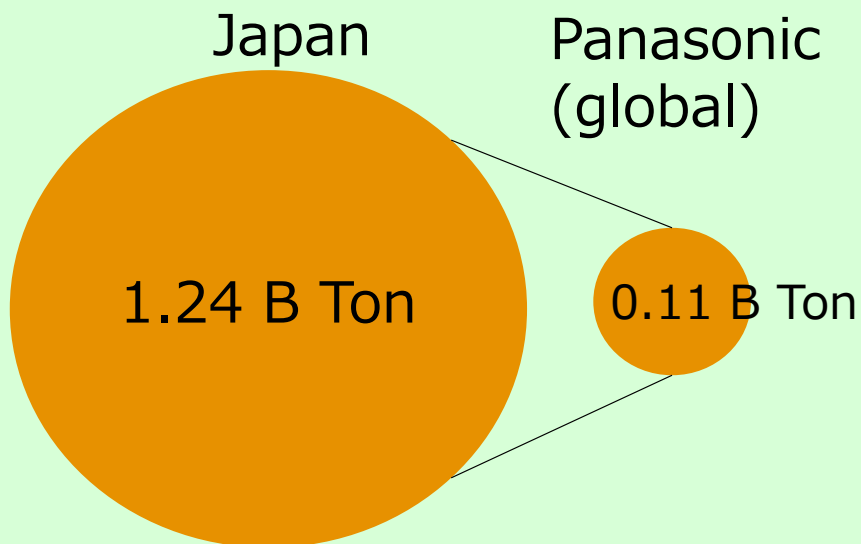
**Energy used < Energy created**

# Image of realizing the Environment Vision

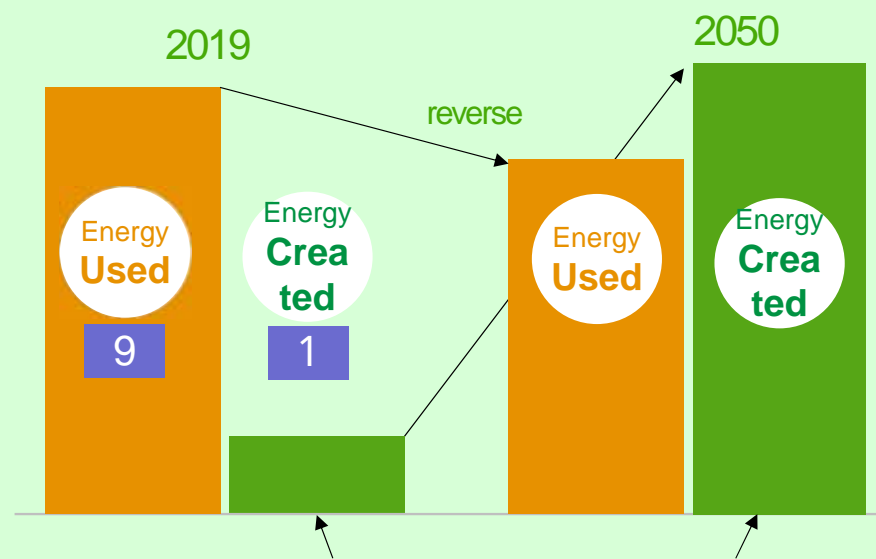


# Contribute to global CO<sub>2</sub> reduction by business

<Annual CO<sub>2</sub> Emission>

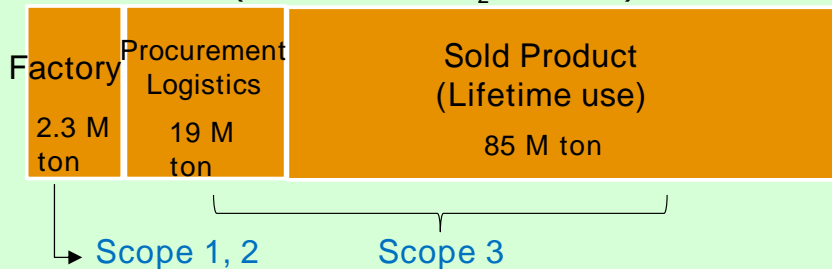


Realize offset by energy saving and energy creation



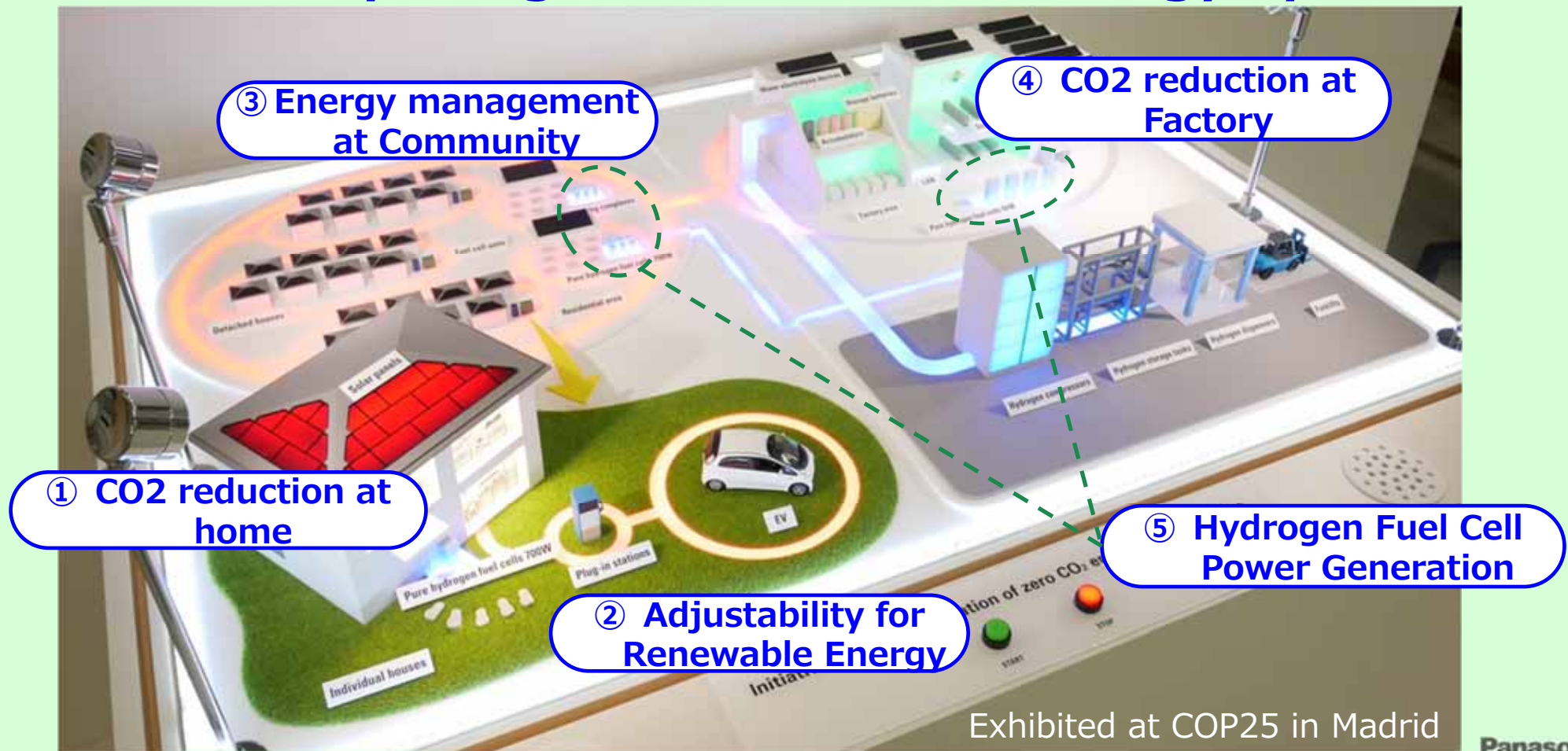
PV, Fuel Cell, EV battery, Stational Battery, Hydrogen Solution and others

Breakdown of "Energy used" in Panasonic (Converted to CO<sub>2</sub> Emission)



# Panasonic concept for Zero Emission Community

## “Community Integrated Distributed Energy System”



Exhibited at COP25 in Madrid

# ① CO<sub>2</sub> reduction at Home : Energy Saving Home Appliance and Device

## ■ Home Air Conditioner

Product at FY2010: **837 kWh/year**

**11.0% Improved**

Latest Model CS-X281D:  
**746 kWh/year**



## ■ TV

Product at FY2010: **154 kWh/year**

**35.7% Improved**

Current Model TH-43HX750:  
**99 kWh/year**



## ■ Vacuum Insulation Glass - Glavenir -



Applied Panasonic PDP technology



**World Highest class insulation performance with 6mm thickness glass (1/5 thickness of triple glass)**

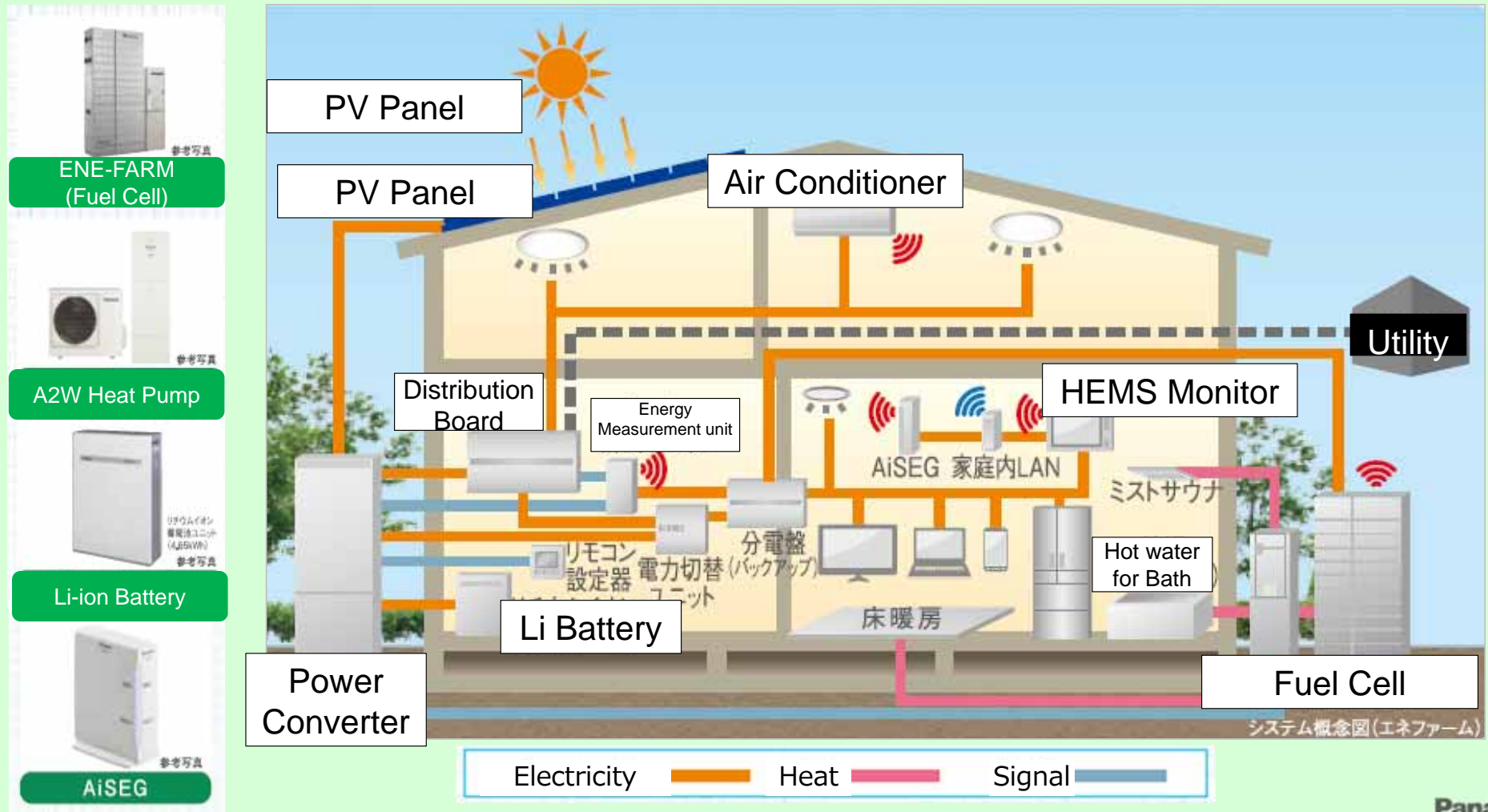
Thermal transmission Rate  
 $U=0.7\text{w/m}^2\cdot\text{k}$

Compare with triple glass: equal  
Compare with multi layer glass: 4.5 times  
Compare with single glass: 8.5 times

Reduced to 1/8 of heat loss from window



# ① CO<sub>2</sub> reduction at Home: Smart House (Fujisawa SST)



## ② Adjustability for Renewable Energy: Storing Heat Energy by Heat Pump

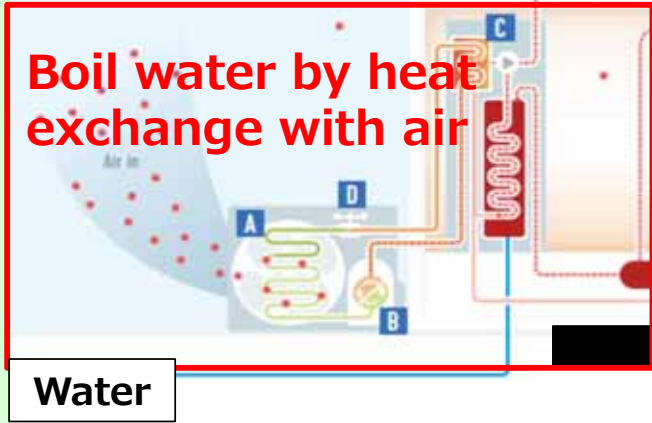
### Convert from Electric Energy to Heat Energy

Contribute to de-carbonization society by utilizing hot water produced by heat pump

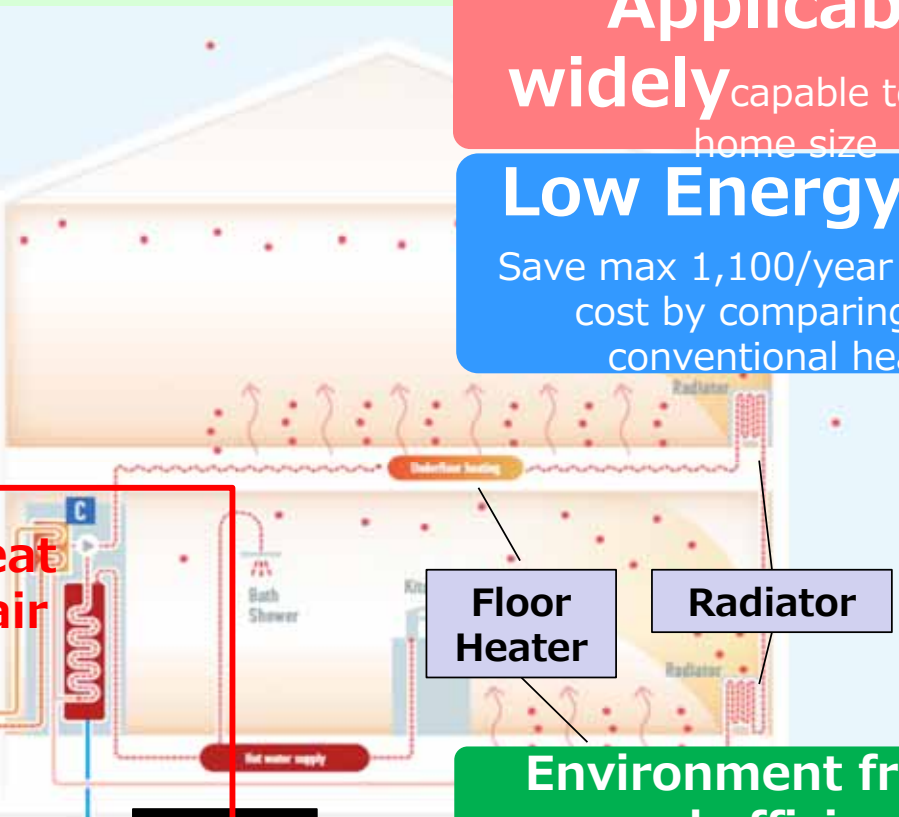


**Applicable widely** capable to various home size

**Low Energy Cost**  
Save max 1,100/year of energy cost by comparing with conventional heater



**Boil water by heat exchange with air**



**Floor Heater**

**Radiator**

**Environment friendly and efficiently**  
Heat Exchange with Air

## ② Adjustability for Renewable Energy: Storing Electricity by Battery

Contribute to Electric energy storage and peak shift by battery device business for EV and Stational Battery



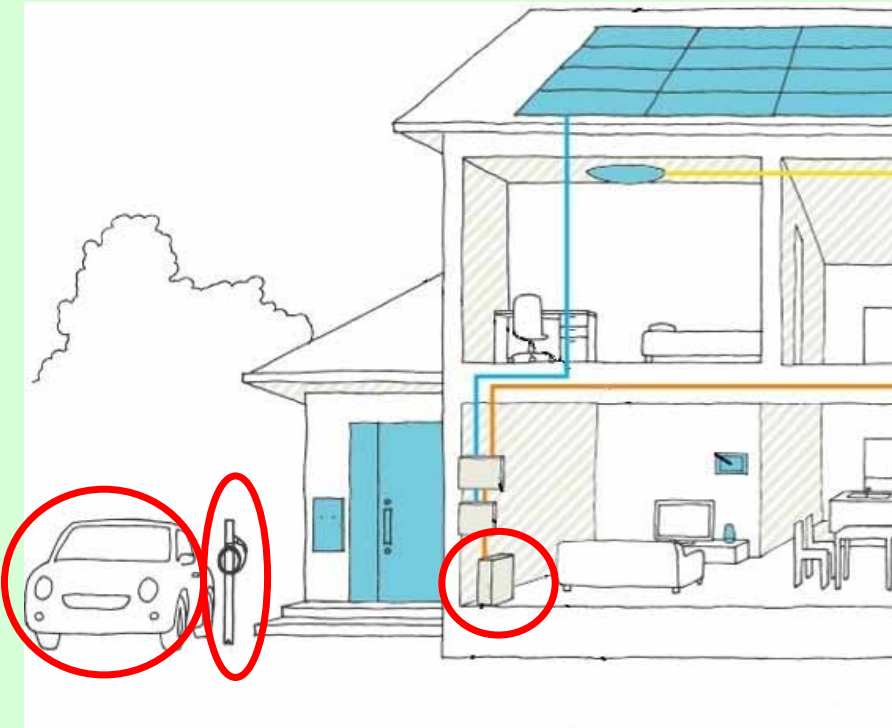
Electric Storage System



EV



EV Charger



③ Energy management at Community: Saving CO<sub>2</sub> program at community

Realize Energy Management for Sustainable town by both hardware and software



hardware

software

Gather life information of whole community by FSST Server

Propose Eco and Smart life by providing motivation at home purchase and life style at new house

### ③ Energy management at Community: Saving CO<sub>2</sub> program at community

Launched SST on 2014 with the targets of CO<sub>2</sub> 70% reduction and renewable energy utilization ratio more than 30%.

All houses (about 600) equip PV panel and Stational Battery.

The infographic is set against a dark blue background with three light blue circular callouts. Each callout contains text and a large percentage or number. Below each callout is a small asterisked note.

- Environment Target**
  - CO<sub>2</sub> 70% reduction (Note: \* Compare with 1990)
  - Domestic Water 30% reduction (Note: \* Compare with generally penetrated equipment in 2006)
- Energy Target**
  - Renewable Energy Utilization Ratio 30% Or more
- Safe and Secure Target**
  - Securing Lifeline 3 days (Note: \* Community Continuity Plan)

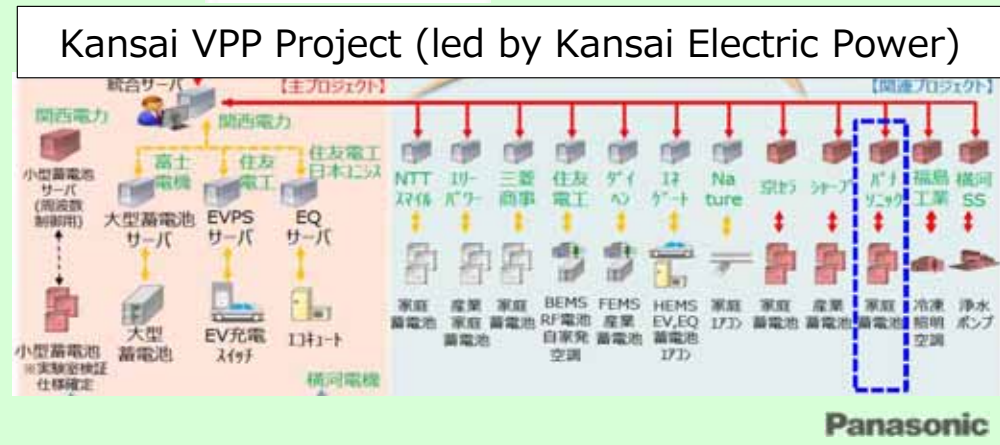
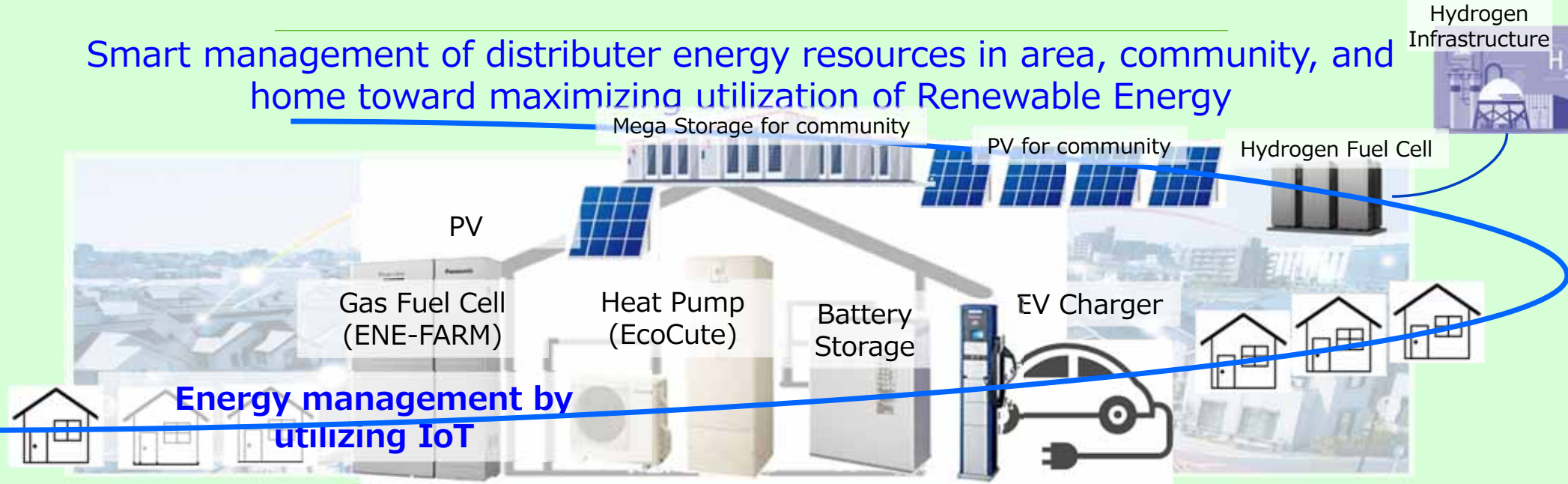
Gather energy information of whole community by FSST Server  
70% houses equip ENE-FARM (fuel cell)



Propose Eco and Smart life by providing motivation at home purchase and life style at new house

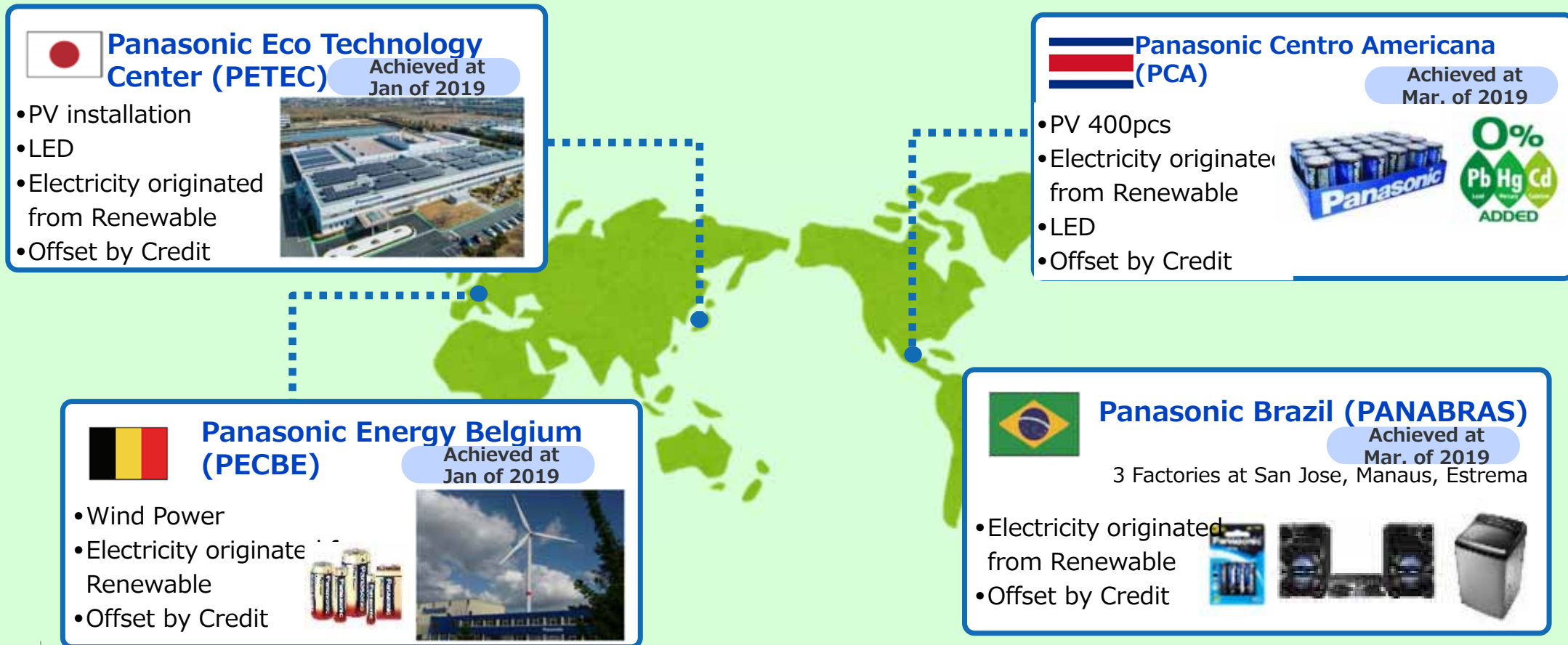
### ③ Energy management at Community: Demand Side Flexibility

Smart management of distributor energy resources in area, community, and home toward maximizing utilization of Renewable Energy



## ④ CO<sub>2</sub> Reduction at Factory : Efforts for CO<sub>2</sub> Zero Emission Factory

Already achieved at 6 factory in 4 regions by various measurement suitable for each region



## ④ CO<sub>2</sub> Reduction at Factory : Utilize Hydrogen at Factory

### ■ Utilize Hydrogen for logistics in factory (Kusatsu Factory of Alliance Co.)



Produce and store Hydrogen by electric power generated from renewable energy, and utilize Hydrogen for forklift operated by fuel cell toward the reduction of CO<sub>2</sub> emission

### ■ Utilize Hydrogen for manufacturing line (Kasugai Factory of Panasonic Ecosystems Co.)



Produce and store Hydrogen by electric power generated from renewable energy, utilize Hydrogen to generate electricity by "pure" Hydrogen fuel cell for Manufacturing line.

Panasonic



## ⑤ Hydrogen Fuel Cell Power Generation: Launch on 2021 and 2022



The image shows two Panasonic hydrogen fuel cell units. The unit on the left is labeled '700W' and is planned to be released in 2022. The unit on the right is labeled '5kW' and is planned to be released in October 2021. Both units are tall, rectangular, and have a ribbed texture. The Panasonic logo is visible on the right side of the 5kW unit.

**700W**  
Plan to be released on 2022

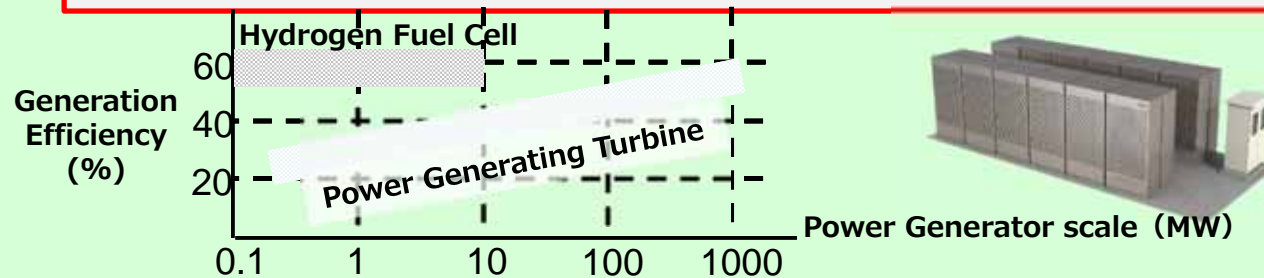
**5kW**  
Plan to be released on Oct, 2021

Features for Panasonic Hydrogen Fuel Cell

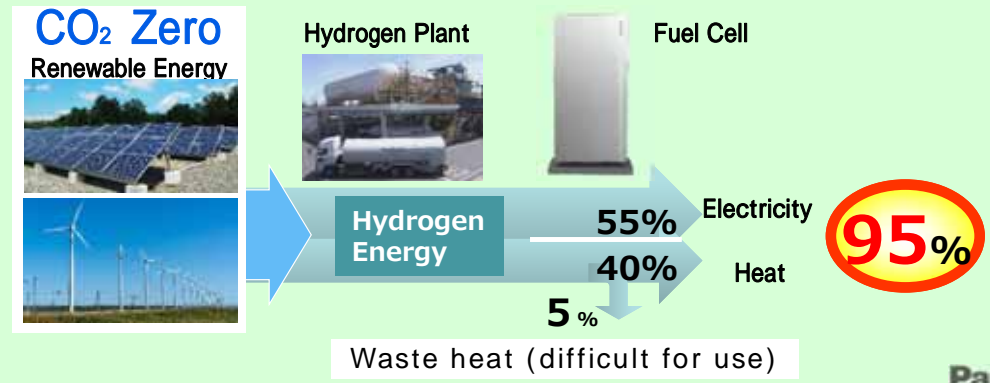
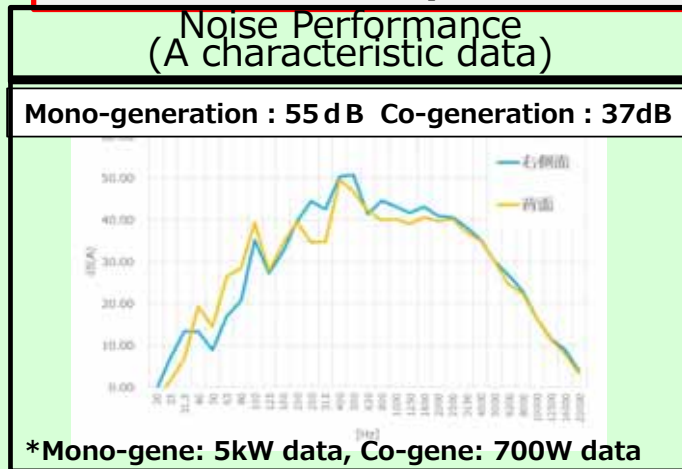
- 1 High Power generation efficiency (5kW model: 56%)
- 2 Quick starting (possible to start in a minute)
- 3 Possible to use Heat simultaneously, capable to be used at electric outage
- 3 Possible to operate connected multiple fuel cell units as single generator

# Features of Hydrogen Fuel Cell is suitable for resolving social issue

- Higher efficient power generation for all generator size (cover range: kw – 10 MW class)
- Suitable for various size demand



- Good at for installation flexibility because of low noise performance
- Total efficiency is 95%, co-generation system is available



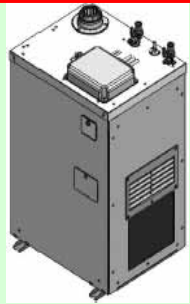
Data from Panasonic



# Panasonic Hydrogen Fuel Cell concept

## ■ Concept

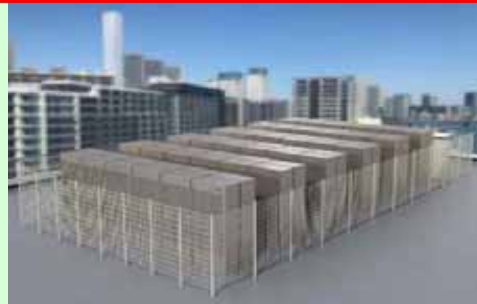
- Develop “pure” Hydrogen Fuel Cell by utilizing the experience and achievement of “ENE-FARM” (mass production, cost, reliability)
- By connecting multiple 700W/5kW Fuel Cell units, enable for “Large Power Plant”



**700W/5kW unit**  
(Base Module)



**60kW**



**300kW**



**10MW class**

## ■ Features

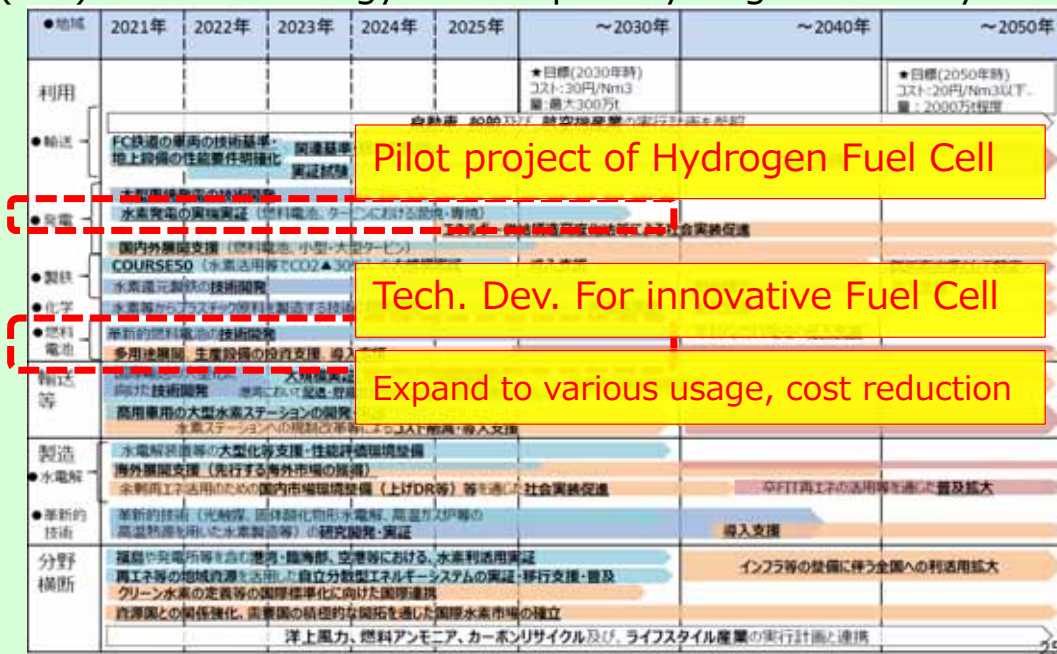
- Possible to install various location depending on the demand scale (roof top, basement room, deformed land, narrow land, and so on)
- Good for Co-generation usage because this can be installed to close place for heat consumption area.
- Possible to install in cold region because this can be installed indoor.
- Possible to keep power generation as whole system even in case that one unit is stopped for maintenance or other reason.

# Contribute to realize Hydrogen Society

## Hydrogen Fuel Cell ;

- ① Can be a part of Hydrogen Industry for contributing “2050「Green Innovation Strategy toward 2050 Carbon Neutral”
- ② Can be a large Hydrogen Consumer together with Transportation sector by aligning with Hydrogen Strategy
- ③ Will continue the technology development and pilot project for aiming economic rationality (cost) by aligning Hydrogen Strategy

(Ref) Growth strategy roadmap of Hydrogen Industry



Possibility of hydrogen utilization as a renewable energy resource

### ◆ Hydrogen Import Plan (from Green Innovation Strategy)

	2030年	2040年	2050年
水素輸入量	300万トン	1,000万トン	2,000万トン

### ◆ Comparison of Hydrogen Consumption

	Generation/year	H <sub>2</sub> consumption/year
5kW Hydrogen Fuel Cell	41.6MWh 5kW×24h×365日 ×0.95(負荷率)	約2,300kg
FCV (参考)	1.0MW (1.0万km)	約100kg

### ◆ Estimation of generation unit price

	Year 2030 (after landed) 40 JPY/m <sup>3</sup>	Year 2050 (after landed) 30 JPY/m <sup>3</sup>
Mono-gene	24.0 JPY/kWh	19.3 JPY/kWh
Co-gene	14.5 JPY/kWh	9.8 JPY/kWh

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# **Panasonic**

**A Better Life, A Better World**