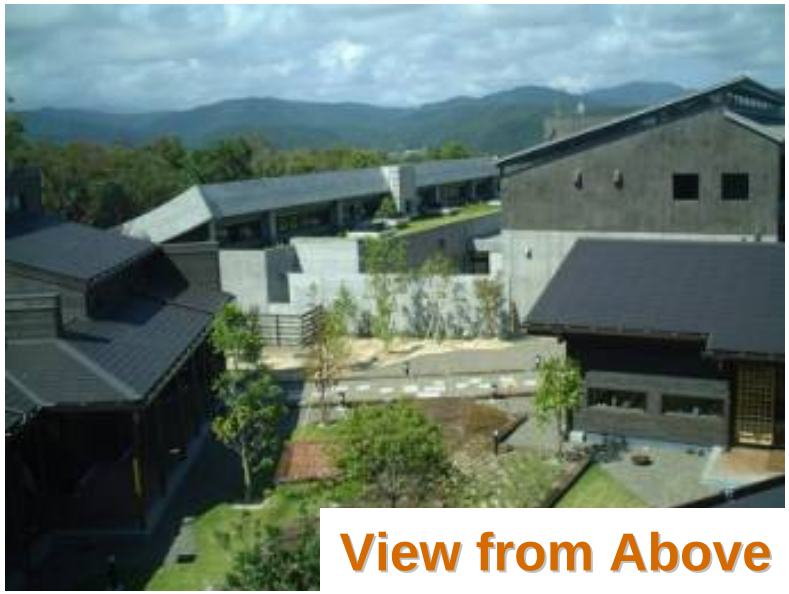
Ecolodge Shimanto

Eco Lodge Shimanto, Kouchi-Prefecture

North View

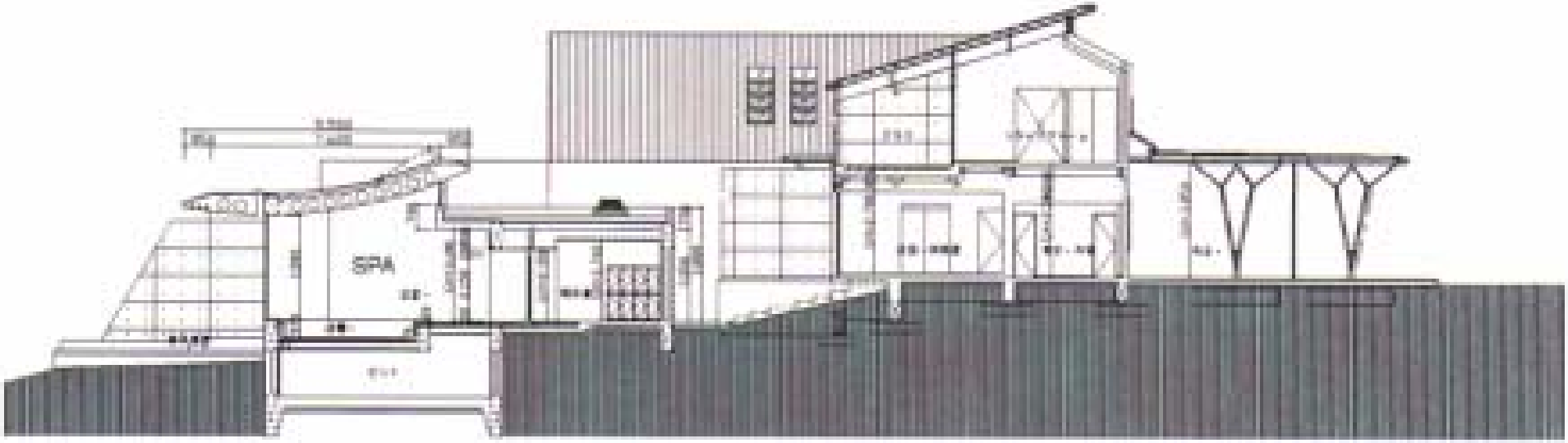
West View (Main Entrance)

Hotel Courtyard



View from Above

「Eco Lodge Shimanto」is a complex facility to heal the people and the earth totally, consists of three parts, Eastern-Chinese Clinic, Center Facility with spa and restaurant , and 30 rooms hotel.



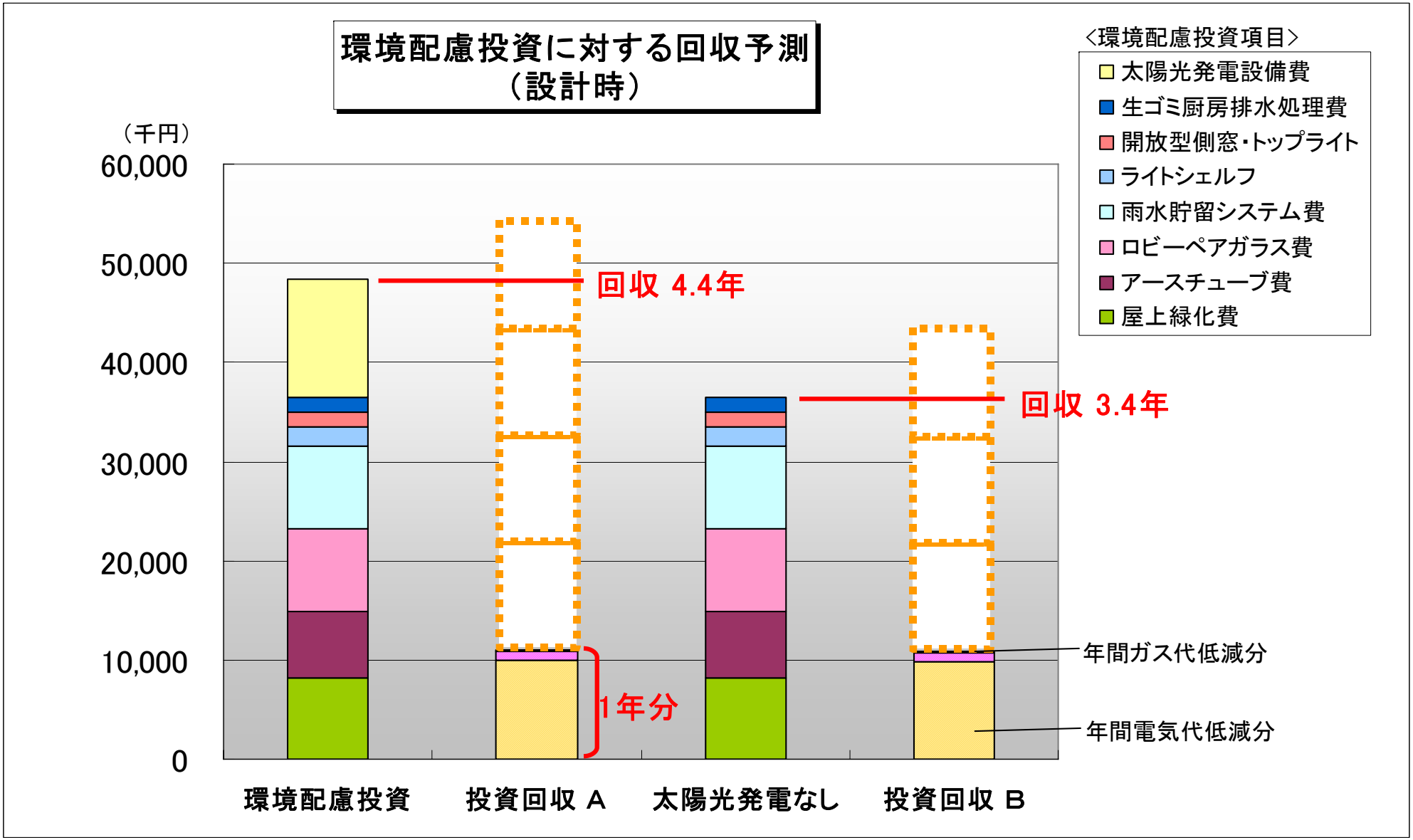
NORTH - SOUTH SECTION 2

NORTH ELEVATION

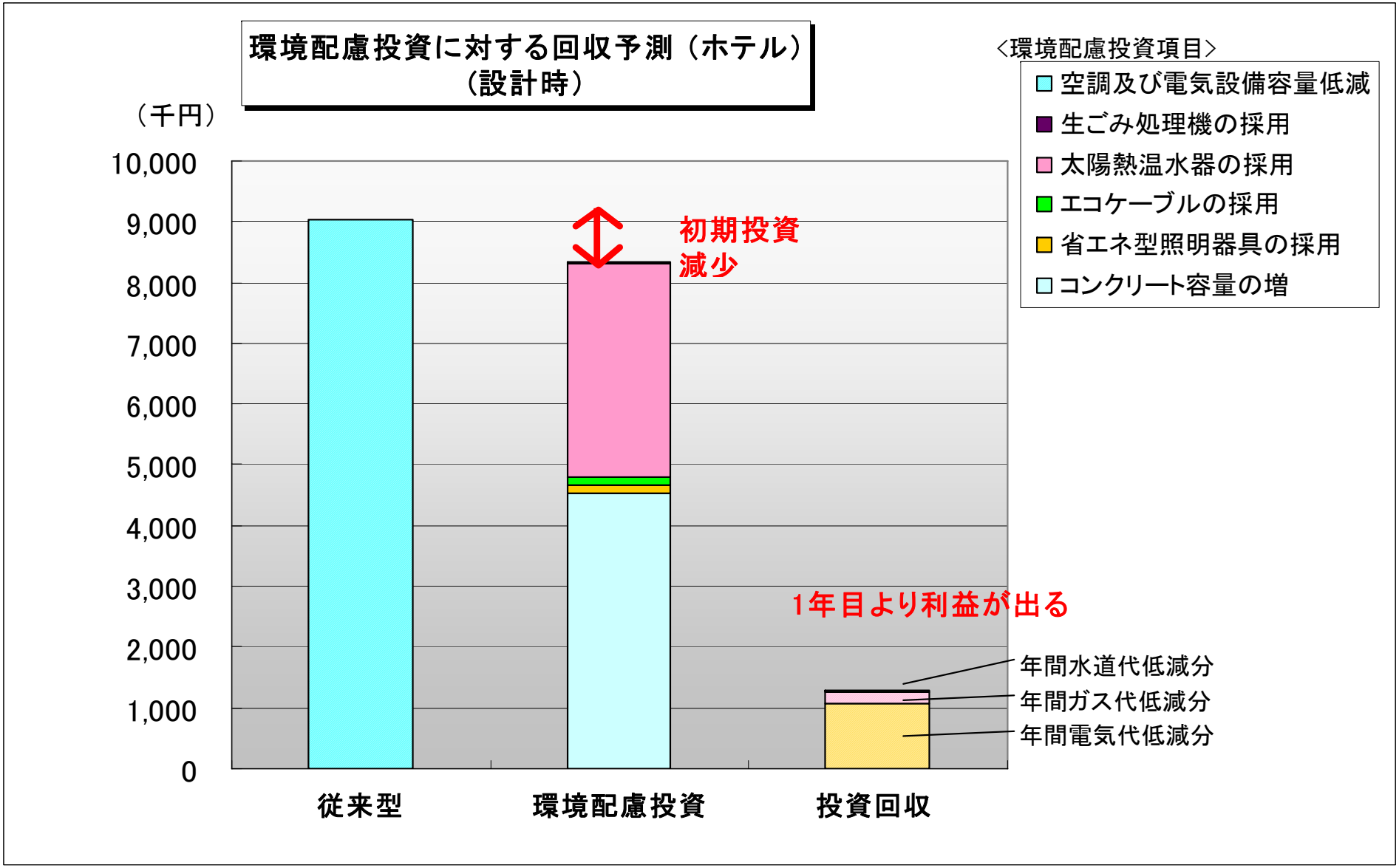
Charrette

At the beginning of the project, collaboration of all stake holders joined the discussion about how to develop environment-friendly project.

資金運用試算 Pay Back（センター）



資金運用試算 Pay Back（ホテル）



Construction Site

Bicycles are used to move within the construction site

Collecting micro climate data on site by measuring the temperature, humidity, earth temperature and rainfall in order to make use of it.

Utilization of harvested rainwater for cleaning, washing cars and flushing toilet.

Environmental Education to the user

Landscape

夏季（6月～8月）

花；ハマボウ、ネム、ニセアカシア、
オリーブ、カキノキ
実；アンズ、ブルーベリー

Green Features

Restoration of Woodland

Originally hilly woodland spread around here.
One day a decision to develop this woodland was made to construct buildings. What happened to many trees around here? Those trees were temporarily planted in a different place during construction. Then the trees were put back !

Preserved topography

Site plan and buildings form reflect the original topography.
Building design responds to the surrounding nature.

Green roof and wall

Rooftop of the spa：Green roofs and walls, which correspond with the surrounding nature, help energy conservation by reducing heat loss.

Solar hot water system

Solar collectors placed on the roof. Storage tank placed in the mechanical room : The sun heats the water as it passes through the collector and then is circulated to a storage tank.

Earth tube (Earth Tempering)

Trench under the floor
(view during the construction)

The temperature of the ground several feet below the surface does not fluctuate much. It is warmer in winter and cooler in summer than the air temperature above. The earth tube system can cool incoming ventilation air in summer and warm it in winter.

Light shelf

Exterior view of light shelves in the south facing windows
Interior view of light shelves
Light shelves distribute daylight throughout the space, by reflecting light off its top surface to the ceiling.

Day lighting & Heat exhaust

North facing high-side windows
Natural light coming through the skylight windows
Openable window

Natural ventilation

Interior view of the upper windows for air exhaust (Bathhouse)

Exterior view of the lower windows for air supply (Bathhouse)

The range of temperature could move the air such as natural wind. The vertical distance between the inlets and outlets causes the air movement without electricity.

Double-glazed glass

View of Lobby from outside
Double glazed glasses, compared to single glazing, cuts heat loss in half due to the insulating air space between the glass layers. In addition to reducing the heat flow, a double-glazed unit allows the continuity between inside and outside nature with high visibility.

Ice storage system

Ice storage systems make ice during the night when electric utilities charge less for energy. The ice supplements or even replaces mechanical cooling during the day and can result in significant operating cost savings

Reclaiming waste heat

Air to air heat exchanger

: Without heat recovery device, the air conditioner operates less efficiently because it has to work with heat loss when it changes the outdoor air and indoor air.

Permeable pavement

The earth filters rainwater Absorbed through soil on its way to groundwater aquifers, streams, and rivers. Permeable pavement allows storm water to drain naturally through the soil below, rather than becoming runoff.

Use of harvested rain water

Collecting rain water from the roof into the storage tank for irrigation of plants and sanitary usage.

Water-efficient equipment

Water-efficient automatic faucet
Water closet which save water
Urinal sensor flush valve

High-efficient lights and appliances

Compact fluorescent lamps (Slope) (Entrance)
High efficient fluorescent lamps (Office)
These high efficient lighting fixtures save energy and last longer

Daylight sensor／ Occupancy sensor

Ceiling daylight sensors: it is automatically switched on or off when day lighting reaches a certain level.
Ceiling occupancy sensors: it is automatically switched on or off with sensing the occupant

Minimize light pollution

Outside lighting in the garden
Too much artificial illumination in the nighttime environment affects the growth of animals / plants and obstructs stargazing. Lighting fixtures used outside minimize these impacts

Energy- efficient elevator

In addition to the high efficient motor, the electronic controller that adjusts the usage of electricity to the required operation is used in the elevators to save energy.

Fermentation of Kitchen Waste

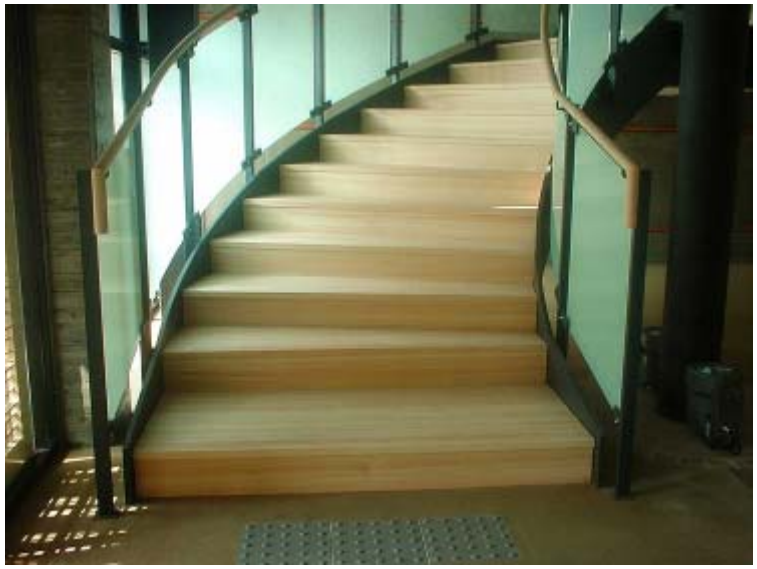
Device of kitchen waste fermentation with pieces of cedar that could help fermentation

：It reuses fresh garbage as fertilizer, reducing

Effective use of local materials（1）

Symbolized pillar is 100 Years old Japanese Cedar from local forest
Art pieces made of 100 Years old Japanese Cedar from local forest Local and domestic materials are chosen as many as possible
in order to minimize CO2 discharge from transportation and respect the local history, culture, and economy.

Effective use of local materials（2）



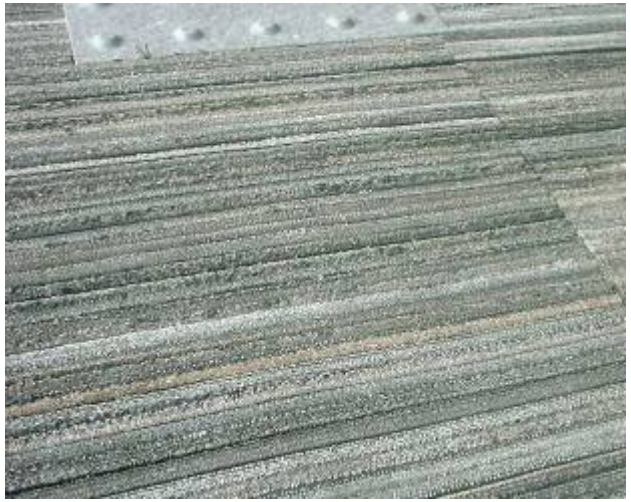
Front staircase made of local cypress.
Information counter board made of 100 Years Cedar.
Spa floor using pebbles from Shimanto River.

Use of Natural Materials
(Soil,Tosa plaster,・・・)

Local plaster wall, Tatami and Cedar flooring / Earth flooring / Cedar flooring.

Human-friendly Natural materials are used,, because they have function of moisture absorbing /discharging and deodorizing.

Recycled materials



Recycled PET Bottle Carpet at office
Recycled Tire Flooring at entrance hall
Environmentally friendly materials are chosen as many as possible for interior finishes.
(recycled materials/ natural materials/ local materials)

Thermal Insulation

Polystyrene Form Fiberglass
Thermal insulation of the exterior wall could reduce the heat transfer through the wall between inside and outside to save energy for an air conditioner.

Photovoltaic system（Future）

Foundation base is provided on the roof for photovoltaic panels

Hotel Guest Room Finish Materials

Guest room A

FINISH SCHEDULE [A Type]

Floor	**Soil Ceramic Tile (Waste heat used)**
Wall	**Rice Paper**
	Cedar / Cypress Board
	Diatom Soil Plaster
	Ceramic Tile (Moisture Control)
Ceiling	**Rice Paper**

FINISH SCHEDULE [B Type]

Floor	Tatami Mat
	Soil Ceramic Tile (Waste heat used)
Wall	Diatom Soil Plaster
	Cedar / Cypress Board
Ceiling	Rice Paper

Guest room B

Guest room B

FINISH SCHEDULE [C Type]

Floor	**Hemp Mat**
Wall	**Rice Paper**
	Cedar / Cypress Board
Ceiling	**Rice Paper**

Guest room C

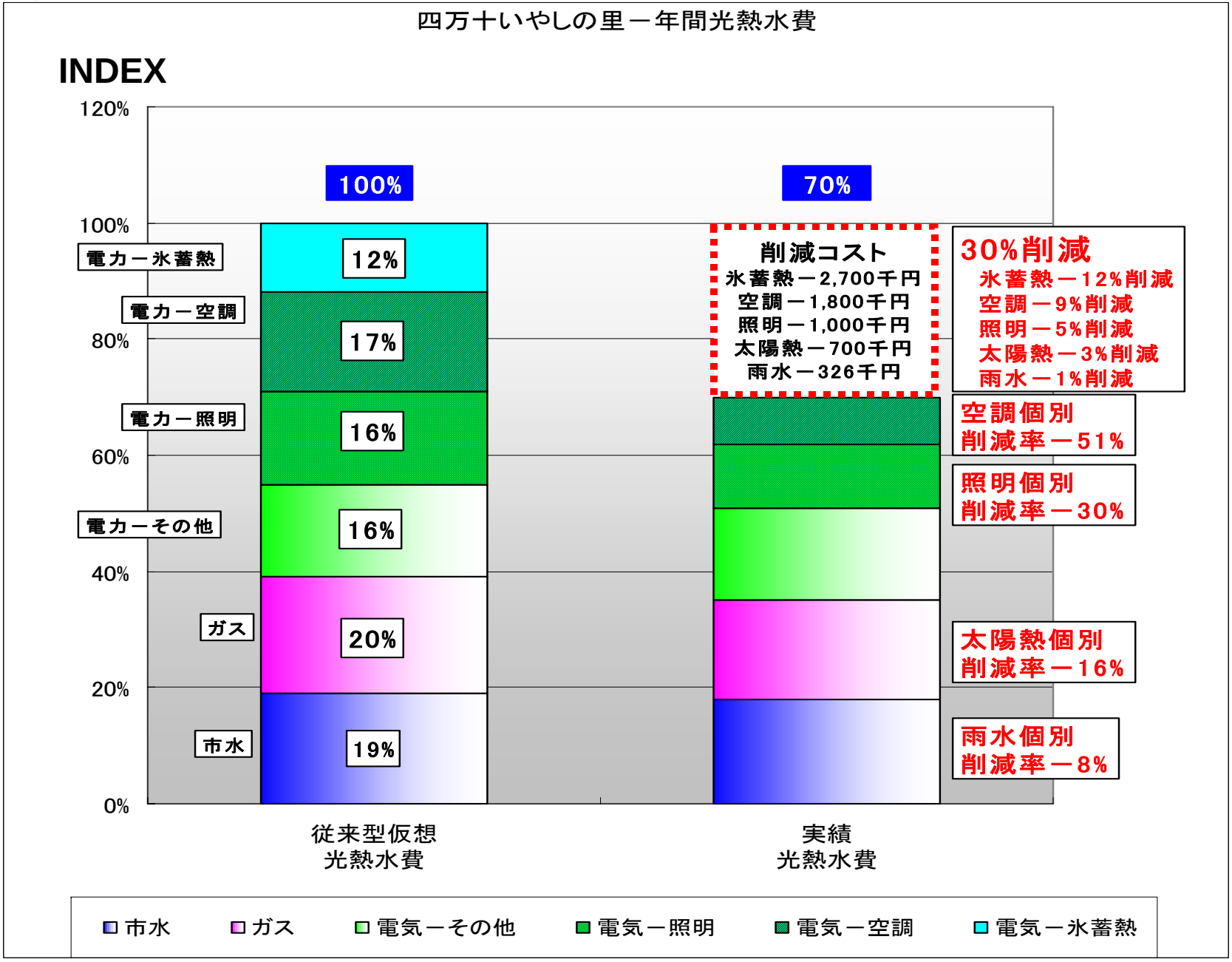
Guest room D

FINISH SCHEDULE [D Type]

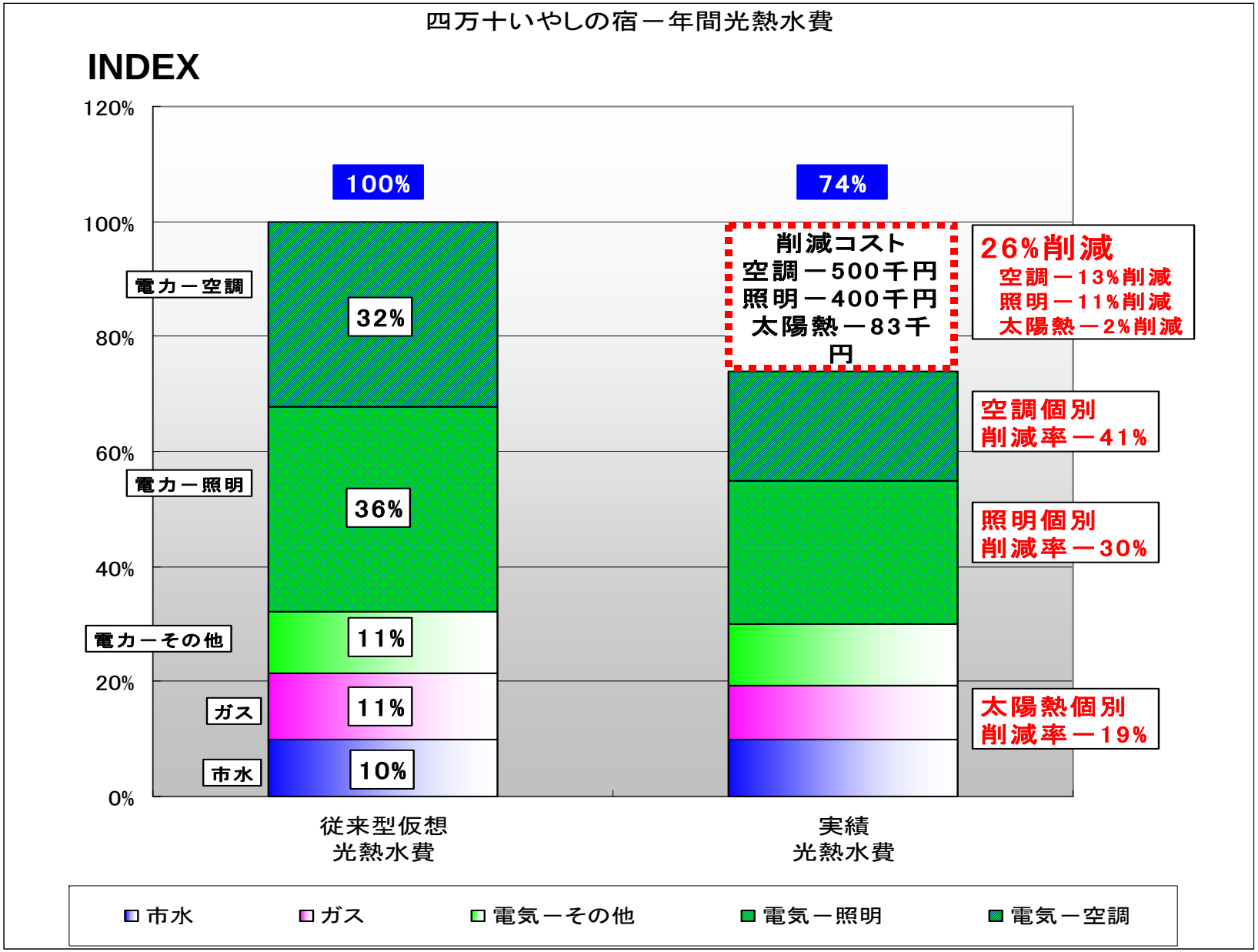
Floor	**Cedar / Cypress Flooring**
Wall	**Diatom Soil Plaster**
Ceiling	**Cedar Board**

Result

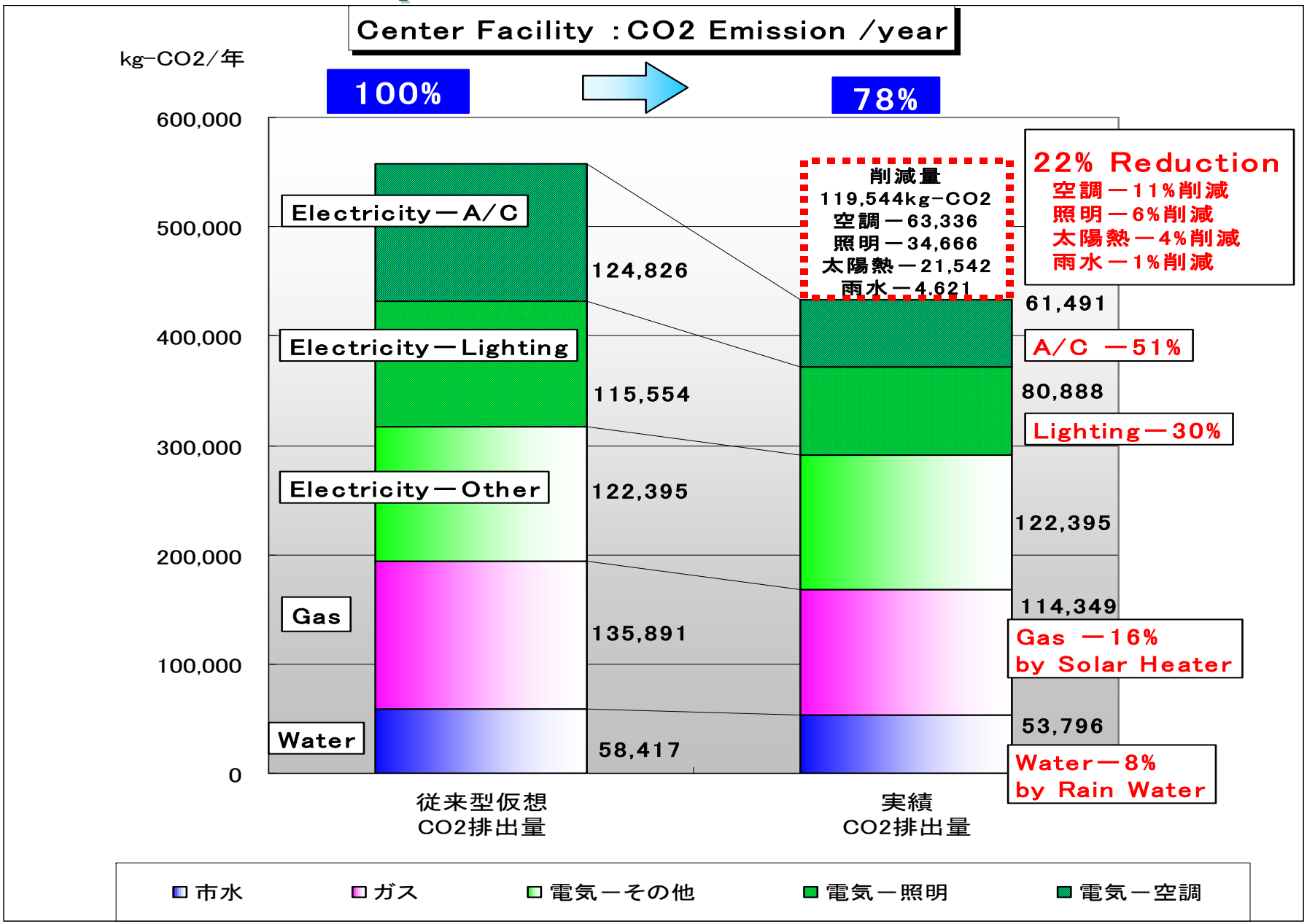
Energy Consumption Cost (Center)



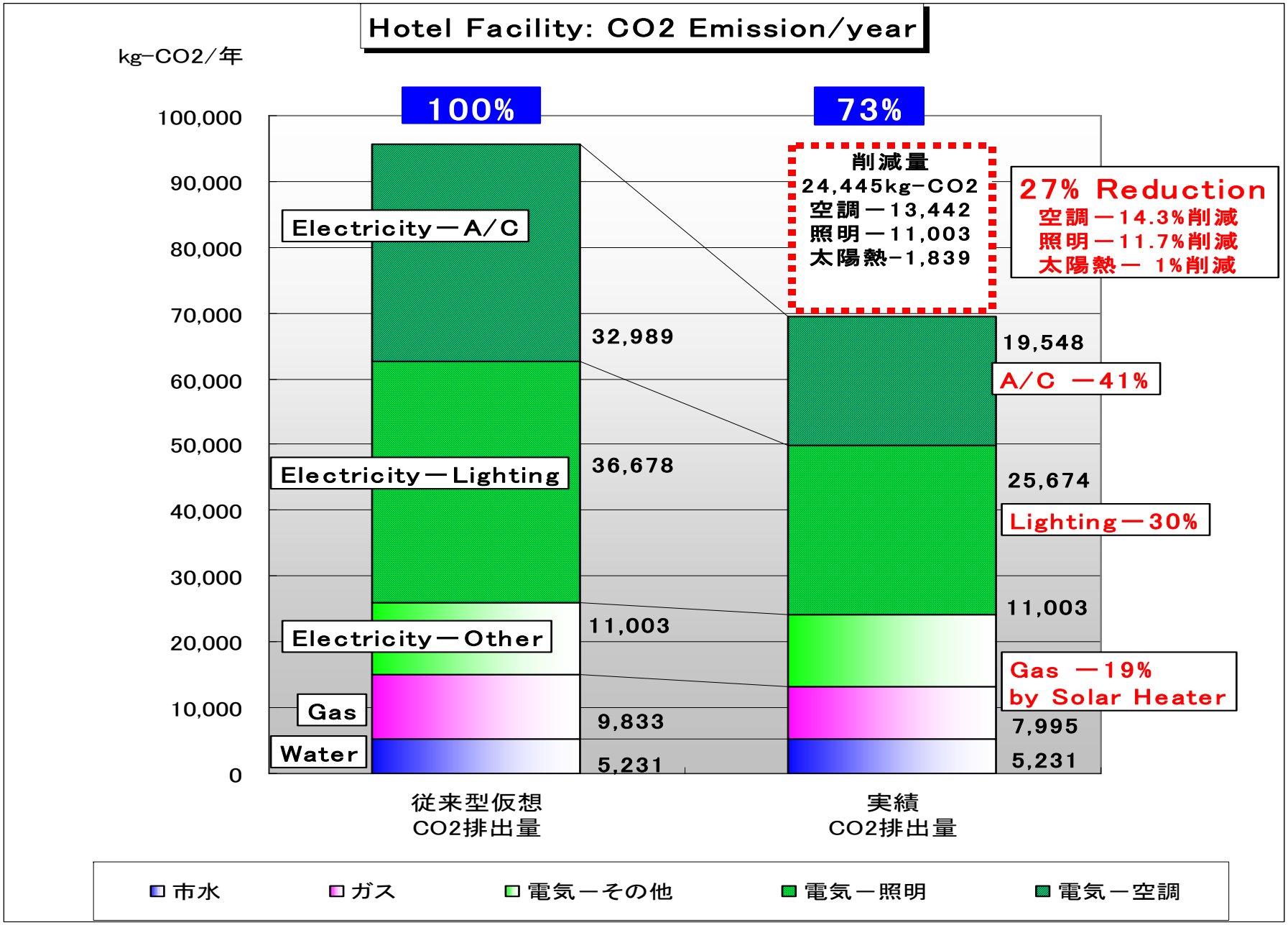
Energy Consumption Cost (Hotel)



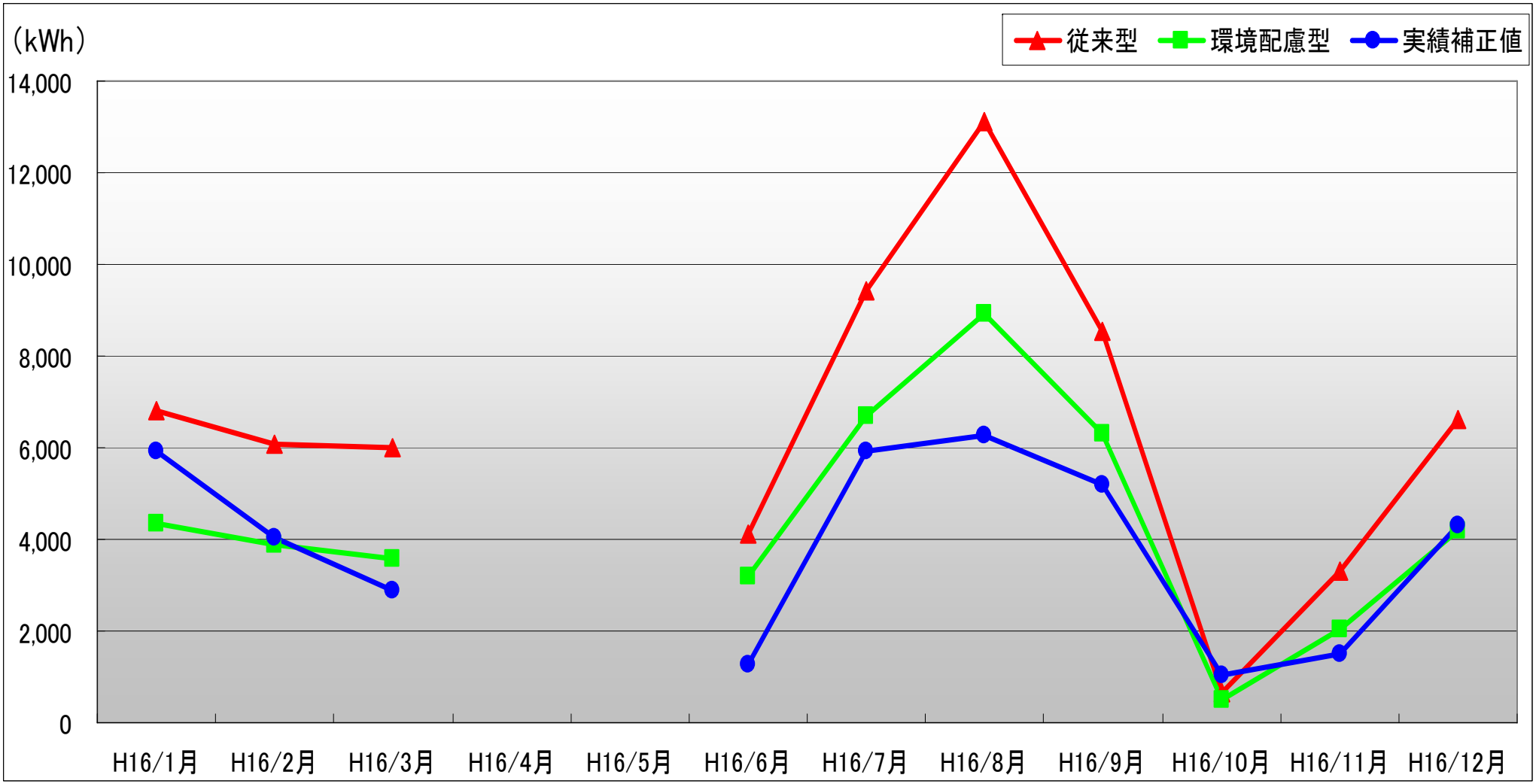
CO2 Emission (Center)



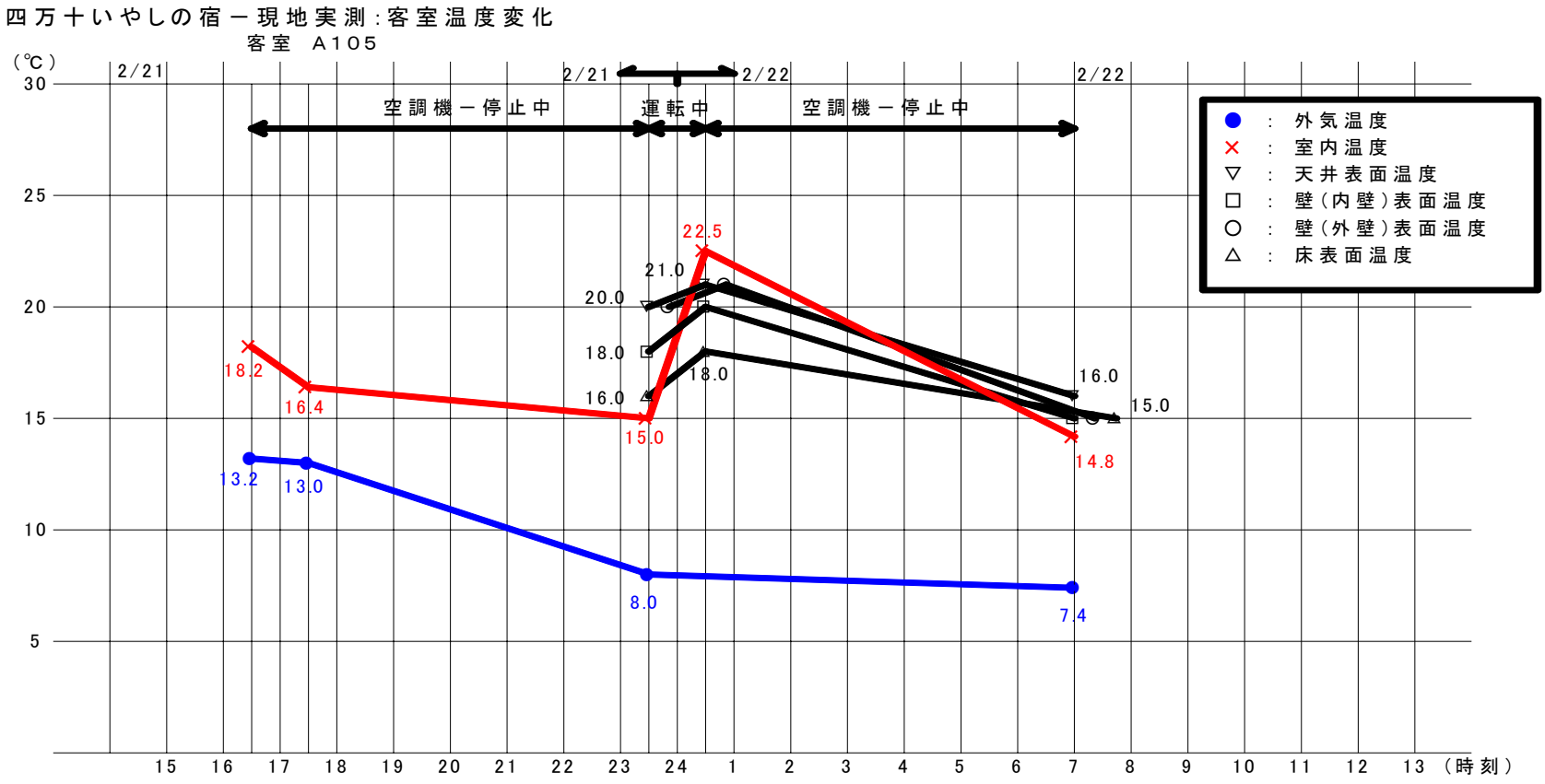
CO2 Emission (Hotel)



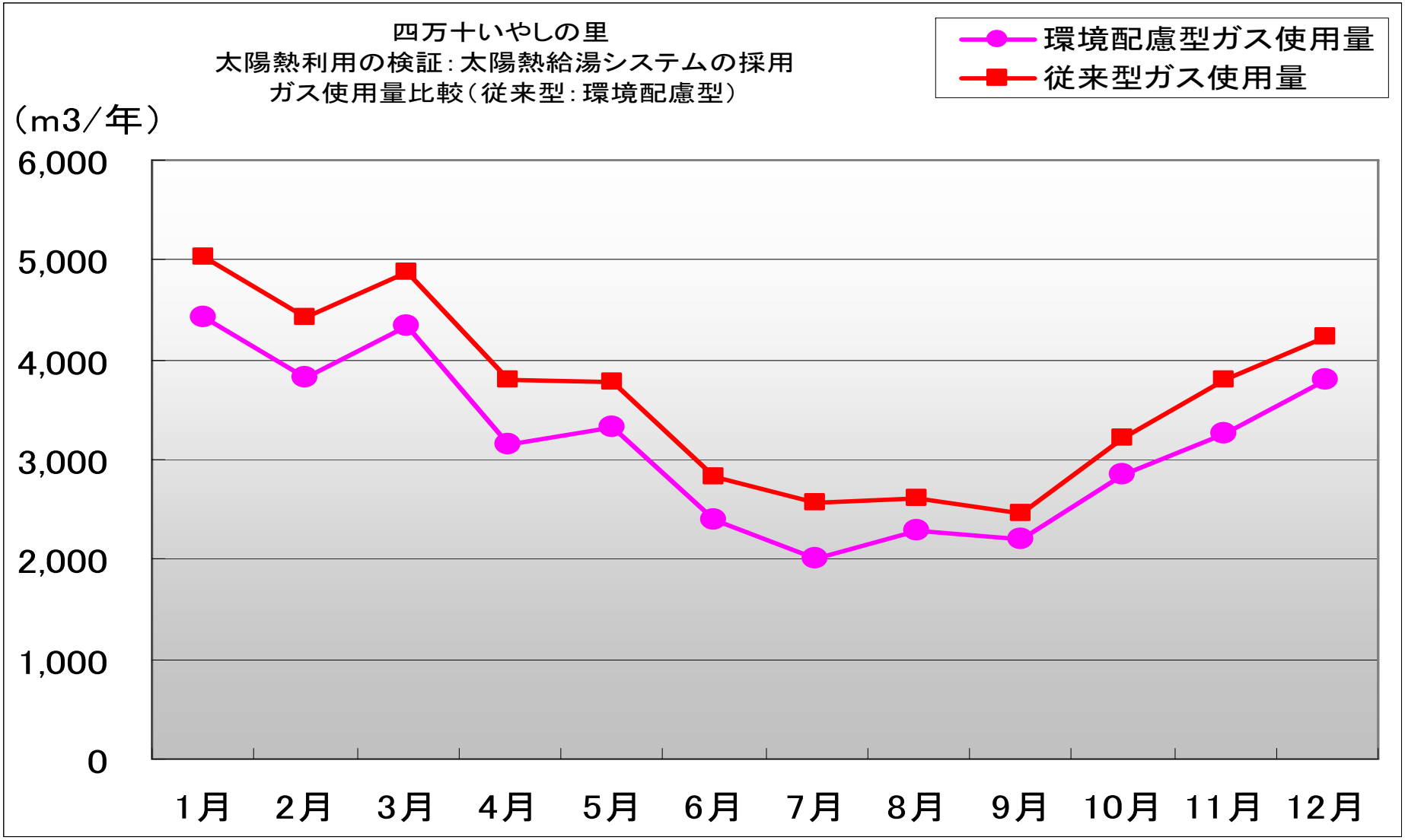
四万十いやしの宿－空調負荷低減　月別空調エネルギー使用量（電力使用量）比較



四万十いやしの宿－現地実測:客室温度変化

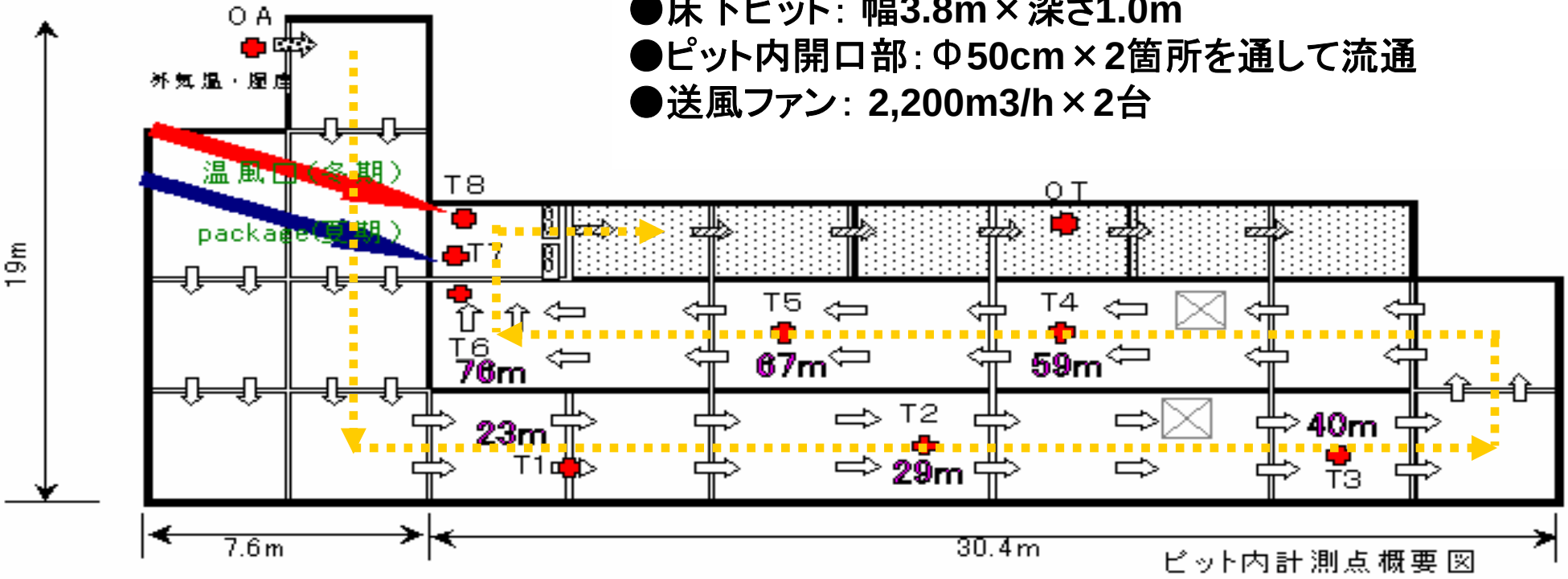


四万十いやしの宿ーガス使用量比較（従来型：環境配慮型）
太陽熱給湯システムの採用

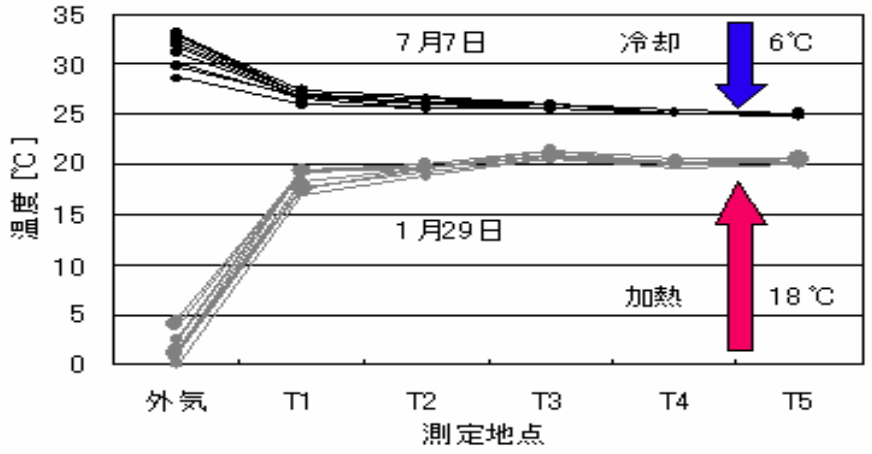


Earth Tube

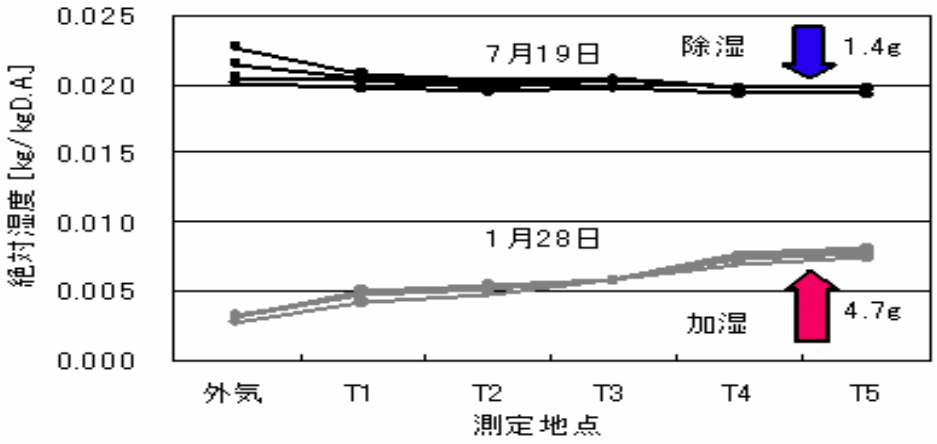
●長さ　　：約80m（外気取入口～吹出手前）
●床下ピット：幅3.8m×深さ1.0m
●ピット内開口部：Φ50cm×2箇所を通して流通
●送風ファン：2,200m3/h×2台



ピット内計測点概要図

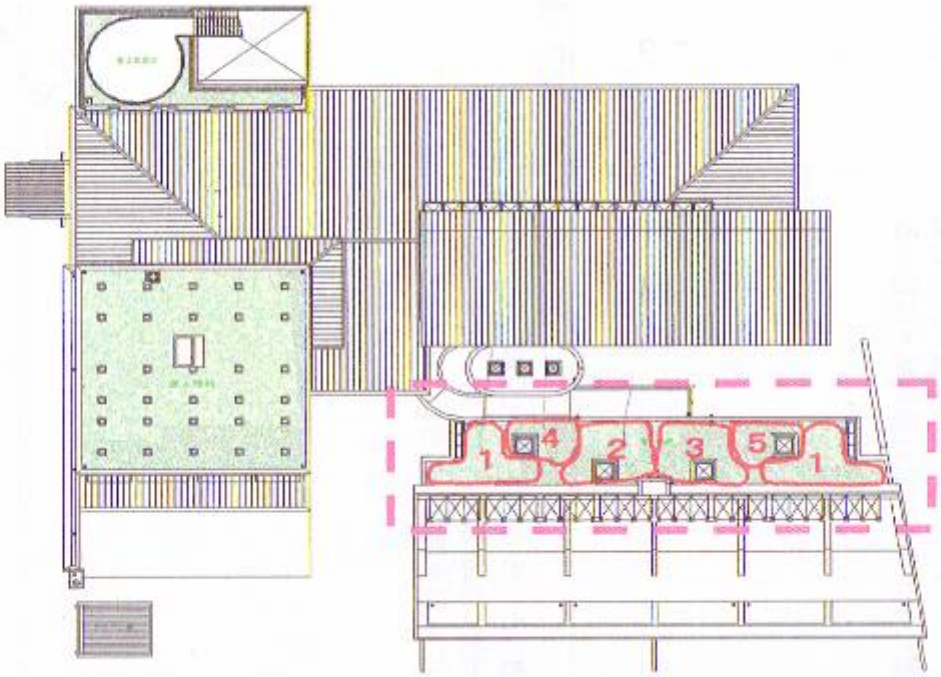


夏期と冬期のピット内温度変化



夏期と冬期のピット内湿度変化

Green roof ;winter

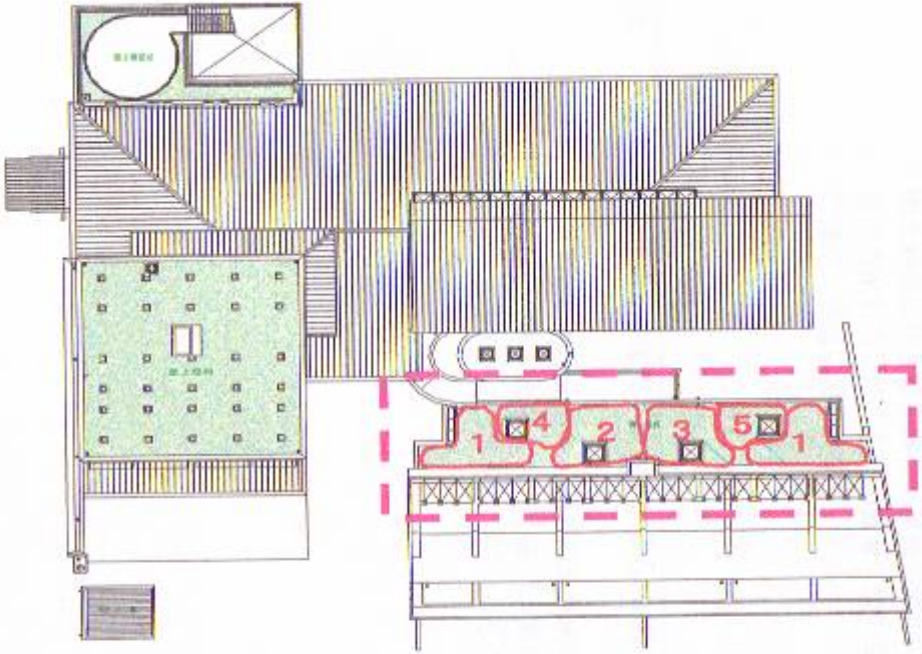


1　葉が茶色く枯れている。

2　よく育っている。
外壁側の浴室排気の当たる場所は特によく繁殖している。

1	アシズリノジギク
2	メキシコマンネングサ
3	タイトゴメ
4	オノマンネングサ
5	ツルマンネングサ

Green roof ;summer



1	アシズリノジギク
2	メキシコマンネングサ
3	タイトゴメ
4	オノマンネングサ
5	ツルマンネングサ