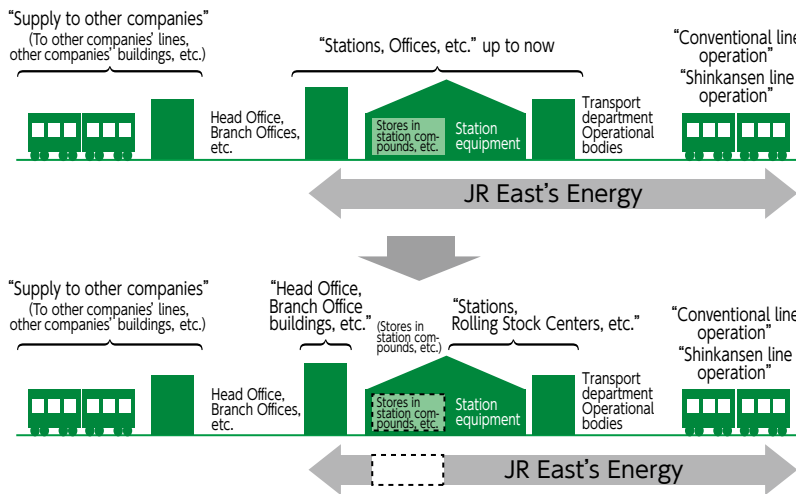


Measures to Prevent Global Warming

Change in category of energy usage

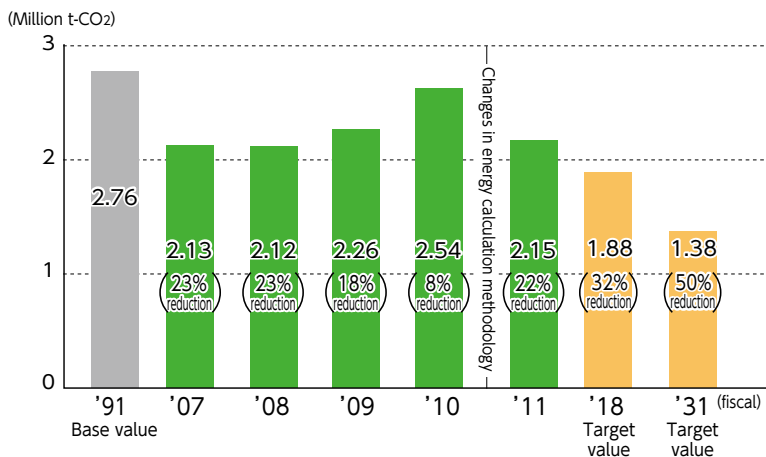
Up to now JR East has broken down energy consumption by 4 categories: i.e., “Conventional line operation,” “Shinkansen line operation,” “Stations, Offices, etc.” and “Supply to other companies.” From this fiscal year, however, in line with the Energy Conservation Law, we have decided to calculate and control energy consumption of JR East by dividing “Stations, Offices, etc.” into transportation category “Stations, Rolling Stock Centers, etc.” and non-transportation category, “Head Office, Branch Office, etc.” As a result, each department will control its own energy consumption, which will help further reduction of energy usage. For the boundary of the amount of energy used by JR East, please refer to the “Boundary” below.



Trends in CO₂ emissions[☆]

Our CO₂ emissions in the fiscal year ending March 2011 totaled 2.15 million tons, a decrease of 0.39 million tons over the previous fiscal year. This was due to the restart of our own hydroelectric power plant, which resulted in the reduction of the operating rate of our own thermal power plant, and eventually in the reduction of CO₂ emissions from it.

Trends in total JR East CO₂ emissions



[☆]Total CO₂ emissions in FY 2011, when calculated with the same calculation methodology (category and boundary) with that in past years, are 2.26 million t-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 its 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 its 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 Act on Rational Use of Energy (Energy Conservation Law). No revision was made to the past data of energy consumptions and CO₂ emissions.

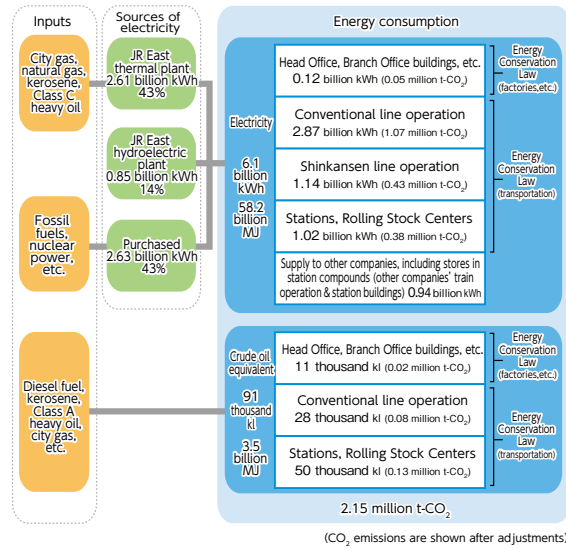
*Calculation Method:

Energy consumption is calculated based on the Energy Conservation Law. As a unit calorific value for the electricity generated at our own hydraulic power plant, 9.76 MJ/kWh is used. The total amount of CO₂ emissions is calculated based on the Act on Promotion of Global Warming Countermeasures (Global Warming Measures Law). However, the emissions attributable to the consumption of electric power purchased outside the company, including that is used for railway transport, are calculated on the basis of post-adjustment emissions coefficient. When the actual emissions coefficient is used, the CO₂ emissions for fiscal year ending March 2011 is 2.41 million t-CO₂ (a decrease of 0.41 million t-CO₂).

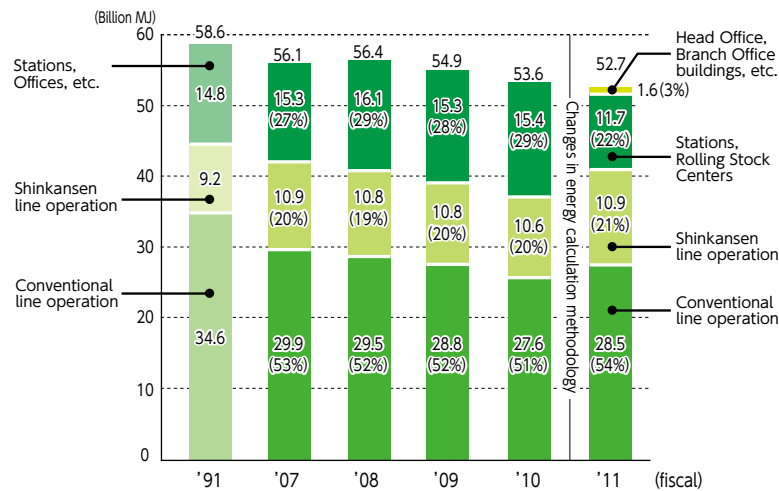
Energy conservation and CO₂ reduction[☆]

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 light fuel and kerosene for diesel train operation and air conditioning at stations and in offices. We will strive to save energy for train operation, which accounts for about 70% of our total energy consumption, and reduce CO₂ emissions in various ways.

JR East Energy flow map



Composition of energy consumption by JR East



* Total energy consumption calculated with the same methodology (category and boundary) with that used in past years is 54.9 billion MJ.

■Reducing energy consumed for train operations[☆]

As of the end of March 2011, JR East had 10,993 energy-efficient railcars in operation. This accounts for 88% 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 in which the highest level of customer service and the cutting-edge technology are coalesced



E231 series: VVVF inverter cars for commuter and suburban transportation

■Diesel-powered, electric-motor-driven hybrid railcars and new resort trains

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, in October to December 2010 we began operating HB-E300 Series, a new type of resort train equipped with a hybrid system similar to Kiha E200 type on Nagano, Aomori and Akita areas.



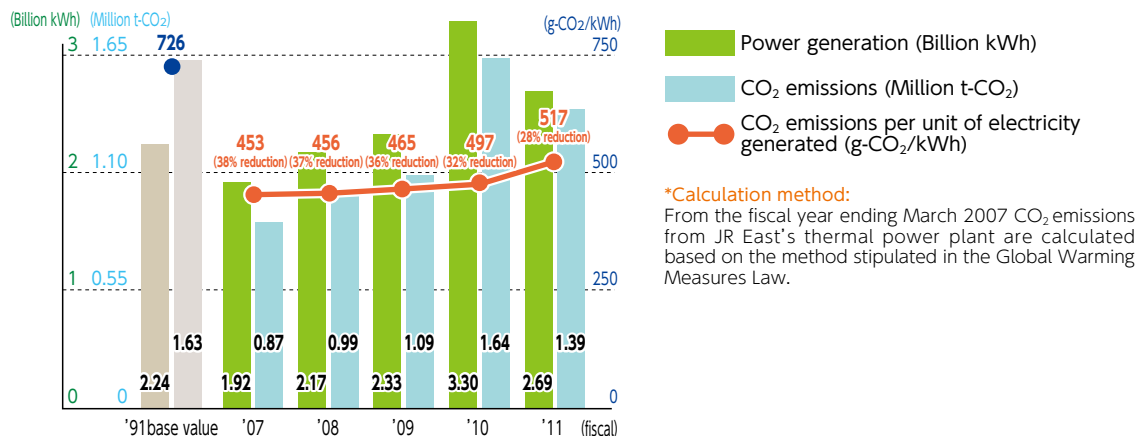
HB-E300 series: A hybrid resort train

JR's own power plants☆

JR East operates a thermal power plant in Kawasaki City, Kanagawa Prefecture, with a total output of 655 thousand kW. At the plant, we replaced three of its four generating units with combined-cycle power generation units* with improved generating efficiency. In June 2006 we replaced kerosene with natural gas as fuel for the No. 3 generation unit. In an effort to further reduce CO₂ emissions, we will replace the last steam powered generation unit using heavy oil with a combined-cycle generation system using natural gas in FY 2014. Output and CO₂ emissions from our thermal power plants in Fiscal 2011 were lower than those in previous year, due to the restart of our own hydroelectric power plant, which reduced the operating rate of our own thermal power plant.

* 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



Utilization of natural energy

We also promote use of natural energies, including solar and wind power. Solar panels are installed at Tokyo Station, Takasaki Station, General Education Center, and R&D Center. Takasaki Station doubled its solar panels in March 2004.

In addition, solar panels were installed at Tokyo Station above the platforms serving Tokaido Line (Tracks No. 9 and 10) and began operation on February 25, 2011. Also, in preparation for employing wind-power generation, we will proceed with research to determine the effect of connecting electricity generated by wind power, which fluctuates according to wind velocity, to a substation.



Solar panel installed atop platform roofs at Takasaki station



Solar panels installed atop Tokaido Line platforms (Tracks No. 9 and 10) at Tokyo station

■Greening rooftops

We have been promoting the planting of greenery on JR East-owned 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 2011, we had “greened” a combined rooftop area of approximately 19,109 m² in 57 projects.



Rooftop greenery at LUMINE Kitasenju

■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 the residents of the community 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 provide education in farming and environment through people’s experience in cultivating vegetables. It is popular among many customers and there are now in Ebisu, Ogikubo and Takasaki.



Kawasaki Be



Soradofarm Ebisu

■Saving energy in office buildings

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

■Getting recognition as top-level establishment

Sapia Tower, JR Shinagawa East Building, JR Tokyu Meguro Building and Tokyo Building were cited as Superior Global Warming Countermeasures Establishment (commonly referred to as top-level establishment or quasi-top-level establishment) under the Tokyo Metropolitan Environmental Preservation Ordinance on May 26, 2011, in recognition of highly-efficient facilities and active management efforts at energy conservation with laudable CO₂ reduction.



Sapia Tower recognized as a top-level establishment



JR Shinagawa East Building recognized as a quasi-top-level establishment

■Saving energy used by information systems

In response to revisions to laws and regulations, saving energy in office buildings has become increasingly important. Since the fiscal year 2009, JR East has been working on this problem by endeavoring to turn off power for certain information system equipment during non-use hours, resulting in savings of about 54,000 kWh of power consumption in fiscal year 2010. We also reduced the number of servers by combining equipment and worked to introduce energy-saving products. In the future we plan to expand the coverage of equipment subject to these efforts with a view to further reduction of power consumption. After the Great East Japan Earthquake, we have strengthened our measures to set our business-use PC terminals at power saving mode as part of our electricity saving efforts.

Environmental Measures : A case report

■LED lighting installed on Yamanote Line

Beginning in December 2010 LED lighting was installed on cars on Yamanote line on an experimental basis. The parts installed on the ceiling of a railcar must be nonflammable as a preventive measure against fire break outs so together with JR group companies, we developed LED lighting equipment that meet the standards and installed the same. This lighting apparatus was installed on Yamanote line E231 series 1 trainset 11 cars, replacing all 262 fluorescent lamps in the passenger cars. We believe that the replacement will result in saving energy of lighting fixtures and we will continue to verify their durability and maintainability.



Intermodal Transportation = Reduction of CO₂ emissions by the entire transportation system

Promoting Park-and-Ride

We are adding parking spaces in front of stations in order to promote park-and-ride schemes so that our customers with tickets for the Shinkansen or limited express trains can drive their cars from home to nearby stations and use the train network from there. By the end of March 2011, 91 JR East stations had parking spaces for ten thousand cars*. Not only can people get to their destinations safely and surely, without getting bogged down in traffic congestion, but they can travel with less impact on the environment.



At 10 stations between Tomobe and Iwaki on the Joban Line, parking charges are free for express train customers going farther than a specified distance.

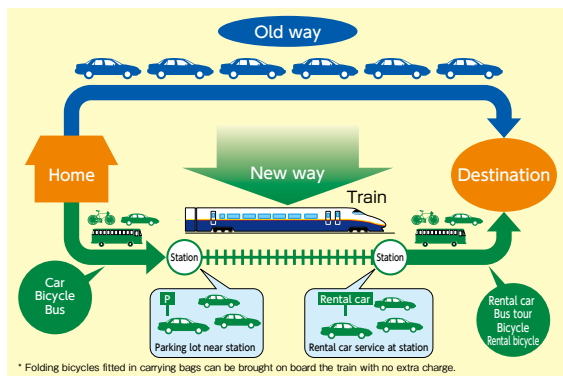
Promoting rail and car rental

To suggest to our customers travel plans that use a combination of railways and automobiles, JR East has been offering a car rental service called “Train-ta-kun” since 1995, with discounted rental charges. We are facilitating intermodal transportation* by introducing new classes of automobiles, such as light cars, offering attractive rates, and installing car navigation systems and ETC as standard equipment on rental cars.

* **Parking spaces for ten thousand cars at 91 stations:** Parking spaces include those developed by JR East, and those managed by JR East Group companies or in cooperation with local municipalities.

* **Intermodal transportation:** Intermodal transportation refers to a transportation system which allows a person to get from an origin point to a final destination by connecting between different modes of transportation.

Intermodal transportation



CO₂ emissions by mode of transportation

