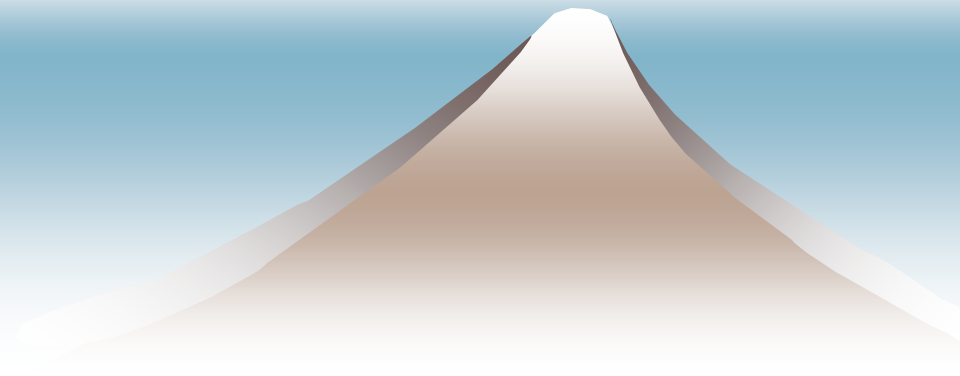


# Stationary Fuel Cell Demonstration Project

Sept. 15, 2005

NEW ENERGY FOUNDATION



# NEW ENWRGY FOUNDATION

- Established in 1980 for the introduction and wide spread of New and Renewable Energy in Japan
  - Formulation of Policy Proposals
    - Subsidy for residential photovoltaic power generating systems
    - 
    -
- Member:  
193 companies/organizations

# Policies and Target of Fuel Cell

FY2002 ~

FY2005 ~

FY2010 ~

R & D Stage

Introduction Stage

Diffusion Stage

Demonstration Study

Support for  
Introduction

Widespread  
Diffusion

METI

NEF : SFC  
JARI: FCV  
ENA: H2 Station

NEF : New Energy Foundation  
JARI : Japan Automobile Vehicle Institute  
ENA : Engineering Advancement Association

Stationary  
Fuel Cell

SFC  
Demonstration Study  
(FY2002-04)

SFC Large-scale  
Demonstration  
Project (FY2005-07)

Stationary FC


2010	2.2 GW
2020	10 GW
2030	12.5GW

FCV

2010	50,000
2020	5M
2030	15M



# 1. Stationary Fuel Cell Demonstration Study

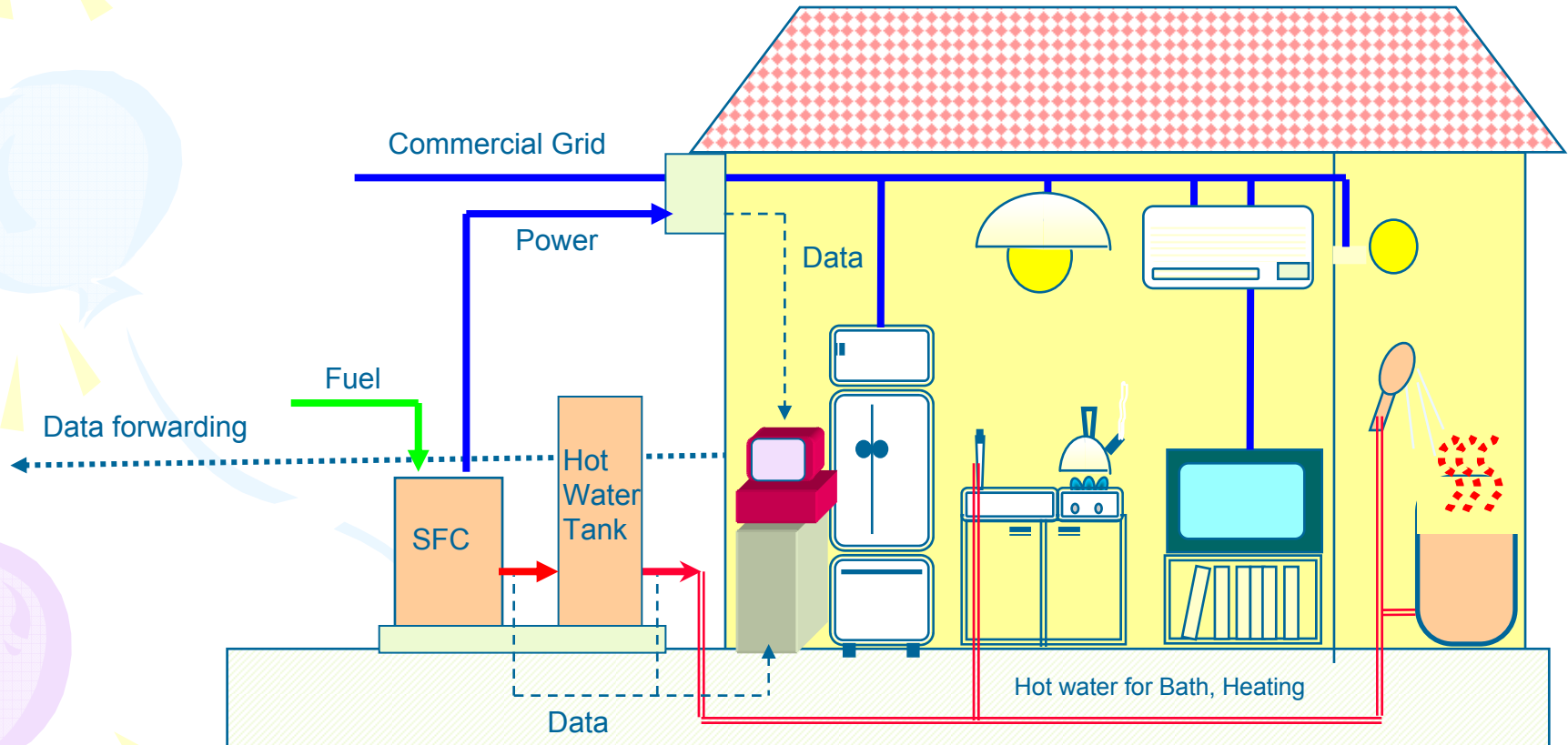


# Main Purpose of the SFC Demonstration Study

To verify the performance of stationary FCs under a variety of actual usage conditions

# Stationary Fuel Cell Demonstration Study

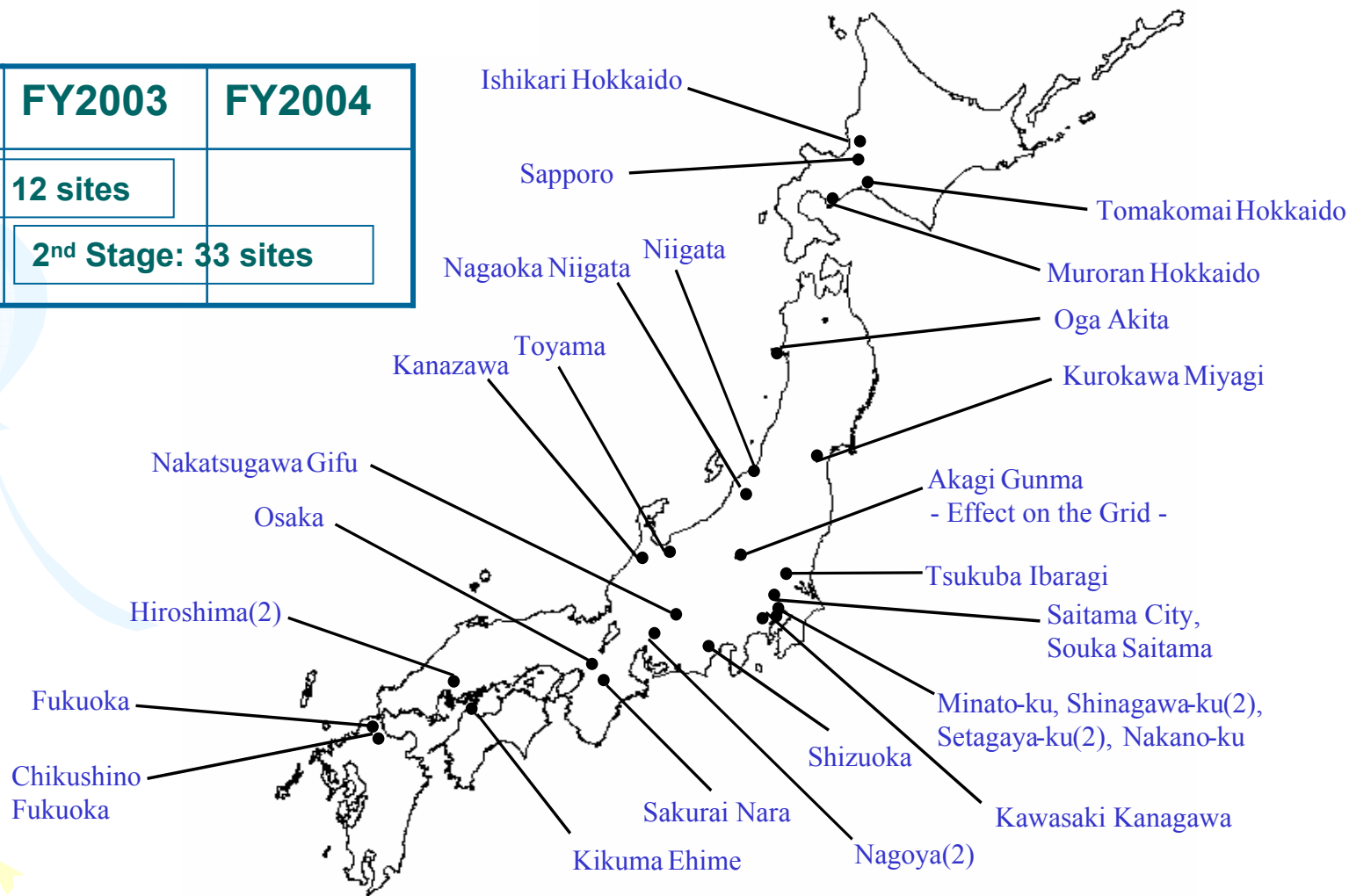
Demonstration study Site



# Stationary FC Demonstration Study

## (The 2<sup>nd</sup> Stage)

FY2002	FY2003	FY2004
1 <sup>st</sup> Stage: 12 sites		
	2 <sup>nd</sup> Stage: 33 sites	



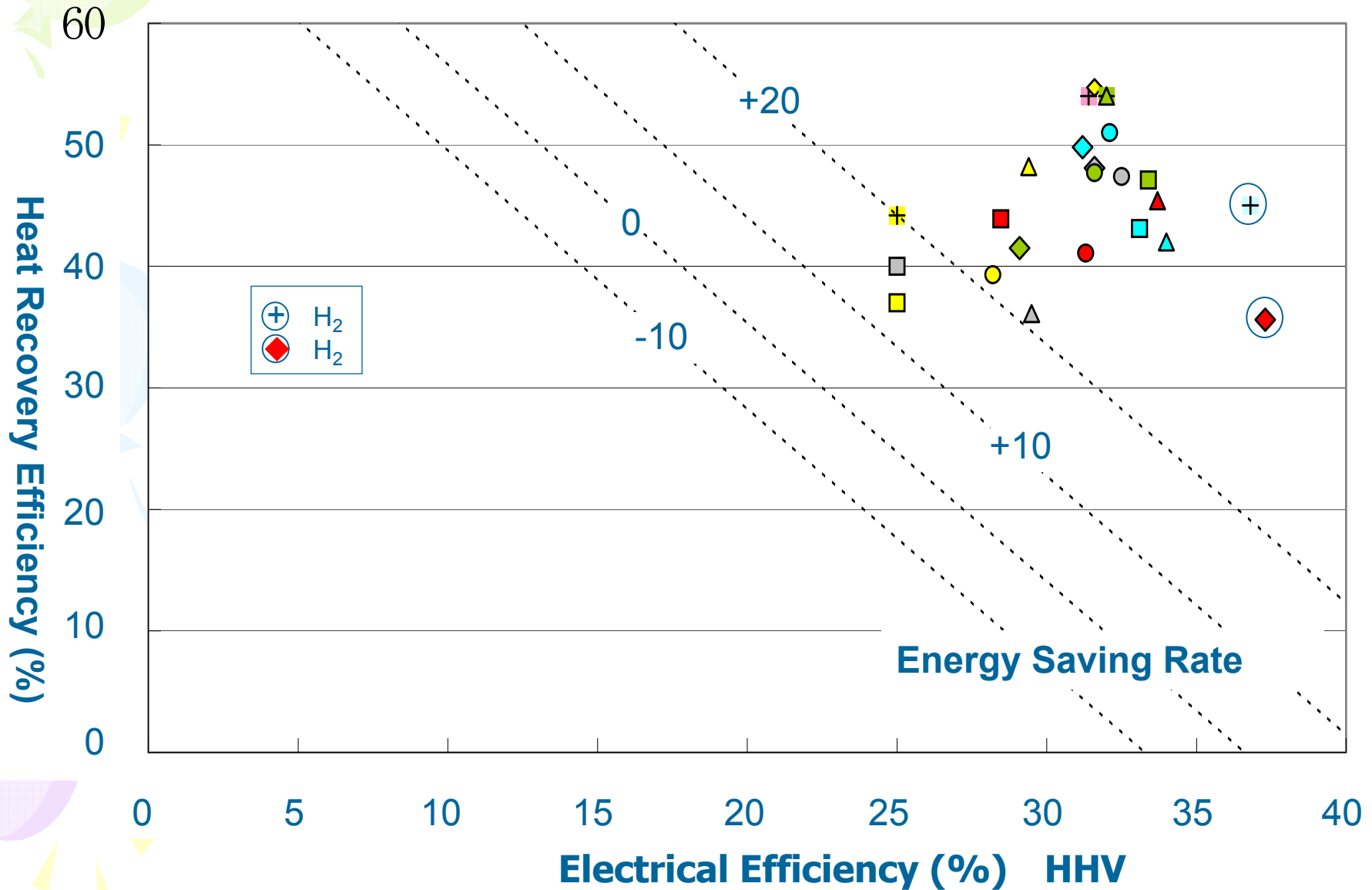
# Stationary FC Demonstration Study

## The 2<sup>nd</sup> Stage

1. Power output: 1kW, 5kW
2. Fuel: Natural gas, LPG, Kerosene, naphtha, H<sub>2</sub>
3. Installation site: 1kW - Independent houses , Flats  
5kW - Dormitories, Training institute etc.
4. System provider: Ebara, Sanyo, Toshiba, Panasonic, IHI, Kurita, Mitsubishi Heavy Industries Nippon Oil,, Toyota Hitachi H&LS, Marubeni(11)
5. Test operator: Japan Gas Association, Tokyo Gas, Tokyo Electric Power Hokkaido Electric Power, Hokuriku Electric Power Kansai Electric Power, Chugoku Electric Power Kyushu Electric Power, Kandenko, Yurtec, Idemitsu Japan Energy, Taiyo Oil, Kyushu Oil, Shinanen Sekisui Chemical, Ebara, NTT Data, Tokiwa Matsumura, Niigata Prefecture, Gifu Prefecture Muroran Techno Center (24)

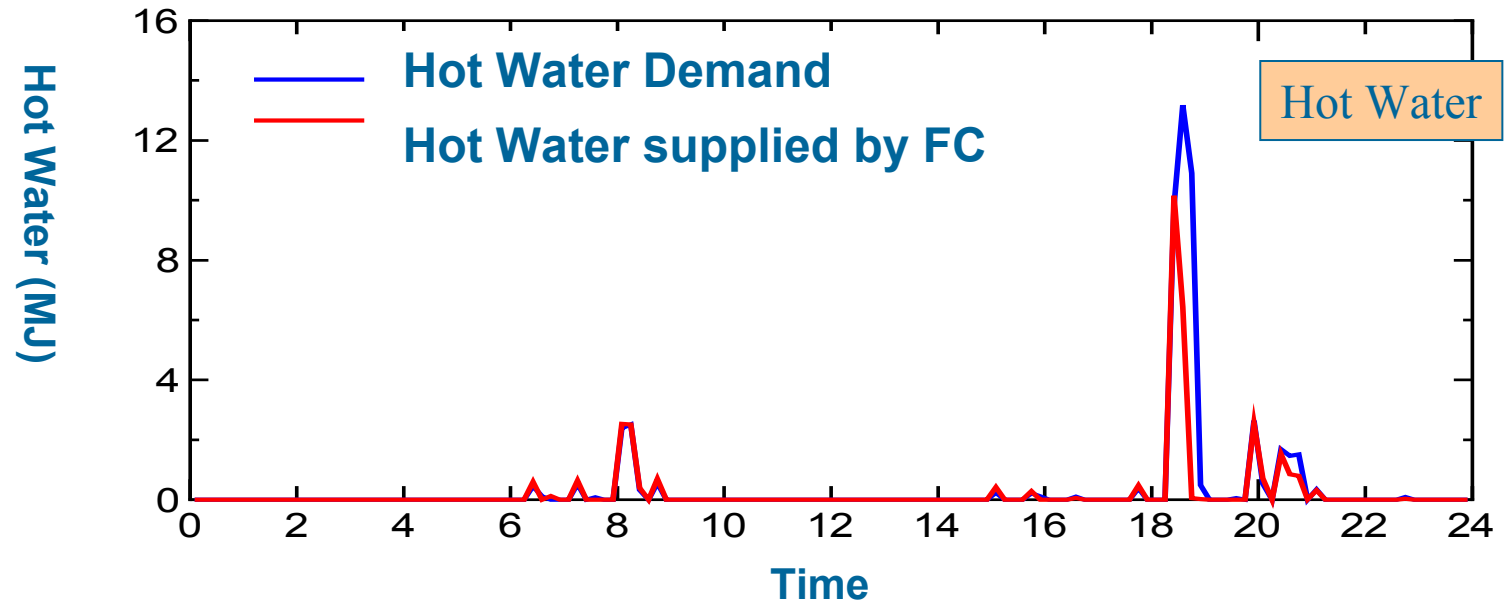
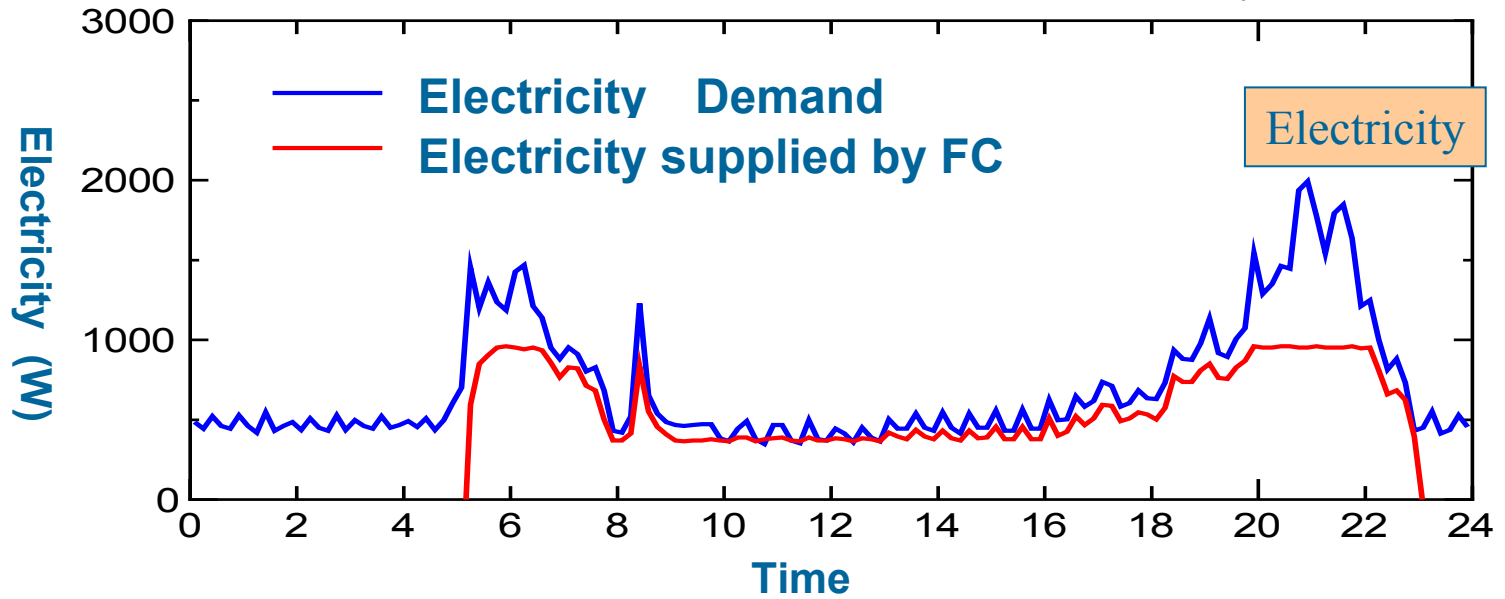


# Performance of SFCs at Rated Point (1kW)



# Operation Example of SFC in One day

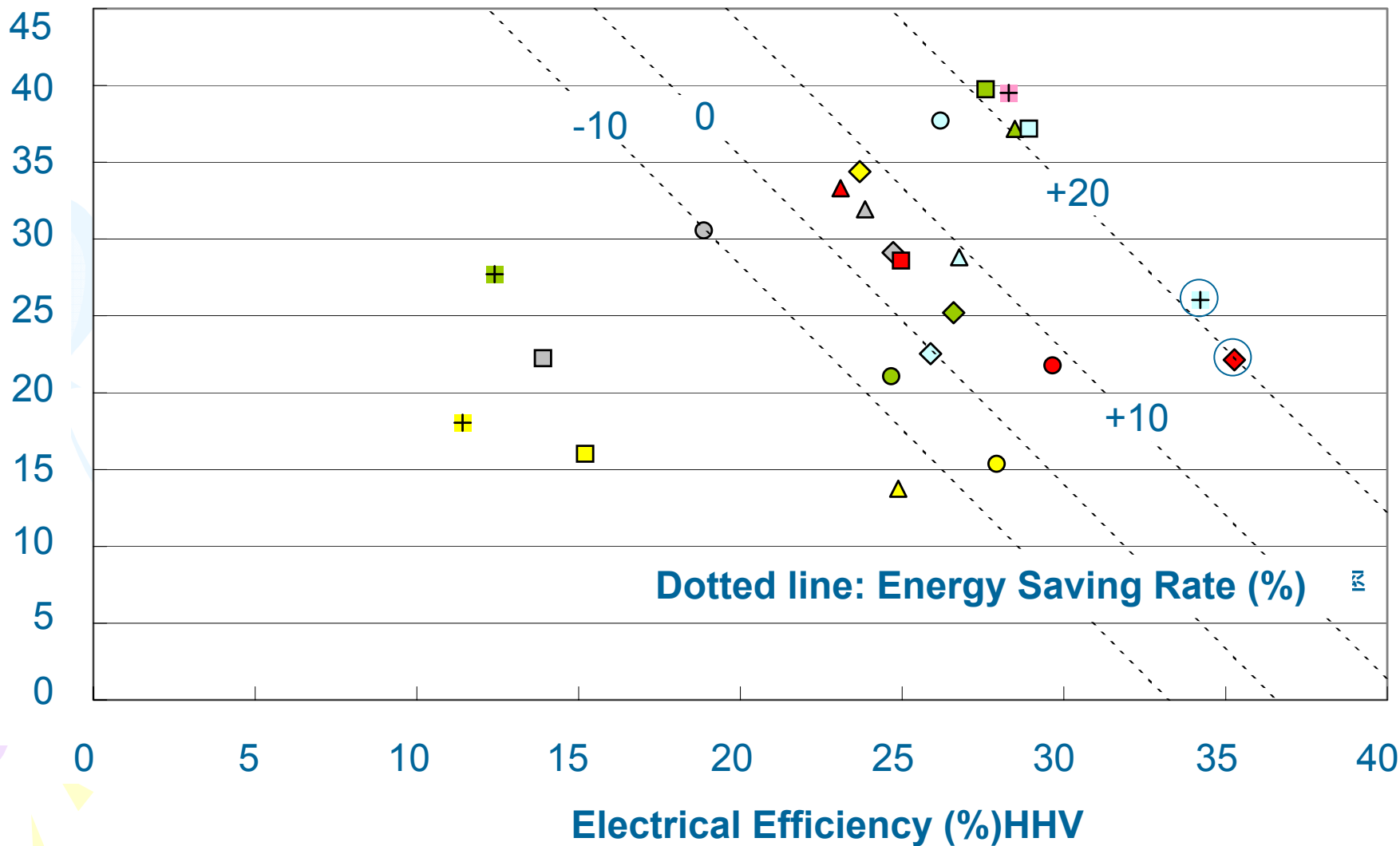
April 4, 2004



# Performance of SFCs at Study Sites

(One year operation)

Recovered Heat Utilization Efficiency (%)

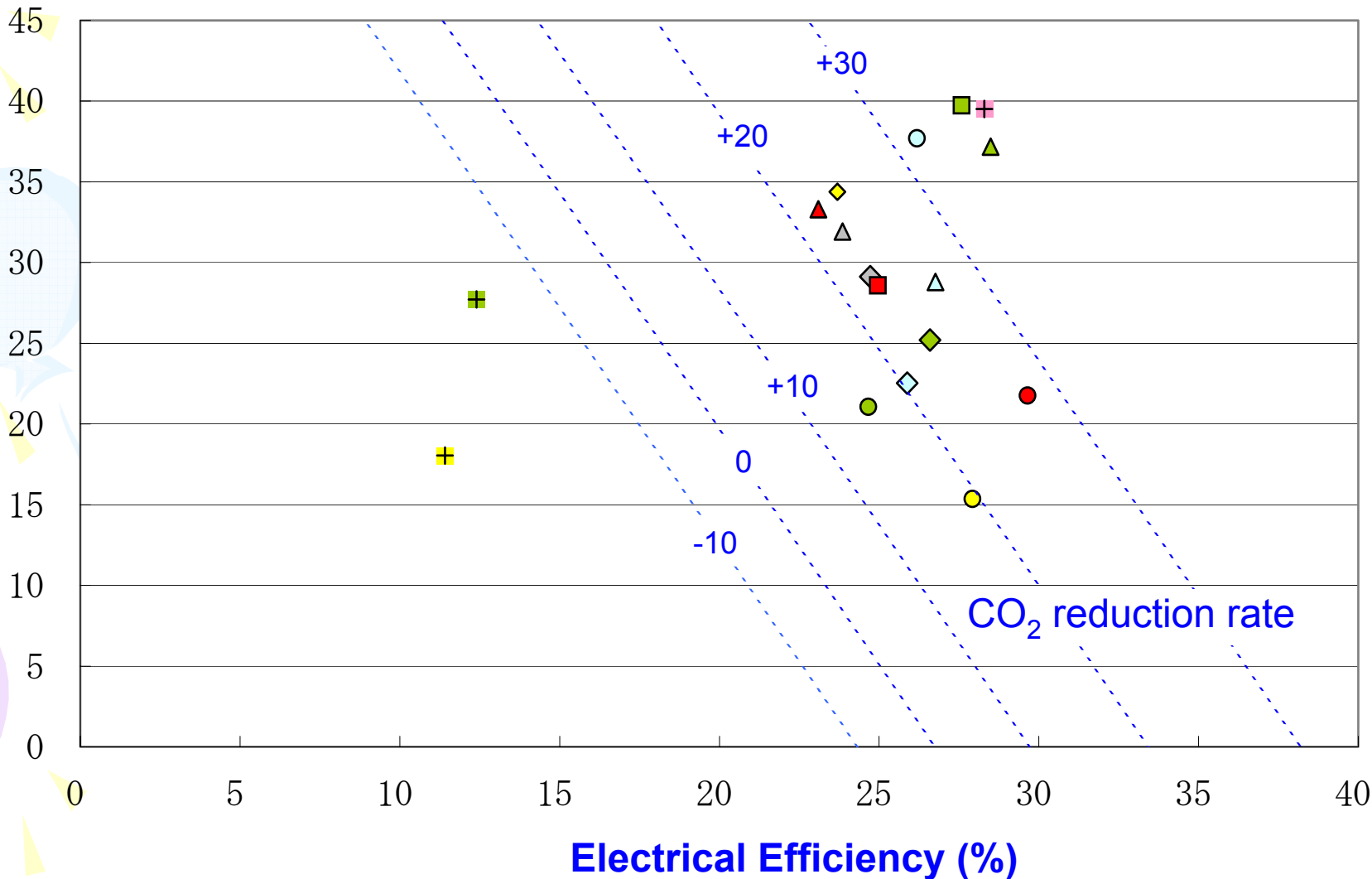


# CO<sub>2</sub> Reduction at Study sites

(One year operation)

Fuel: Natural Gas

Recovered Heat Utilization Efficiency (%)





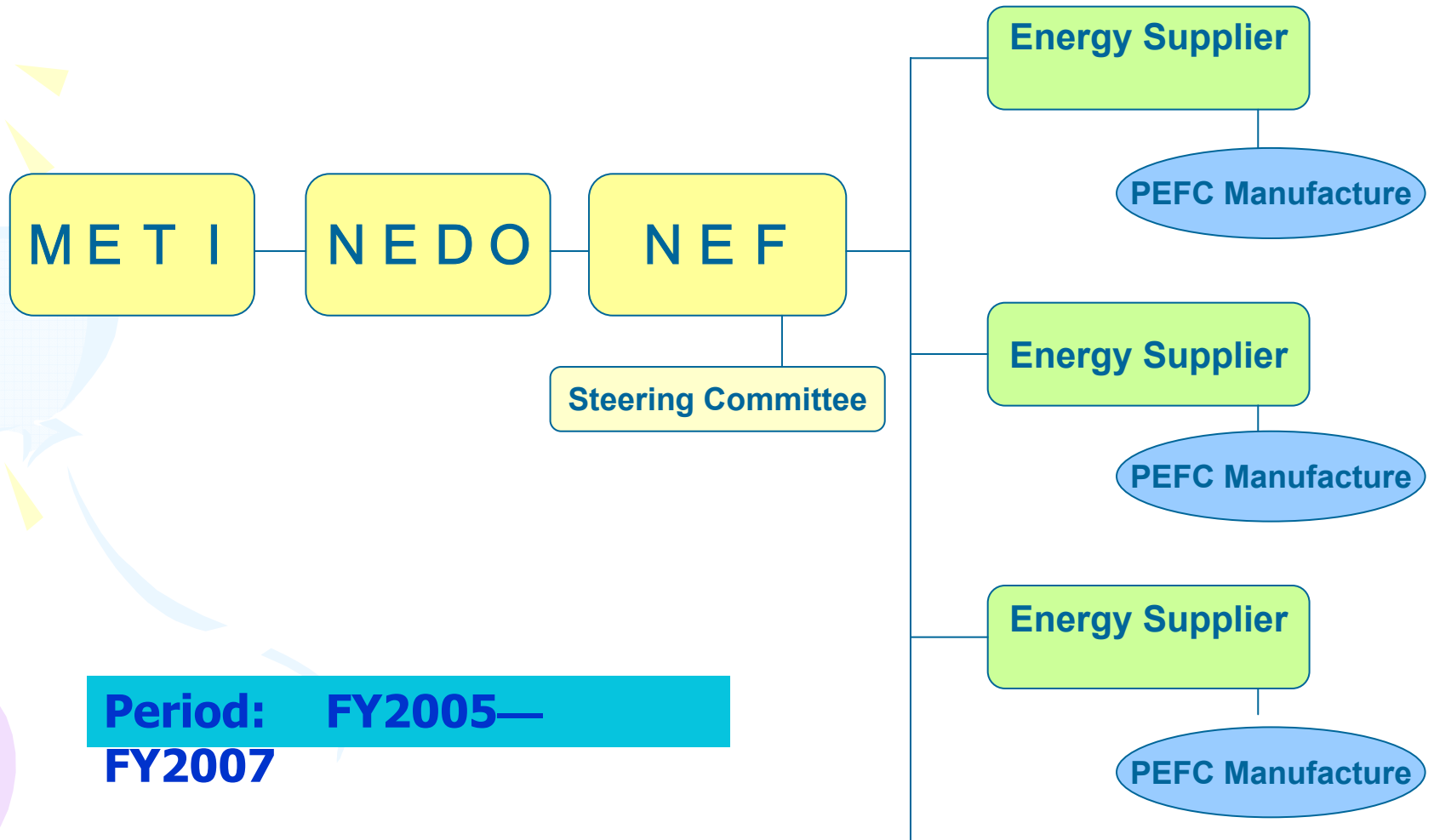
## 2. Stationary Fuel Cell Large-scale Demonstration project



# Purposes of the Project

1. To install stationary fuel cells into houses in a large-scale and collect operational data under actual usage condition.
2. To evaluate the technical level and find out the problems of SFCs to be solved for the early market introduction.
3. To promote the cost reduction of production, installation and maintenance of SFCs.

# Large-scale Demonstration Project Scheme



# Requirements for the applicant

- Applicants must be an energy supplier who supply fuel to SFC.
- Applicants must install over 10 units of SFCs from the qualified SFC providers for the term. (over 5 units from each manufacturer)  
( 1<sup>st</sup> term of FY2005: April to September 2005 )
- Applicants must collect operational data for 2 years.



# Requirements for the SFC providers

- SFC providers must supply over 30 units per term to the applicants in total at the time of application for the project. ( 1<sup>st</sup> stage of FY2005: April to September 2005).

# Specifications of SFC required

- 1kW class PEFC for residential use
- Electrical Efficiency (HHV):
  - ≥ 30% at rated operation
  - ≥ 27% at half load operation
- Overall Efficiency (HHV):
  - ≥ 65% at rated operation
  - ≥ 54% at half load operation
- System durability: over 2 years

# Evaluation of the Operational Data

- From the operational data such items as the following are evaluated.
  - Electrical Efficiency
  - Heat Recovery Efficiency
  - Energy Saving Rate
  - CO2 Reduction Rate
  - Amount of Energy Saving
  - Amount of CO2 Reduction
- The result is taken into account when the delivery of subsidy of the next term is decided.

# Schedule of the Project in FY2005

## ◆ Installation and Start of Operation

- 1<sup>st</sup> term of FY 2005  
April 22, 2005 ~ Sept. 30, 2005  
( Application: March 18 ~ April

15 )

- 2<sup>nd</sup> term of FY 2005  
Early Oct. ~ Feb.28, 2006  
(Application: August 15~Sept.15 )

## ◆ Period of Operation : 2 years

## ◆ Subsidy:

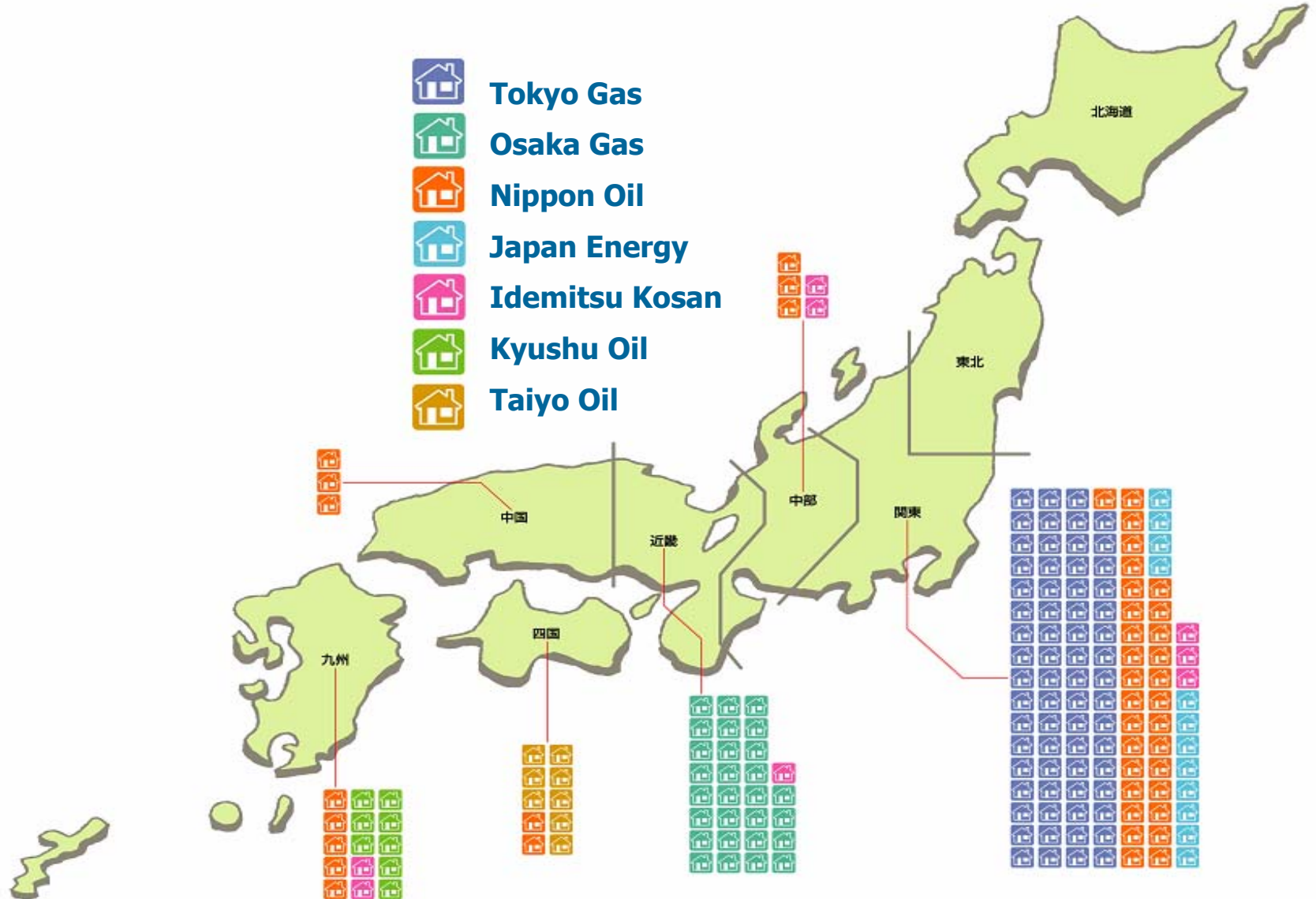
JP\ 6 million (max.) per unit to about 400 units for the FY2005

# Subsidies for the Large Scale Demonstration Project (FY2005 1<sup>st</sup> term)

Energy supplier	Number of Sites	SFC Provider	Fuel	Number of Sites
TOKYO GAS	6 7	Panasonic	Natural Gas	4 0
		EBARA	Natural Gas	2 7
OSAKA GAS	2 8	SANYO	Natural Gas	2 0
		TOSHIBA	Natural Gas	4
		Panasonic	Natural Gas	4
NIPPON OIL	4 4	SANYO	LPG	4 4
JAPAN ENERGY	1 2	TOSHIBA	LPG	1 2
IDEMITSU KOSAN	8	TOSHIBA	LPG	8
KYUSHY OIL	8	TOSHIBA	LPG	8
TAIYO OIL	8	TOSHIBA	LPG	8
<b>TOTAL</b>	<b>1 7 5</b>			<b>1 7 5</b>

# Large-scale Demonstration Sites

## 1<sup>st</sup> Stage of FY2005



Thank you very much  
for your attention.

