

## 1 Reduction of Greenhouse Gases

### Overall View of Kyushu Electric Power's Measures against Global Warming

Kyushu Electric Power contributes to the fulfilment of the Japanese government's Kyoto Protocol commitments by controlling GHGs emitted in the course of business.

#### Target for CO<sub>2</sub> emission reduction

We have established CO<sub>2</sub> emission reduction targets for 2010 in order to do our part to meet Kyoto Protocol requirements.

|                   |  |
|-------------------|--|
| <b>Commitment</b> | 20% reduction in FY2010 end-use CO <sub>2</sub> emission intensity from FY1990 |
|-------------------|--|

#### CO<sub>2</sub> emissions during power generation

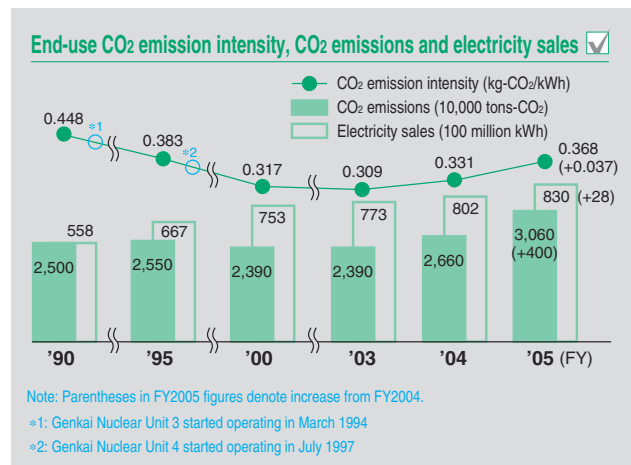
CO<sub>2</sub> emission intensity in FY2005 was 0.368kg-CO<sub>2</sub>/kWh - 18% less than FY1990 levels.

In the 15 years since FY1990, electricity sales have increased 1.5-fold while CO<sub>2</sub> emissions increased 1.2-fold.

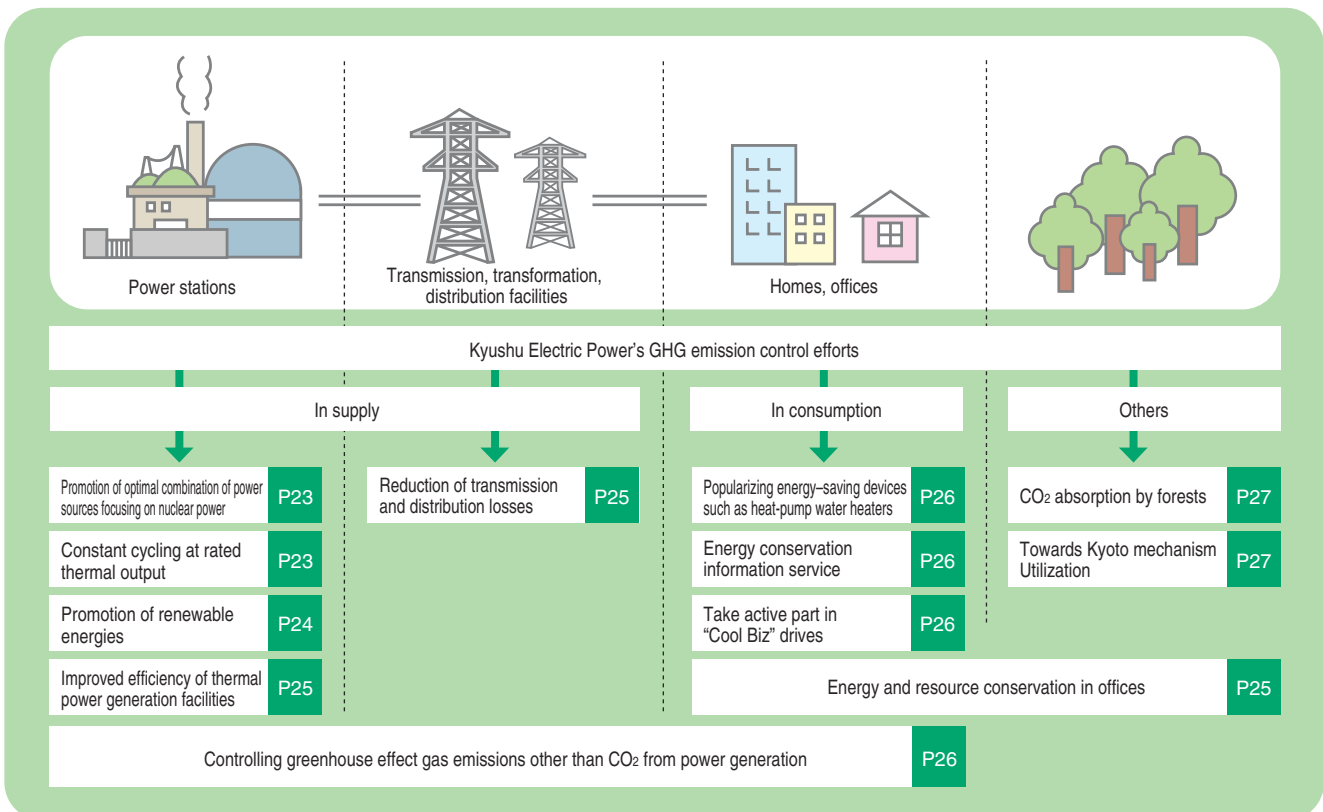
Such results were achieved by promoting well-balanced power source development, with nuclear power as a core source supplemented by LNG thermal and the natural energy of hydroelectric and geothermal power. Other contributors include the improvement of nuclear power capacity factors and the total thermal efficiency of thermal power stations through the introduction

of high-efficiency thermal power stations, which reduce CO<sub>2</sub> emissions per unit output. The development of two nuclear plants (2.36 million kW) offered particularly significant benefits.

CO<sub>2</sub> emissions increased by four million tons-CO<sub>2</sub> (+15%) over the previous year. This was attributable mainly to an increase of 2.8 billion kWh in electricity sales despite an increase in nuclear power usage from 86.2% to 86.8%, and to increased use of thermal power generation to cover the drop in hydro power generation caused by droughts. As a result CO<sub>2</sub> emission intensity rose 0.037kg-CO<sub>2</sub>/kWh (+11%).



### Working to minimise GHG emissions



### Efforts in Electricity Supply

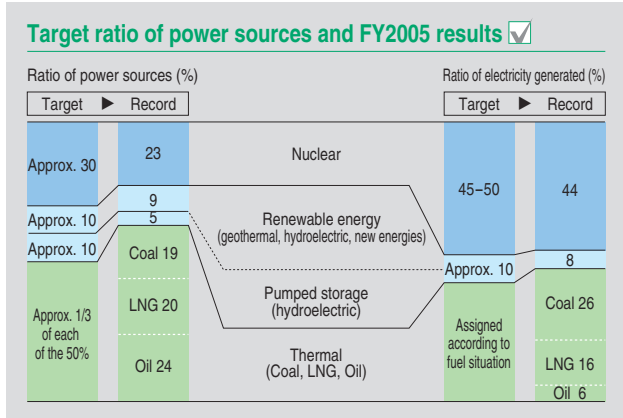
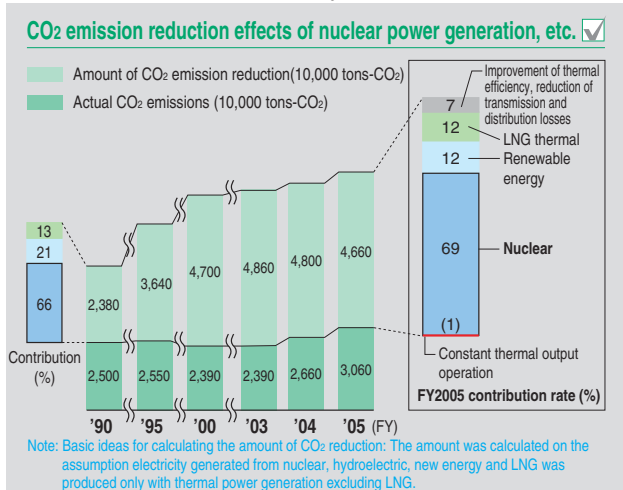
#### ■ Promotion of optimal combination of power sources focusing on nuclear power

We are committed to CO<sub>2</sub> emission reduction through the optimal combination of power sources by promoting a balanced development of sources around our core source of nuclear power and through introduction of new energy sources, with comprehensive consideration of power supply stability, economic efficiency and environmental conservation.

Nuclear power accounts for 44% of total power generation and does not produce CO<sub>2</sub> during its power generation process, thus contributing to CO<sub>2</sub> emission reduction. Improving nuclear power capacity therefore leads to a reduction in the overall volume of CO<sub>2</sub> emissions from the power supply.

Since demand for power is expected to grow slowly but constantly, we feel existing nuclear power stations must be utilized in the most efficient manner, which must also ensure safe, stable operation, and that it is necessary to develop next-phase nuclear power stations and pluthermal utilisation.

We are aiming to develop next-phase nuclear power stations by the latter half of the 2010s; we calculate that this will reduce GHGs by some nine million tons-CO<sub>2</sub> annually.



### Characteristics of power sources

| Power sources  | Characteristics   |
|--|---|
| Nuclear  | <ul style="list-style-type: none"> <li>○ Superior in fuel supply stability and economic efficiency (fuel needs no replacing for one year, wide distribution of supply areas, nuclear fuel cycle makes fuel reusable).</li> <li>○ No CO<sub>2</sub> emissions during power generation</li> </ul>   |
| Renewable energy (geothermal, hydroelectric, new energies) | <ul style="list-style-type: none"> <li>○ Totally domestic renewable energy</li> <li>○ No CO<sub>2</sub> emissions during power generation</li> </ul> <p><b>Geothermal Hydroelectric</b></p> <ul style="list-style-type: none"> <li>○ Limited development sites (and volumes)</li> <li>○ Building dams affects the environment</li> </ul> <p><b>Wind Photovoltaic power</b></p> <ul style="list-style-type: none"> <li>○ Output fluctuates with weather conditions</li> <li>○ High-cost</li> </ul> |
| Pumped storage (hydroelectric)                             | <ul style="list-style-type: none"> <li>○ Superior output adjustability in accordance with demand</li> <li>○ Building dams affects the environment</li> </ul>  |
| Coal-fired thermal   | <ul style="list-style-type: none"> <li>○ Superior in fuel supply stability and economic efficiency (many fuel reserves, wide distribution of supply areas)</li> <li>○ CO<sub>2</sub>, SO<sub>x</sub> and NO<sub>x</sub> emitted during power generation</li> </ul>  |
| LNG-fired thermal  | <ul style="list-style-type: none"> <li>○ Relatively superior in fuel supply stability (wide distribution of supply areas)</li> <li>○ Lower CO<sub>2</sub> emissions during power generation compared to other fossil fuels</li> </ul>   |
| Oil-fired thermal  | <ul style="list-style-type: none"> <li>○ Easy storage and transportation of fuel</li> <li>○ Dependent on the Middle East for most of oil supply</li> <li>○ CO<sub>2</sub>, SO<sub>x</sub> and NO<sub>x</sub> emitted during power generation</li> </ul>   |

#### ■ Constant cycling at rated thermal output

The term “constant cycling at rated thermal output” refers to the operation of generation facilities at the rated reactor thermal power (100%) approved by the government. In FY2005, this led to an increase in usage of nuclear generation of 1.5% — equivalent to a reduction of 550,000 tons-CO<sub>2</sub>.


We're conserving more energy and resources than ever before.

**Hideo Kashiwagi** Environmental Management Group, Environmental Affairs Department

### VOICE ● Energy and resource conservation in offices

I am assigned to the Environmental Affairs Department. There, we promote group-wide efforts aimed at the control and reduction of greenhouse effect gas emissions—efforts which are a part of the whole Kyushu Electric Power Group's business activities. Naturally, it is important to minimise CO<sub>2</sub> emissions upon power generation—which make up the bulk of emissions—in order to make a contribution to achieving Japan's GHG reduction targets under the Kyoto Protocol, but I feel it is just as important for each and every member of staff in our offices to be aware of energy conservation in their part of the office and to do what they can.

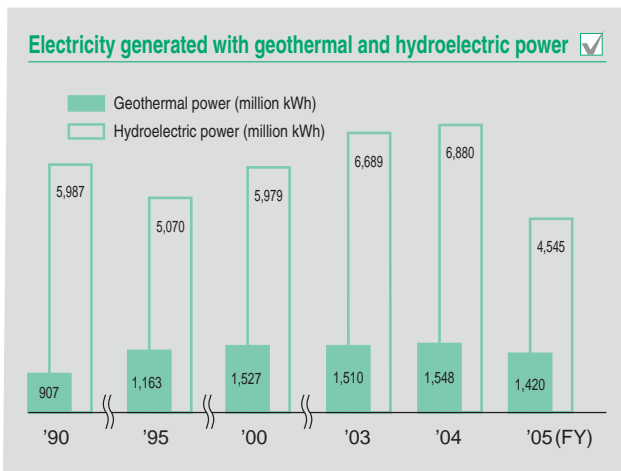
I try to play my part by shutting down my computer when away from my desk and pausing a little before I make photocopies so as to avoid mis-copies.



## Promotion of renewable energies

### Promotion of geothermal and hydroelectric power generation

Geothermal and hydroelectric power generation are highly eco-friendly power generation methods that harness valuable energy sources available in Japan, and are CO<sub>2</sub> emission-free during the power generation process. Since utilization of such power sources is developed in rich natural environments, we pursue the effective use of such technology while paying close attention to the natural landscape and surrounding environment. Geothermal generation facilities located in Kyushu represent about 40% of national installed capacity, taking advantage of Kyushu's rich geothermal energy.



### Promotion of wind and photovoltaic power generation

New energy sources such as wind and photovoltaic power provide clean and inexhaustible energy, although they do have some issues such as high dependency on weather.

#### In-house installation of wind and photovoltaic power generation facilities

We have installed some such facilities at our business sites, including 11 wind power generation units with a capacity of 3,250 kW and 21 photovoltaic power generation units with a capacity of 325 kW, with a total capacity of 3,575 kW as at the end of FY2005.

#### Purchases of electricity from customers and businesses

By purchasing surplus electricity generated by wind power generators installed at customers' homes or businesses, we help promote the spread of renewable energies.

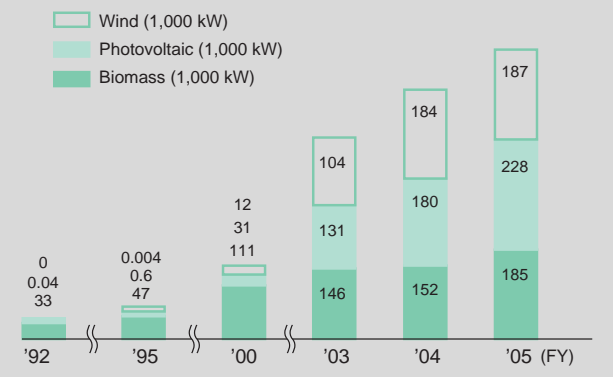
### Excess wind-, photovoltaic- and biomass-generated power contract numbers

 ✓

Unit: contracts

| Fiscal Year  | 1992 | 1995 | 2000  | 2003   | 2004   | 2005   |
|--------------|------|------|-------|--------|--------|--------|
| Wind         | 0    | 1    | 15    | 32     | 42     | 44     |
| Photovoltaic | 2    | 126  | 7,642 | 32,353 | 45,060 | 57,296 |
| Biomass      | 9    | 11   | 18    | 27     | 31     | 33     |

### Excess wind-, photovoltaic- and biomass-generated power contracts

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Note: Contract numbers and contracted power figures show the relevant portion of power sources subjected to RPS.

### Addressing the Renewable Portfolio Standard

Thanks to these measures, we achieved 450 million kWh of electricity generated using new energy sources in FY2005, or the standard amount of new energy utilisation (minimum requirement) set under the Renewable Portfolio Standard.

### Changes in the standard amounts of new energy utilization (minimum requirement)

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Unit: 100 million kWh

| Fiscal Year           | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010  |
|-----------------------|------|------|------|------|------|------|------|-------|
| Japan                 | 32.8 | 36.0 | 38.3 | 45.5 | 61.2 | 75.6 | 94.6 | 122.0 |
| Kyushu Electric Power | 3.9  | 4.2  | 4.5  | 5.0  | 6.3  | 7.4  | 8.9  | 11.1  |

Note 1: Values for between FY2003 and FY2005 are final values.

Note 2: National values for FY2006 and after are currently (as at May 31, 2006) being revised (source: RPS Law Re-evaluation Subcommittee Report). Kyushu Electric Power values for this period are based on the national figures being revised.

### Contributing to the Kyushu Green Power Fund

We cooperate with the Kyushu Green Power Fund in an effort to promote the use of natural energy. We are happy to meet the amount of donations made by customers (one share: ¥500 per month), and we actively support the fund in areas such as promotion and acceptance of applications.

The Kyushu Green Power Fund was established in 2000 to offer financial assistance towards the installation cost of wind or photovoltaic power generation facilities, and it is managed by the Kyushu Industrial Advancement Center.

The Kyushu Green Power Fund has attracted 10,870 shares or 0.17%\* of electric light contracts as of the end of FY2005. This participation ratio is relatively high compared to green power funds of other regions in Japan.

Over the five years through FY2005, the fund has dispensed a total of 400 million yen in assistance including 165 cases of subsidies with installed capacity of approximately 220,000 kW.



\* The number of shares was divided by the total number of electricity subscribers.

The Aso Kurumagaeri Power Station (one of our wind power plants which received a subsidy)

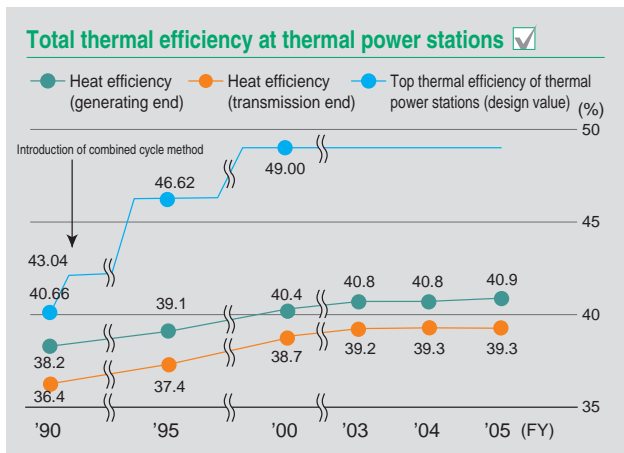
### Improving generation facility efficiency

#### Improved efficiency of thermal power generation facilities

Improved thermal efficiency of thermal power stations will lead to less fuel used for generation, resulting in a reduction of CO<sub>2</sub>, SO<sub>x</sub> and NO<sub>x</sub> emissions.

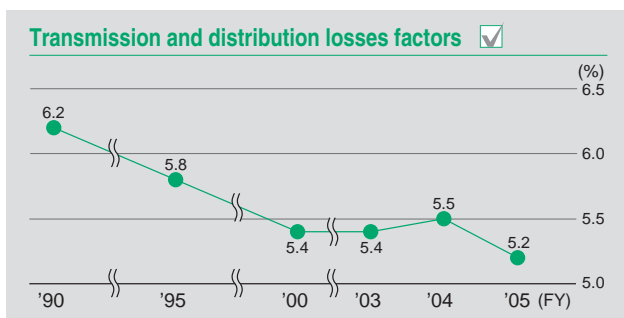
In FY2005, the total thermal efficiency of the company's thermal power stations maintained the highest level in our history. This is attributable to the operation of the new and advanced Reihoku Power Station Unit No.2 and the greater use of highly-efficient power stations employing the combined cycle power generation method, such as Shin-Oita Power Station.

If the total thermal efficiency of our thermal power stations improves by one point, CO<sub>2</sub> emissions can be reduced by 400,000 tons annually.



#### Reduction of transmission and distribution losses

We are striving to reduce the energy lost between power stations and customer premises, called transmission and distribution losses.



### The measures of public welfare and transportation section

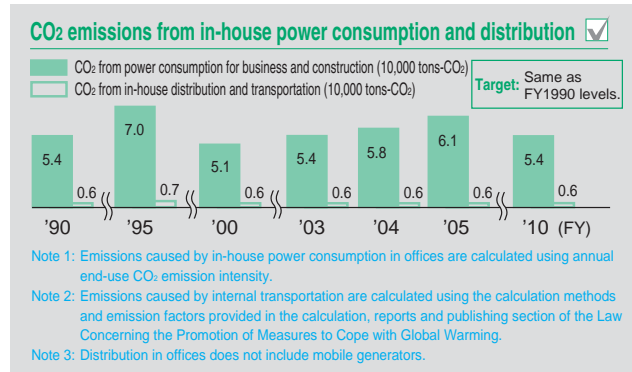
In light of the Kyoto Protocol Target Achievement Plan, we are working to step up our energy and resource conservation activities in offices. Meanwhile, in order to ensure proper compliance with the revised Energy Conservation Law enacted in April 2006, we are laboring to draw up guidelines and manuals relating to the obligations of shippers.

#### Energy and resource conservation in offices

We work to engage in eco-friendly actions to reduce environmental load in our daily operations.

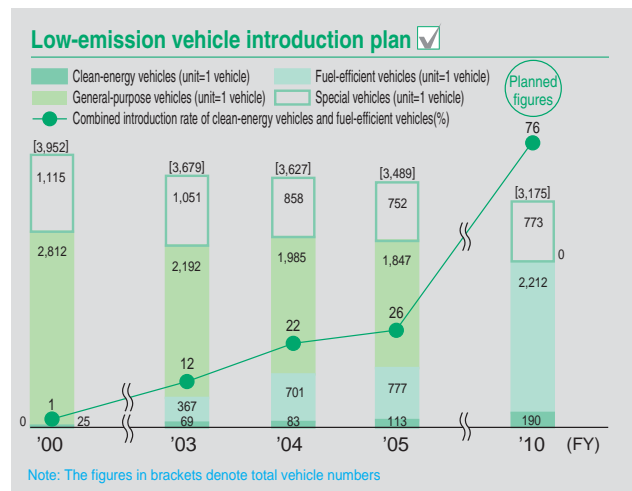
#### CO<sub>2</sub> emission targets for in-house power consumption and distribution

Beginning in FY2006, we have set ourselves targets for reducing CO<sub>2</sub> emissions for company head office, branch offices, customer service offices and power system maintenance offices, and electricity used to build power stations and for other construction, as well as by in-house distribution. Naturally, we are working hard towards meeting these goals.



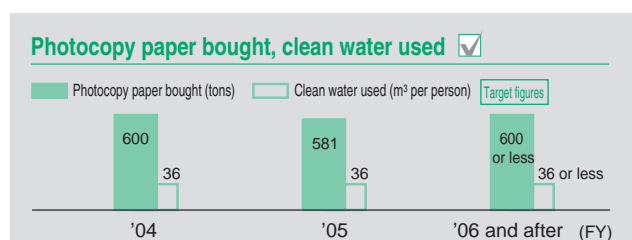
#### Low-emission vehicle introduction plan

We are continually introducing more clean-energy and fuel-efficient vehicles to our fleet.



#### Reduction of paper purchases and clean water use

Beginning in FY2006, we have set ourselves targets for reducing the volume of photocopy paper we buy and clean water we use as part of our efforts to further conserve energy and resources.



## ■ Popularizing energy-saving devices such as heat-pump water heaters

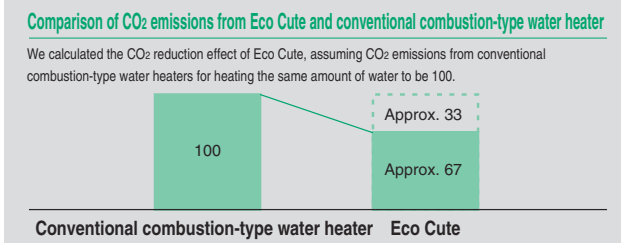
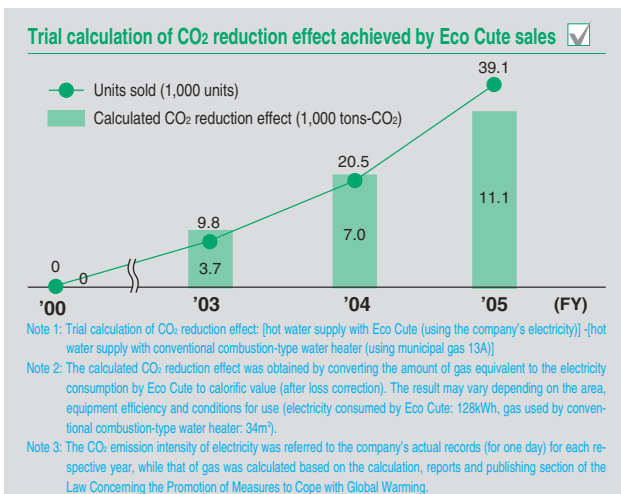
We encourage the use of heat-pump water heaters so as to promote the use of energy-saving equipment. But our efforts are not limited to heat-pump devices; we also offer suggestions to our customers to promote energy conservation, including consultations on the efficient use of energy.

Furthermore, we strive to boost the spread of energy-saving devices such as by expanding our air-conditioning business to include regular electric air conditioners.

### Eco Cute heat-pump water heater

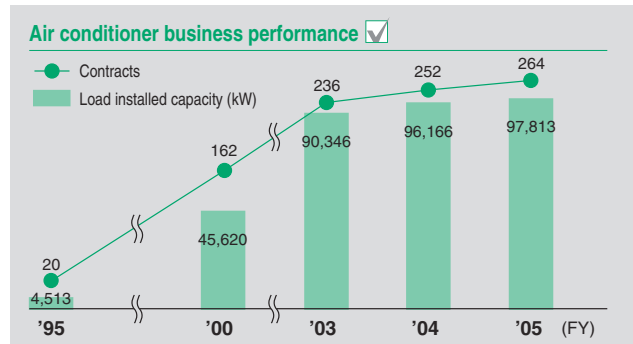
“Eco Cute” is a high efficiency heat-pump type electric water heater that realizes better energy conservation and co-existence with nature. Eco Cute requires approximately 24% less energy than conventional combustion-type water heaters (calculated on a primary energy-base\*), offers economic benefits by utilizing less expensive nighttime electricity, and utilizes CO<sub>2</sub> as a coolant, which is found in natural environment.

\*Energy-saving effect was calculated by converting electric energy to calorific value. For the conversion, we used the figure (9.28MJ/kWh) set forth in a notice issued by the Ministry of Economy, Trade and Industry and the Ministry of Land, Infrastructure and Transport of 2006 and the criteria for building owners and specific building owners regarding streamlined energy usage.



### Developing the air-conditioner business

In 1993, Kyushu Electric Power began what was called a “heat storage business”, in which we installed heat source facilities such as energy-efficient heat pumps and heat storage tanks in customers' premises and retained and operated them on the customers' behalf. In FY2005, the business was expanded to include regular electric air conditioners, and was consequently renamed the air-conditioner business.



### ■ Energy conservation information service

In addition to our efforts thus far, such as including previous-month and previous-year electricity usage figures in monthly meter reading slips, we also launched a service through our “Kirei Life” website in March 2006 where customers can look up the amount of electricity they have used as well as their power bills.

### ■ Take active part in “Cool Biz” drives

Cool Biz is a movement started by Team Minus 6%, in which air conditioners are set no lower than 28°C and people wear cooler summer attire to work. We calculate that Cool Biz has led to a reduction of 3,000 tons-CO<sub>2</sub>\* (approximately eight million kWh) in Kyushu alone.

\*Equivalent to the annual CO<sub>2</sub> emissions caused by electricity use of around 2,200 households.

### Controlling Greenhouse Effect Gas Emissions other than CO<sub>2</sub> from Power Generation

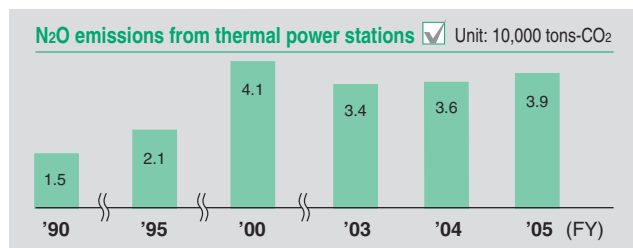
Although over 99% of GHG emissions are CO<sub>2</sub> generated during power generation, we also take measures to locate and reduce the other GHGs such as N<sub>2</sub>O and SF<sub>6</sub> emitted in the course of our business operations.

#### Methane (CH<sub>4</sub>)

Because the concentration of CH<sub>4</sub> in emissions released as a result of the combustion of fuel at thermal power stations is lower than the concentration in the atmosphere, in effect Kyushu Electric Power emits no methane at all.

#### Dinitrogen monoxide (N<sub>2</sub>O)

Some N<sub>2</sub>O is emitted during the combustion of fuel at thermal power stations, but we endeavor to minimize these emissions by improving power generation efficiency.





### Sulfur hexafluoride (SF<sub>6</sub>)

We use SF<sub>6</sub> as an insulation material for some electrical equipment, and take precautions not to release SF<sub>6</sub> gas into the atmosphere when the equipment is overhauled or dismantled.

#### SF<sub>6</sub> gas recovery record (FY2005) Figures in parentheses show CO<sub>2</sub> converted volume\*

|                            | SF <sub>6</sub> gas transaction | SF <sub>6</sub> gas recovery | Recovery rate |
|----------------------------|---------------------------------|------------------------------|---------------|
| At equipment overhaul      | 14.98 tons (358,000 tons)       | 14.85 tons (355,000 tons)    | 99.1%         |
| At equipment dismantlement | 4.07 tons (97,300 tons)         | 4.04 tons (96,600 tons)      | 99.3%         |

\*Figures are obtained by converting the weight of SF<sub>6</sub> gas to the weight of CO<sub>2</sub> by applying the global warming potential (23,900) for SF<sub>6</sub>.

### Hydrofluorocarbon (HFC)

HFC used as a coolant in air conditioners is mostly recovered during inspection and removal, with very little released to the atmosphere.



### Perfluorocarbon (PFC)

PFC is utilised in some transformers as a refrigerant or as an insulation medium, but Kyushu Electric Power does not use PFC.

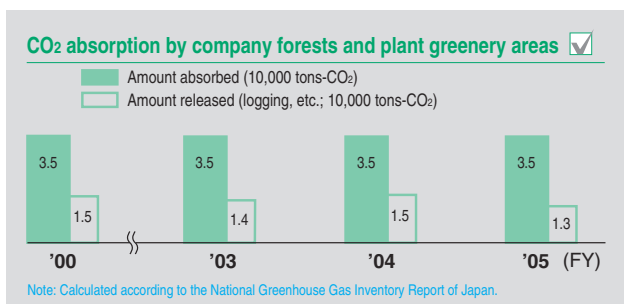
### CO<sub>2</sub> absorption by forests

We own 4,448 hectares of Forest Stewardship Council-certified forests that are managed and maintained to protect water resources and 254 hectares of greenery area around power stations to create harmony with the surrounding environment.

These forests together absorbed 35,000 tons-CO<sub>2</sub> in FY2005—22,000 tons after subtracting the potential CO<sub>2</sub> released from the forests (by logging and shipping of Japanese cedar and cypress for timber from artificial forests).



A table made using wood gained from the thinning of our forests. These tables are used at company headquarters.



Note: Calculated according to the National Greenhouse Gas Inventory Report of Japan.

### Towards Kyoto Mechanism Utilization

The Kyoto Mechanisms are an international framework approved to fulfill the commitments under the Kyoto Protocol, where countries jointly work to reduce GHG emissions in a cost effective manner.

#### Outline of Kyoto Mechanisms

|                                   |  |
|-----------------------------------|--|
| Joint Implementation (JI)         | Developed countries jointly implement projects, and that reduction in GHGs can be put towards the investing country's targets.   |
| Clean Development Mechanism (CDM) | Developed countries implement joint projects with developing countries and that reduction in GHGs can be put towards the investing (i.e., advanced) country's targets. |
| Emissions Trading (ET)            | Developed countries trade emissions limits in order to meet their reduction targets.   |

As part of our use of the Kyoto Mechanism, we invest in the World Bank's Prototype Carbon Fund (PCF) and Japan GHG Reduction Fund (JGRF) to attain GHG emission allowances and gain further insight into the workings of the Kyoto Mechanisms.

#### World Bank's Prototype Carbon Fund (PCF)

The fund is managed by the World Bank to provide financing to GHG emission reduction projects and return GHG emission allowances to investors.

- Total fund: 180 million dollars (eight million dollars funded by Kyushu Electric Power).
- Investors: governments from six countries and 17 companies

#### Japan GHG Reduction Fund (JGRF)

The fund was established by the Development Bank of Japan and the Japan Bank for International Cooperation, in cooperation with Japanese companies, for the reduction of GHG emissions. It offers financing to GHG emission reduction projects and returns GHG emissions allowances to the investors.

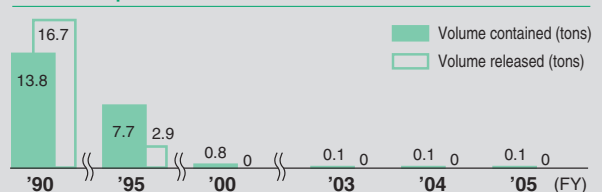
- Total fund: 141.5 million dollars (three million dollars funded by Kyushu Electric Power).
- Investors: Development Bank of Japan, Japan Bank for International Cooperation and 31 Japanese companies

## 2 Ozone Layer Protection

Freons used in air conditioners, refrigeration and freezer equipment deplete the ozone layer and cause serious impact on global warming when released into atmosphere. We take every action to eliminate freon emissions.

We also install regulated freon-free equipment when replacing or installing new equipment.

#### Volume of specific freons contained and released



Note 1: Specific freons refer to specific freons and carbon tetrachloride.

Note 2: "Volume released" is the amount actually used to replenish equipment.

Note 3: Natural leakage was calculated in the year when it was detected during inspections or when switching to alternative freons.