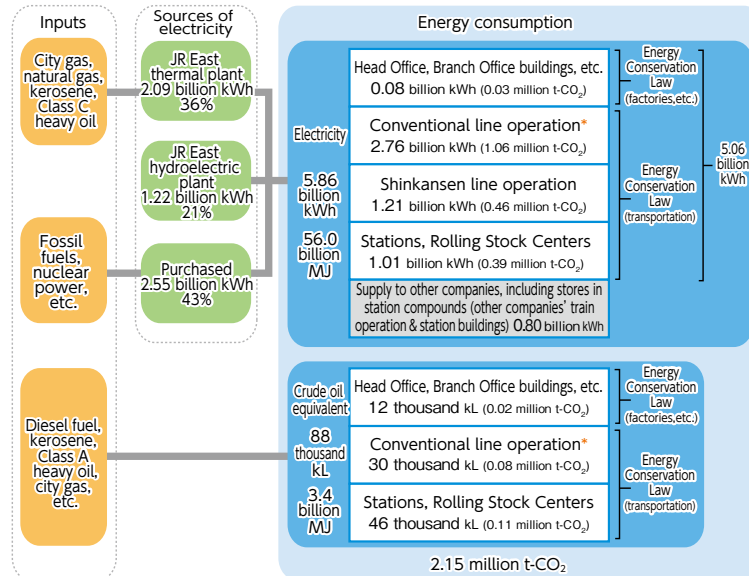


Measures to Prevent Global Warming

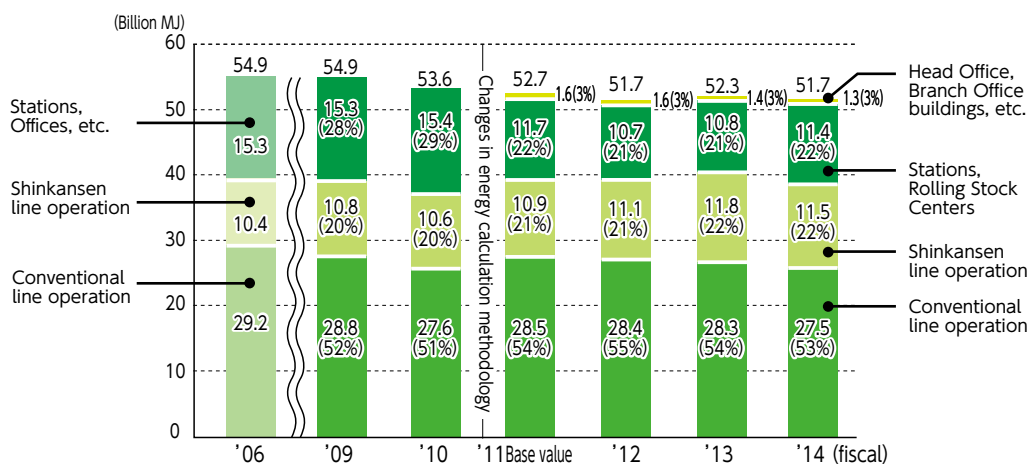
Energy conservation and CO₂ reduction☆

The electricity consumed by JR East for train operations as well as for lighting and air conditioning at stations and in offices is supplied by JR East's own power plants and by electric power companies. Besides electricity, we also use diesel fuel and kerosene for diesel train operation and for air conditioning at stations and in offices. We will strive to save energy for train operation, which accounts for about 80% of our total energy consumption, and reduce CO₂ emissions in various ways.

■ JR East Energy flow map



■ Composition of energy consumption by JR East



* Regarding Change in Method of Computation

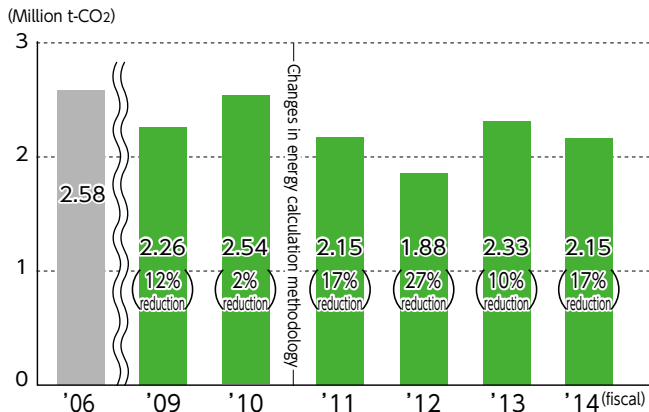
Until FY2006, computation concerning CO₂ emissions and energy consumption volume through the use of electricity and fuel was based on the Keidanren Voluntary Action Plan on the Environment. Beginning in FY2007, the computation method was revised based on the Energy Saving Act and the Act on Promotion of Global Warming Countermeasures.

* The energy consumption is converted to Joules according to the Energy Saving Act, except for the electricity generated by JR East's own hydroelectric plant, which is converted to Joules using 9.76 MJ/kWh as the conversion factor. JR East uses 0 MJ/kWh as the conversion factor for our own hydroelectric power in our report submitted to the government, as required by the Act.

Trends in JR East's total CO₂ emissions[☆]

Our CO₂ emissions in the fiscal year ending March 2014 totaled 2.15 million tons, a decrease of 0.18 million tons over the previous fiscal year. This is the result of a decrease in the CO₂ emission coefficient of electricity generated by JR East. Beginning this fiscal year, we also report CO₂ emissions in Scopes 1 and 2 in accordance with the definition of the GHG Protocol.

■ Trends in JR East's total CO₂ emissions



*Total CO₂ emissions in FY2014, when calculated with the same calculation methodology (category and boundary) as that used until FY2010, are 2.25 million tons of CO₂.

*Boundary:

Energy consumption and CO₂ emissions have been calculated for JR East alone, in principle. Beginning with FY 2011, however, the energy consumption by and associated CO₂ emissions from companies to whom JR East outsources its station operations and other services are calculated as JR East's own energy consumption and CO₂ emissions. Meanwhile, the energy consumption by and associated CO₂ emissions from stores in station compounds operated by group companies are excluded from those of JR East. These changes have been made to calculate the energy consumption and CO₂ emissions associated with JR East's business as a whole more accurately in line with the idea of setting organizational boundaries for transportation and factories in the Energy Saving Act. No revision was made to the past data on energy consumption and CO₂ emissions.

*Calculation Method:

CO₂ emissions have been calculated based on the method specified in the Act on Promotion of Global Warming Countermeasures. However, the CO₂ emissions attributable to the purchased electricity are calculated, including those from the electricity used for rail transport, by using adjusted emission coefficients. The CO₂ emissions in the fiscal year ending March 2014 calculated by using actual emission coefficient is 2.34 million tons, the same as the previous fiscal year.

Item	Scope 1	Scope 2
FY2014 Emission Volume	1.19 million tons CO ₂	1.31 million tons CO ₂

Scope 1... CO₂ emissions directly attributable to fuel consumed in the operation of diesel railcars and the operation of JR East's thermal electric power plant.

Scope 2... CO₂ emissions indirectly emitted from the use of electricity purchased from electric power companies.

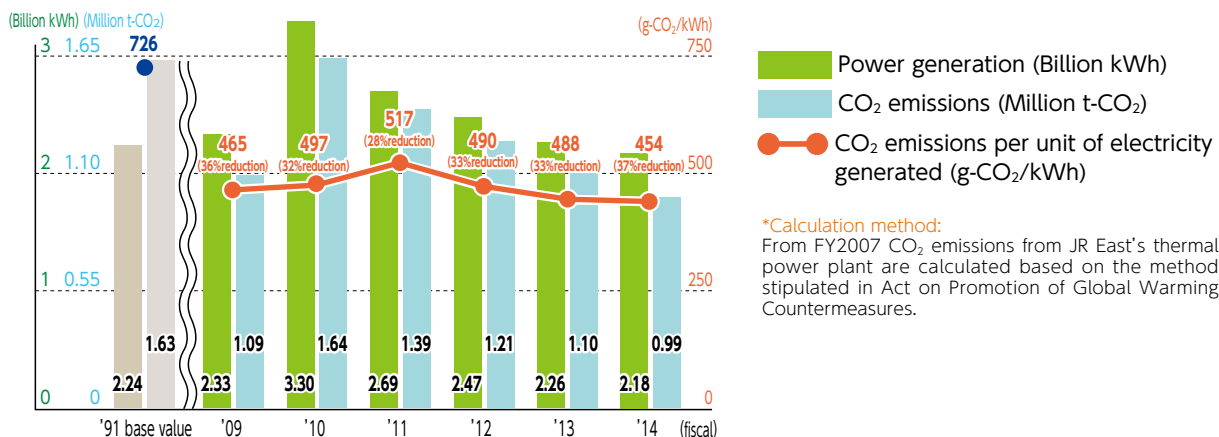
*The sum of the Scope 1 and Scope 2 emissions and the total CO₂ emissions do not match, since the former includes emissions associated with the production of electricity supplied to other companies.

JR East's own thermal power plant[☆]

JR East operates a thermal power plant in Kawasaki City, Kanagawa Prefecture, with a total capacity of 655 MW. The plant uses combined-cycle power generation units* with improved efficiency and switched fuel from oil to natural gas when the plant was renovated to reduce CO₂ emissions.

*A combined-cycle power generation unit is a power generation unit that combines gas turbines propelled by combustion of gas with steam turbines driven by steam from the exhaust heat.

■ Power generation and CO₂ emissions at JR East's thermal power plant



*Calculation method:

From FY2007 CO₂ emissions from JR East's thermal power plant are calculated based on the method stipulated in Act on Promotion of Global Warming Countermeasures.

Reducing energy consumed for train operations[☆]

As of the end of FY2014, JR East had 11,631 energy-efficient railcars in operation. This accounts for 91.3% of our railcar fleet. We are putting into service more new-generation energy efficient railcars, with features such as regenerative brakes, which can convert kinetic energy during deceleration into electric energy, and Variable Voltage Variable Frequency (VVVF) inverters, which control motors without wasting electricity.



E233 series: State-of-the-art cars introduced on the Chuo Line in December 2006



E5 series: new high-speed Shinkansen railcars that incorporate the highest level of customer service and cutting-edge technology



E231 series: VVVF inverter cars for commuter and suburban transportation

Diesel-powered, electric-motor-driven hybrid railcars and the accumulator railcar train

The Kiha E200 type cars, which entered service on the Koumi Line in July 2007, are the world's first diesel-powered, electric-motor-driven hybrid railcars. Compared with the current trains, fuel consumption rate has been reduced by about 10% and the noise level of the trains idling at stations and accelerating on departure has been lowered by 20–30 dB. Also, starting from the October to December 2010, we began operating the HB-E300 Series, a new type of resort train equipped with a hybrid system similar to the Kiha E200 type, in the Nagano, Aomori and Akita areas. Additionally, as a new measure toward reduction of the environmental burden in non-electric zones, we are proceeding with the development of an accumulator system, which debuted in March 2014 with the EV-E301 ACCUM railcar train, put into service on the Karasuyama Line. The introduction of the EV-E301 has enabled an elimination of emissions, as well as a reduction in CO₂ and noise emissions associated with diesel engines.



EV-E301 Accumulator System (ACCUM) train



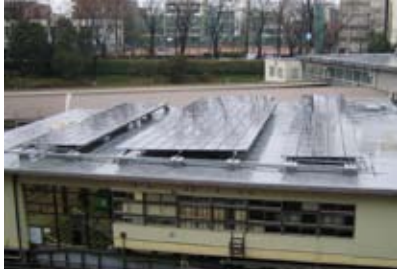
HB-E300 series: A hybrid resort train

Utilization of renewable energies

We also promote use of renewable energies, including solar and wind power. Solar panels have been installed at Tokyo Station, Takasaki Station, the General Education Center and R&D Center. In March 2004, the number of panels at Takasaki Station was doubled. Panels on the largest scale in JR East were installed at Tokyo Station in February 2011 above the platform for tracks 9 and 10, which serve Tokaido Line trains.

Starting full operations as the first ecostation – “eco-station” – Yotsuya Station on the JR Chuo Line began use of solar panels in March 2012. Hiraizumi Station on the JR East Tohoku Main Line, the second ecostation, began to use solar panels in June 2012, to “generate and use energy locally” and to achieve “zero emissions,” i.e., no CO₂ emissions on fine-weather days. Additionally, the largest solar panels employed anywhere at our company have been installed at the Keiyo Rolling Stock Center. These have been in use since February 2014.

We will continue to endeavor to introduce technology using renewable energies efficiently.



Solar panels on the main building at the Akasaka Exit of Yotsuya Station



Solar panels at Hiraizumi Station



Solar panels installed at Keiyo Rolling Stock Center

Greening rooftops

We have been promoting the planting of greenery on JR East station and office building rooftops with the aim of reducing the heat island effect and decreasing the need for air conditioning. As of the end of March 2014, we had completed 73 greening projects (including some cases of moss planting) encompassing a combined rooftop area of approximately 25,173 m².



Rooftop greenery at the Chiba branch building

Rooftop greening by JR Group companies

We have been promoting rooftop greening to make station buildings in the metropolitan area a place of relaxation for community residents as well as for office workers. The “Soradofarm”, which is a vegetable farm rented to subscribers and built alongside the gardens, serves to create a local community, and provides education in farming and environment through people’s experience in cultivating vegetables. These are popular among many customers and have also been built in Ebisu, Ogikubo, Takasaki and Hachioji.



atre Kawasaki



Soradofarm Ebisu

Saving energy in office buildings

In response to revisions of laws and regulations, saving energy in office buildings has become increasingly important. We work hard on reducing energy consumption through physical measures, including the introduction of highly efficient equipment and facilities, and operational measures, including temperature management of air conditioning and diligently turning off lights.

In addition, given the concerns about energy supply and demand since the Great East Japan Earthquake, we have been actively introducing LED lighting apparatus, which is particularly effective as a physical measure.

Environmentally friendly and energy efficient office buildings

Construction was completed in FY2013 on the JR Minami Shinjuku Building, JR Kanda Manseibashi Building, and JP Tower, which are all environmentally friendly and energy efficient buildings. The JR Kanda Manseibashi Building and JP Tower have acquired a class S rating, the highest rating under the CASBEE environmental labeling system, an initiative of the Ministry of Land, Infrastructure, Transport and Tourism. Moreover, last fiscal year the JR Kanda Manseibashi Building earned both LEED-CS Gold and LEED-CI Gold certification, widely recognized building performance standards in the U.S. Six other buildings - Gran Tokyo South Tower, Gran Tokyo North Tower, JR Shinagawa East Building, Sapia Tower, JR Tokyu Meguro Building and Tokyo Building - have received praise for proactive efforts for highly efficient equipment performance and operations management relating to energy conservation. They have also earned recognition as Offices Taking Excellent Specific Global Warming Countermeasures (top-level office building or quasi-top-level office building) under the Tokyo Metropolitan Ordinance on Environmental Preservation.



JR Kanda Manseibashi Building, LEED-certified, ranked "S," in the CASBEE



GranTokyo South Tower, recognized as a top-level establishment

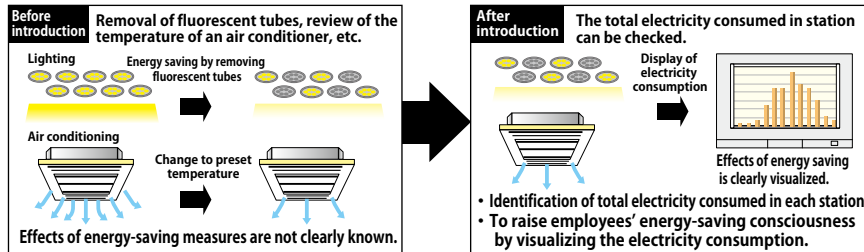
■ List of top-level establishments

Top-level establishments	Quasi-top-level establishments
Sapia Tower (certified FY2011)	Tokyo Building (certified FY2011)
GranTokyo North Tower (certified FY2012)	JR Tokyu Meguro Building (certified FY2011)
GranTokyo South Tower (certified FY2012 as quasi-top-level establishment, upgraded FY2013)	
JR Shinagawa East Building (certified FY2011 as quasi-top-level establishment, upgraded FY2012)	

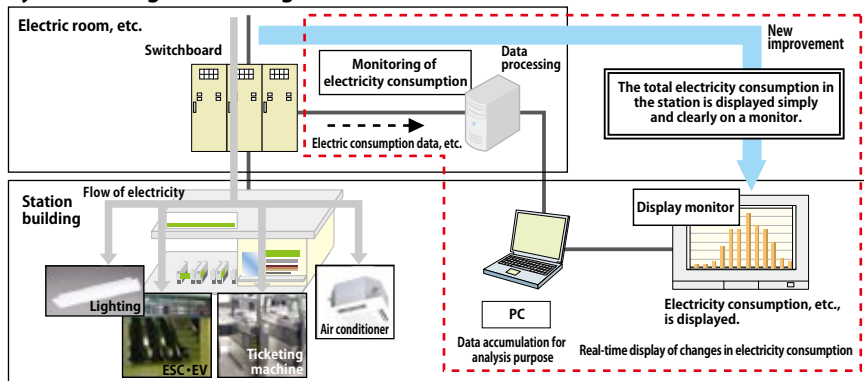
Visualizing the power consumption in stations

JR East is introducing monitors that display the energy consumed in stations to encourage employees to be more conscious of energy saving. The visualization system measures the total electricity consumed in the station at the power-receiving location and displays it on a monitor every hour. It was introduced in about 30 stations by FY2013, and in 170 stations during FY2014.

■ Mechanism of visualization



System configuration diagram



Case Report: Environmental Measures

LED lighting installed on all Yamanote Line trains

In December 2010, LED lighting was installed on an 11-car Yamanote Line train on an experimental basis. As the collected data confirmed reductions in both energy usage and CO₂ emissions, in summer 2013, we began introducing LED car lighting to all Yamanote Line cars and completed the changeover (572 cars in 52 trainsets) by spring 2014. By doing this, JR East reduced Yamanote Line electricity consumption by approximately 40% compared to that of fluorescent lighting. We also expect to reduce CO₂ emissions by approximately 624 tons per year with these changes to all 52 Yamanote Line trainsets. Stickers are displayed on the windows

of cars equipped with LED lighting. From 2013, we also introduced LED lighting on the E233-series cars that were to be introduced on the Saikyo, Yokohama and Nambu lines, on the EV-E301 introduced into service on the Karasuyama Line, on the E129-series cars that were to be introduced in the Niigata area and on the HB-E210-series cars that were to be introduced on the Senseki and Tohoku lines. We plan to adopt LED lighting for all new cars serving in the conventional lines. Furthermore, the E7 series trains introduced into service on the Hokuriku Shinkansen in March 2014 feature 100% internal LED illumination.



LED railcar lighting



LED lighting in use sticker