

# Our Approach for Reducing Greenhouse Gases of Sony City

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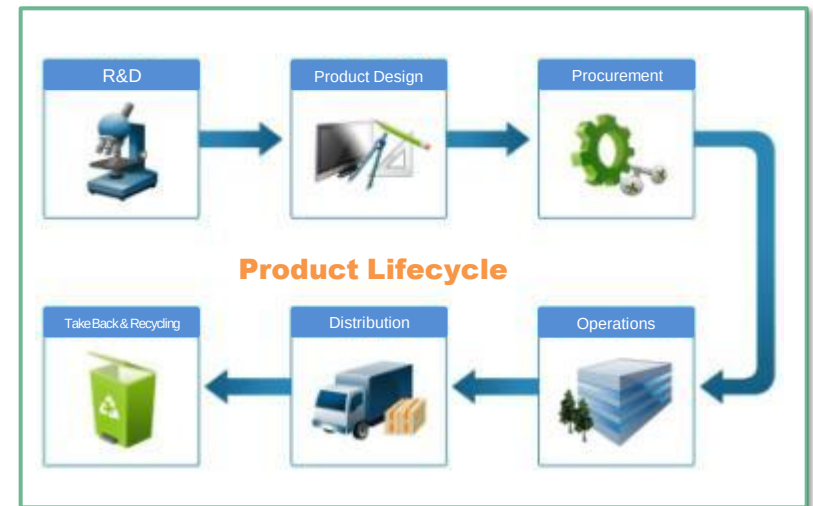
# History of Environmental Initiatives at Sony



# Sony's Global Environmental Plan

## “Road to Zero”

Sony strives to achieve a zero environmental footprint throughout the lifecycle of our products and business activities.



### Road to Zero Timeline



# Building Specifications of Sony City



|              |                                      |
|--------------|--------------------------------------|
| 1 floor area | Approx. 7,000sqm                     |
| Office area  | Approx. 5,000sqm                     |
| Floor height | 3,100mm<br>(4F 4,000mm, 12F 3,400mm) |

|                           |                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Location                  | 7-1, 1-chome, Konan, Minato-ku, Tokyo                                                                                     |
| Owner                     | Sony Life Insurance Co., Ltd.                                                                                             |
| Site area                 | 18,165.30 sqm                                                                                                             |
| Total floor area          | 162,887.57 sqm                                                                                                            |
| Number of floors / Height | 20above ground, 2below ground •99.4 m                                                                                     |
| Structure                 | Above ground: Steel-frame structure<br>Below ground: Steel-reinforced concrete, seismic isolation system                  |
| Date of Completion        | October 2006                                                                                                              |
| Electrical equipment      | Power receiving system: 66kV duplicate loop service<br>NAS batteries 2,500kW                                              |
| Air-conditioning          | AHU system + VAV and FCU on each floor                                                                                    |
| Heating equipment         | Cooling: Turbo cooling machine 3,460RT<br>Heating: Heat recovery turbo cooling machine 490RT<br>Heat storage tank: 6,470t |



# Building Concept

## Perform the Headquarters function of Sony Group

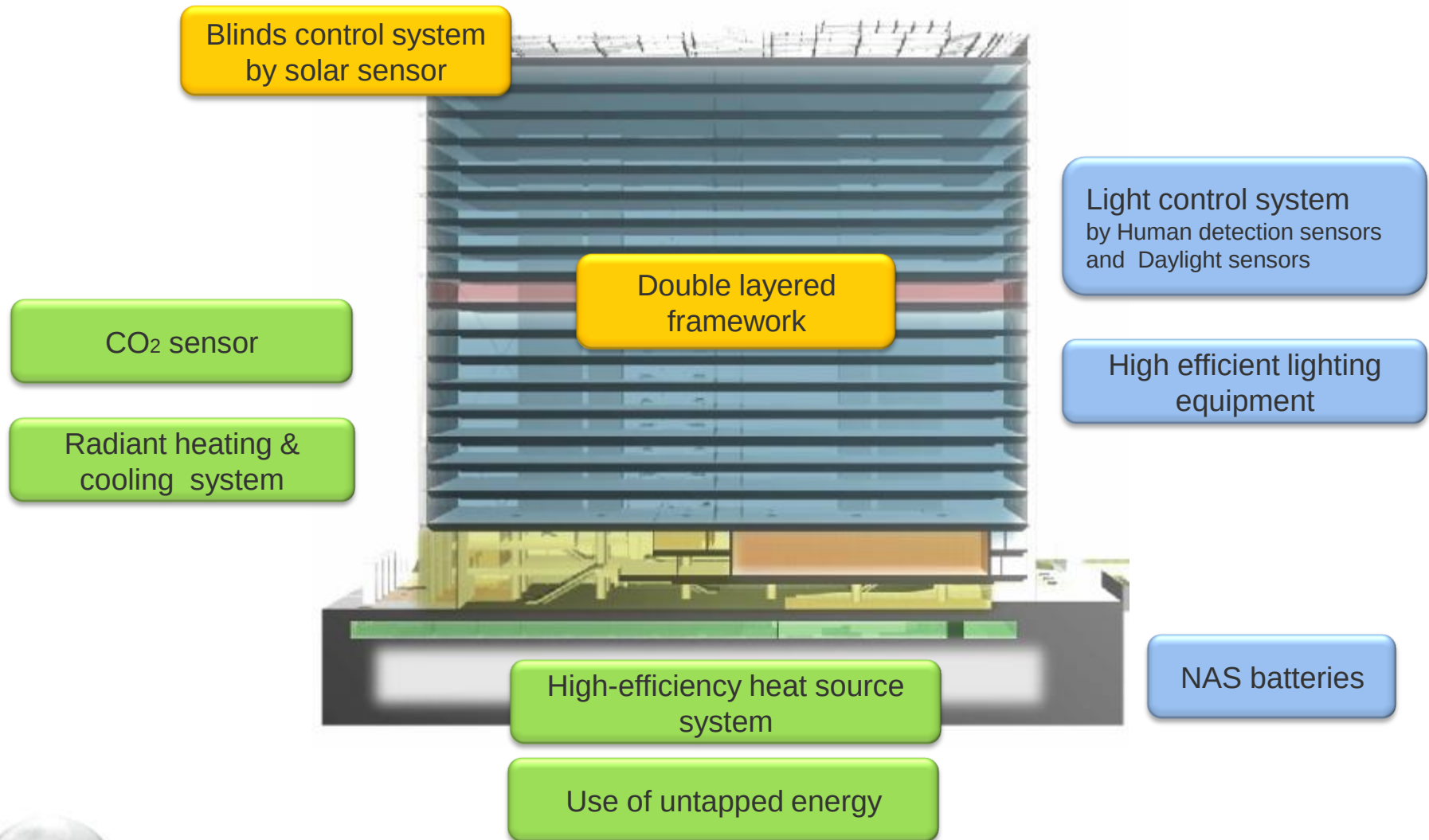
- Adoption of seismically isolated structure
- Duplication of electric supply (66KV double access to electricity, generator, and NAS battery)
- Backup system (maximum 72 hours: electricity, drinking water, food)
- high-end security system (security gates etc.)

## Appropriate building as environmental consciousness corporation

- Reduction of CO<sub>2</sub> emissions since construction phase (Reduction of 2,600 ton CO<sub>2</sub> emissions compared to the common energy-saving building)
- Reduction of CO<sub>2</sub> emissions by more than 40% compared to the ordinary office building by utilizing some of energy saving technology.

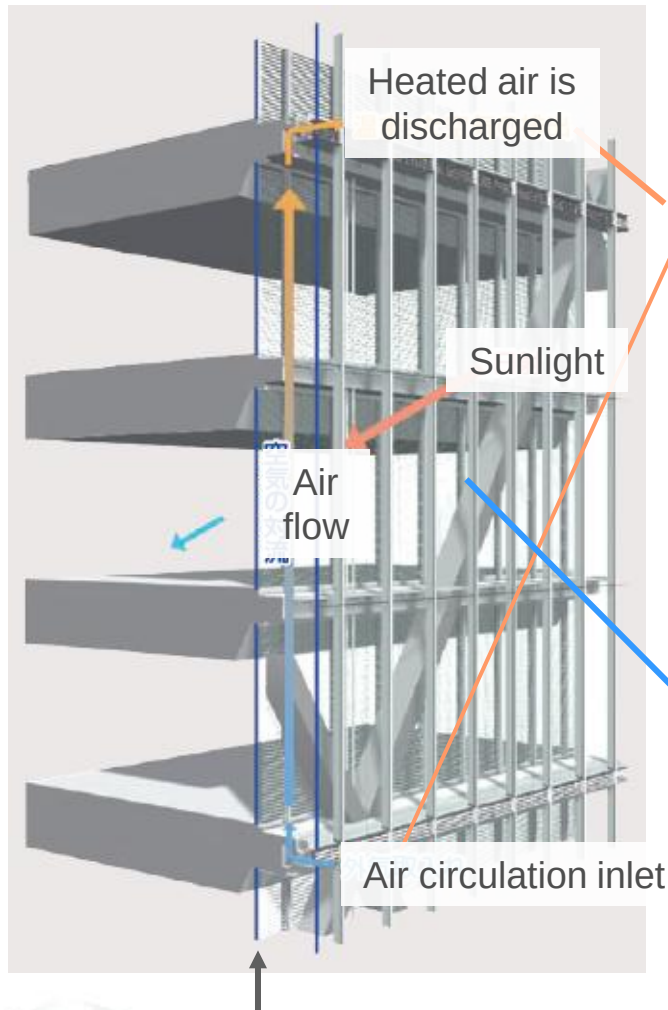


# Sony City's Environmental technology





# Benefits of a Double Layered Framework



Air circulation inlets and air discharge vents set in a 3-floor area create a flow of natural air, providing for natural ventilation.

Blinds are set on the east, south and west sides of the building and automatically adjust the angles depending on the amount of light.

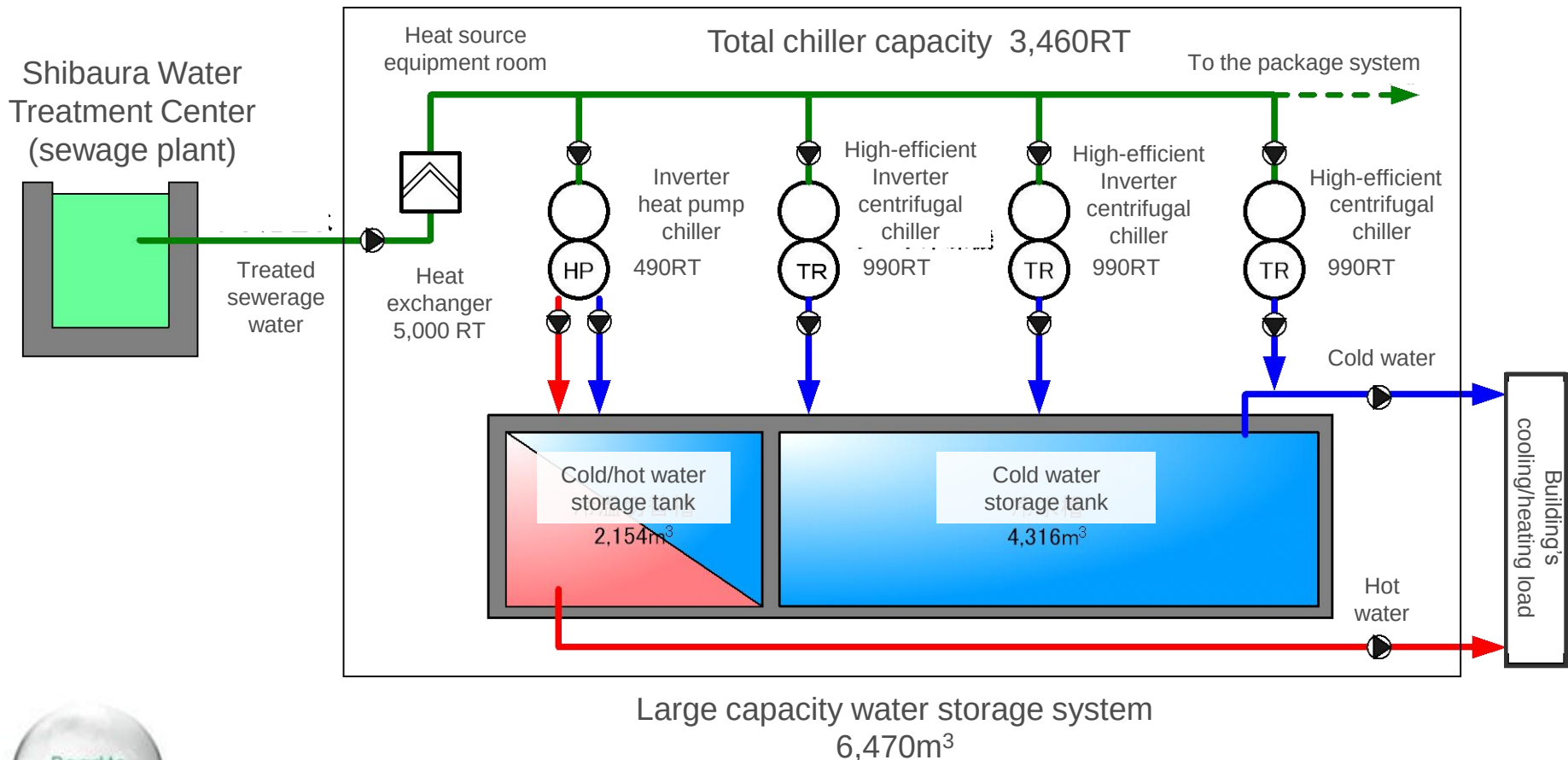


Outside wall based on area calculations



# Heat Source System Structure

Implementing an inverter-type centrifugal chiller and a heat recovery inverter-type centrifugal chiller has helped realize the optimal use of the large capacity water heat storage system





# Wastewater Heat Energy Mechanism

Treated sewage water is an untapped energy source that can be used as a coolant for use in heat source equipment using heat exchange

## Tokyo Metropolitan Government Bureau Sewerage Shibaura Water Treatment Center



Sewage water  
0.68 mil m<sup>3</sup>  
per day

Discharged  
into the canal

Treated water temperature  
Summer 27°C / Winter 18°C  
(Difference when in use ±5°C)

Treated sewage water

0.06 mil m<sup>3</sup>  
per day  
(MAX)

Treated sewage water

(After utilization of heat)

## Sony City



### ◆ Energy Saving

→ Using sewage water heat greatly reduces the electricity and water used by cooling towers in heat source equipment. (Reduced amount of clean water used -95%)

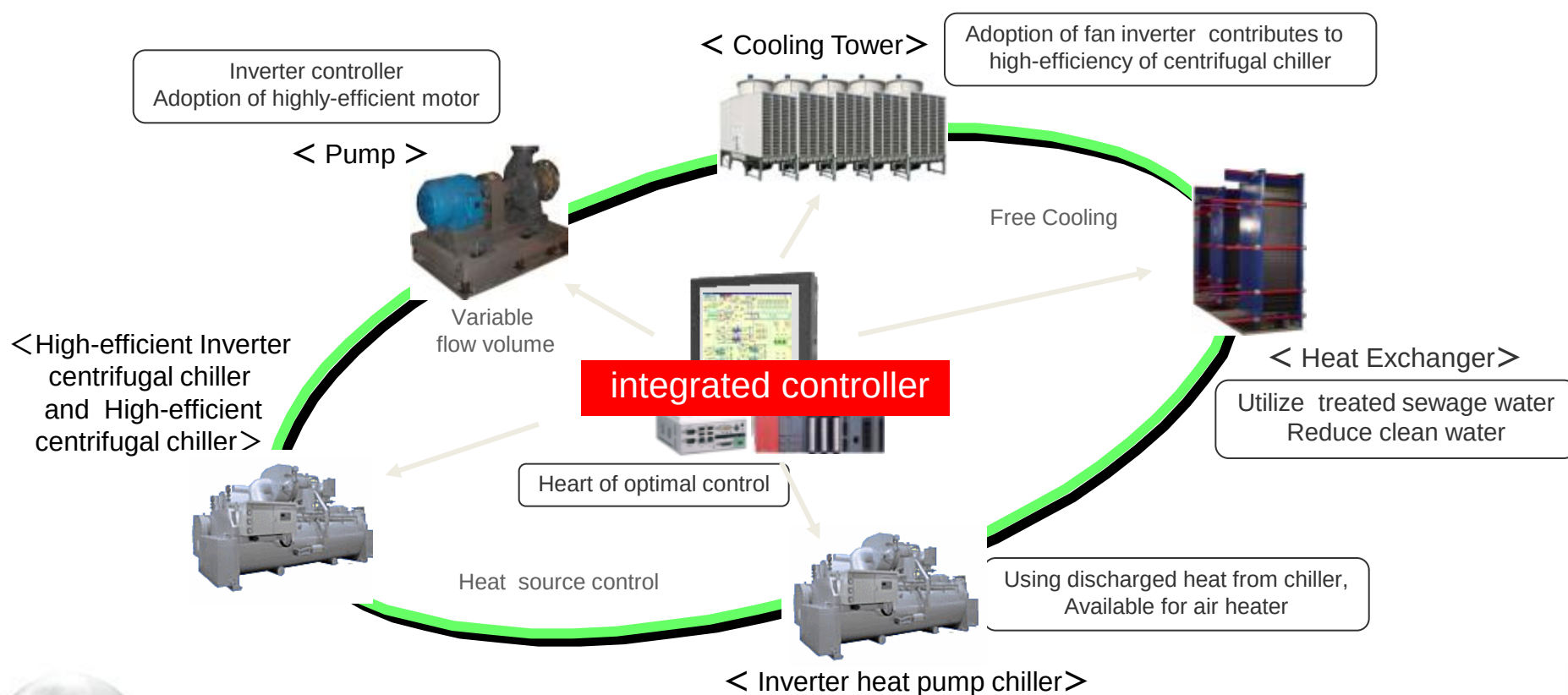
### ◆ Heat Island Prevention

→ All heat emitted to air-condition the building is dissipated to drainage. (64,000 GJ per year)



# Integrated Heat Source System

Implement optimal control as a whole system by integrated controller to operate each equipment at maximum efficiency



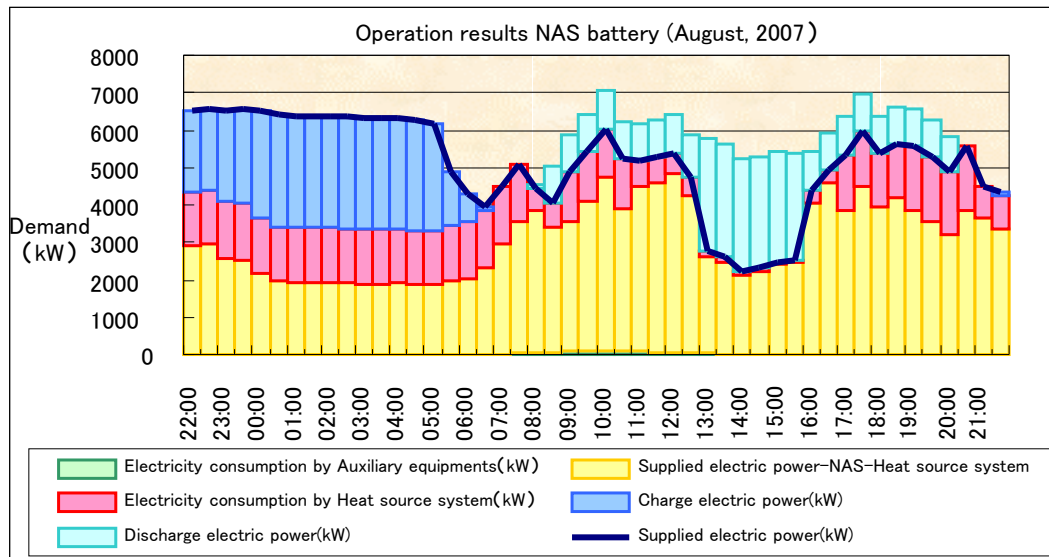
# Introduction of the NAS Battery System

## NAS Battery System 2,500kW

※NAS: Natrium and Sulfur

Decrease in initial cost by using as a backup power  
Decrease in running cost by effect of electric-load leveling

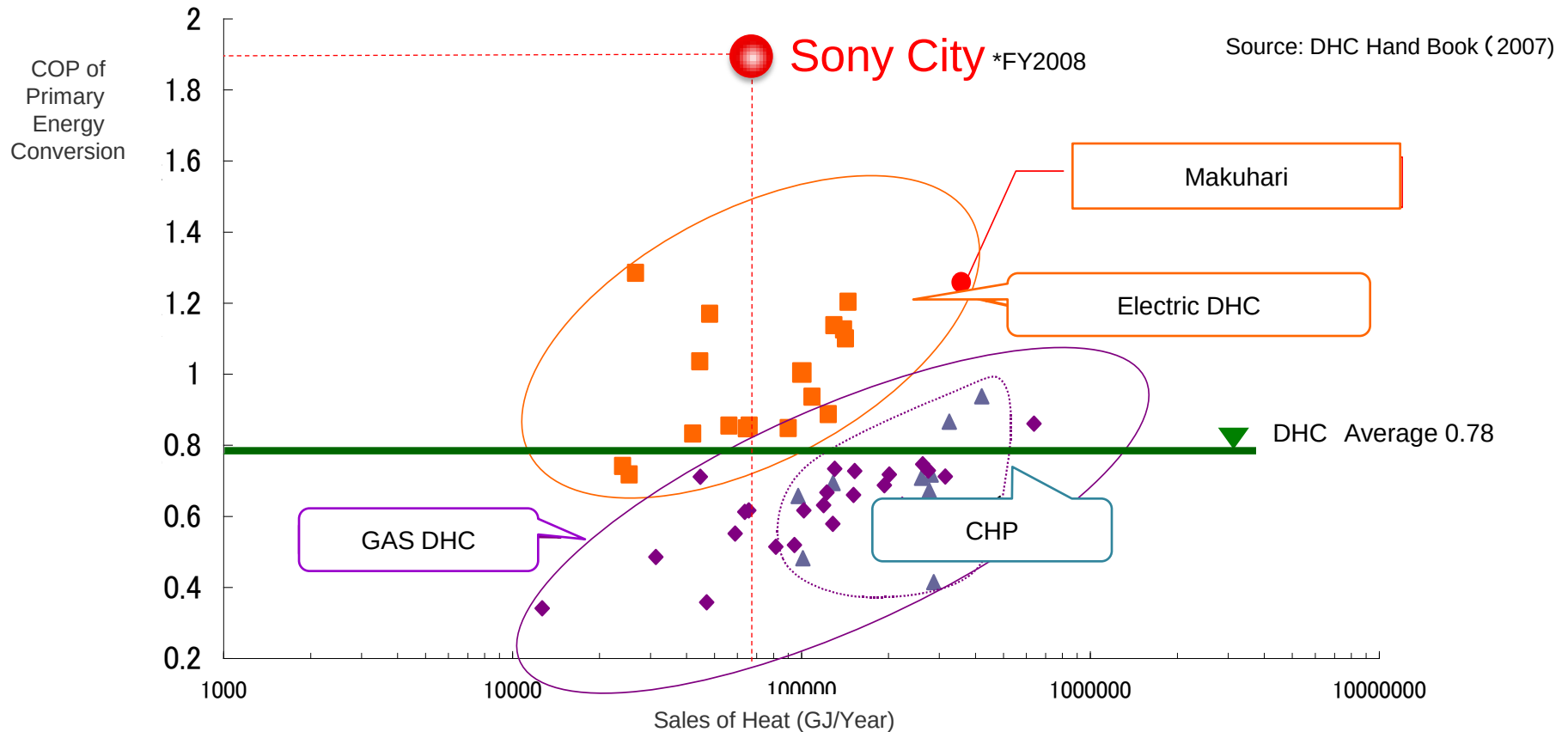
- backup power: Use of backup power in case of blackout caused by disaster.
- Electric-load leveling: decrease in electric charge by reducing basic rate (contracted power demand) and using nighttime power.



NAS Batteries

# Coefficient of Performance of Sony City

The COP of primary energy conversion of 1.9 of Sony City is much higher than the most efficient District and Heating and Cooling systems in Japan



Efficiency of Heat Source System

$$\text{Total Efficiency} = \frac{\text{Sales of Heat (GJ)}}{\text{Input of Primary Energy (GJ)}}$$



# Monitoring heat source system by Web-based monitoring

Introduce web-based monitoring that enables technical experts in a remote location to monitor operational status of equipment.

## 《Monitored data》

Number of point: 1,485

Interval: less than 4 seconds

## 《Display》

Display of overall heat source system

Display of operational status of equipment

(temperature, pressure, fluid flow, heat quantity)

Real-time display of COP

(coefficient of performance)

## 《data saving》

One-minute interval for last 200 days data

30-minute interval for last 36 months data

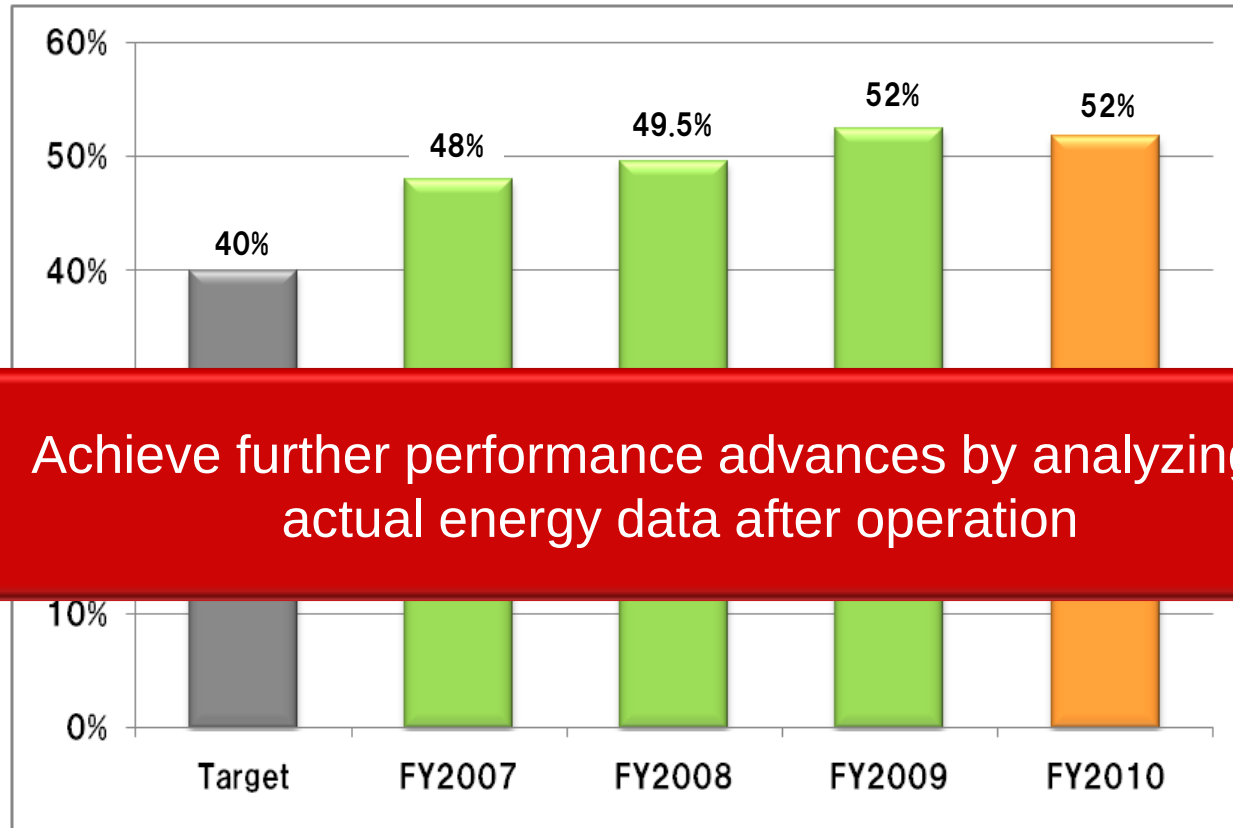
\* downloadable as CSV format



# Effect of Reducing CO<sub>2</sub> Emissions

Compared to the general office buildings

**50% reduction in CO<sub>2</sub> emissions**



Achieve further performance advances by analyzing actual energy data after operation





**SONY**  
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