

Sustain and Improve Efficiency of Coal-Fired Thermal Power Generation

Coal-fired thermal power generation thermal efficiency (both at the generating end and the transmission end) was sustained at the same level as the previous year

In terms of the amount of fuel consumed and the limiting of CO₂ emissions, we are working to sustain and improve the total thermal efficiency of coal-fired thermal power generation.

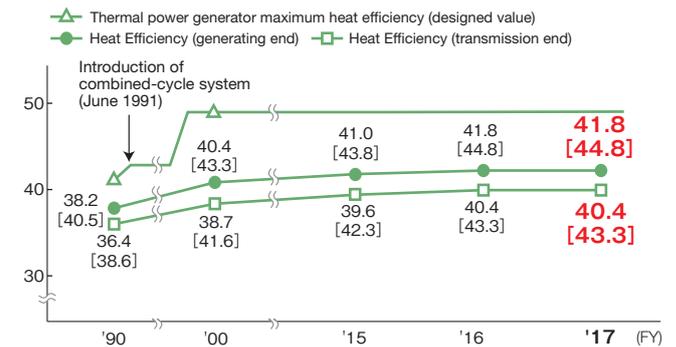
In FY2017, performance was equal to FY2016 at 41.8% (at the generating end) due to two factors: a reduced capacity utilization rate of oil-fired thermal power plants with low thermal efficiency that was attributed to the Sendai Nuclear Power Station's steady operation (excluding routine inspections); and the completion of a gas turbine upgrade at Shin-Oita Power Station Unit 1.

High calorific value: calorific value where water vapor produced by combustion is condensed and the latent heat held within recovered.

Low calorific value: calorific value where heat held in water vapor is not condensed and recovered but instead remains.

Thermal Power Total Heat Efficiency (Higher Calorific Value Base)

Unit: %



Note: [] are lower calorific value base-converted values for which Comprehensive Energy Statistics conversion factors, etc., have been used.

Reducing Transmission & Distribution Loss

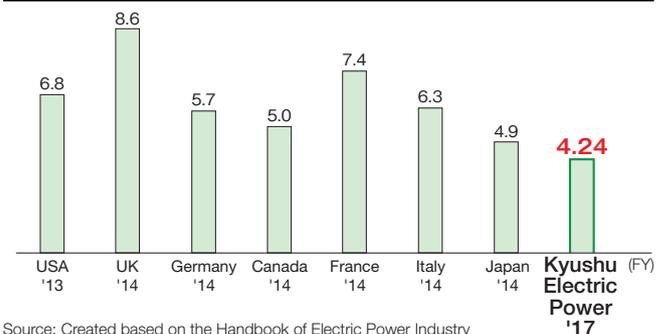
T&D loss ratio steady at a low rate of 4.24%

If we can deliver electricity efficiently through efforts to reduce electricity lost along transmission and distribution lines that leads to lower fuel usage and limits CO₂ emissions at coal-fired thermal power stations.

As a result of efforts to increase transmission voltage, introduce low-loss transformers, and other initiatives, the transmission and distribution loss rate for FY2017 was 4.24%, among the best in the world.

Country Comparison for Transmission/Distribution Loss Rates

Unit: %



Source: Created based on the Handbook of Electric Power Industry

Reference: Benchmark indicators under the Energy Conservation Law, non-fossil power source ratio under the Act on Sophisticated Methods of Energy Supply Structure

(Efficiency Improvements of Thermal Power Generation [Benchmark Indicators])

The Energy Conservation Law calls on energy producers to achieve a specified energy mix by FY2030 with thermal efficiency standards for installing new power generation equipment, as well as by decommissioning aging equipment and improving the overall thermal efficiency of facilities.

In response, we have worked to improve the thermal efficiency of thermal power plants and are responding appropriately to achieve the 2030 targets. The efforts include: the development of Matsuura Power Station Unit 2 through use of the latest technology; lower capacity utilization, planned shutdowns, and decommissioning of oil-fired thermal power plants with low thermal efficiency; commencement of operation at Shin-Oita Power Station No. 3x4 using the high-efficiency combined-cycle power generation system; a gas turbine upgrade at Shin-Oita Power Station Unit 1 (using an LNG combined-cycle power generation system).

(CO₂-Free Power Supply Structure [Non-Fossil Power Source Ratio])

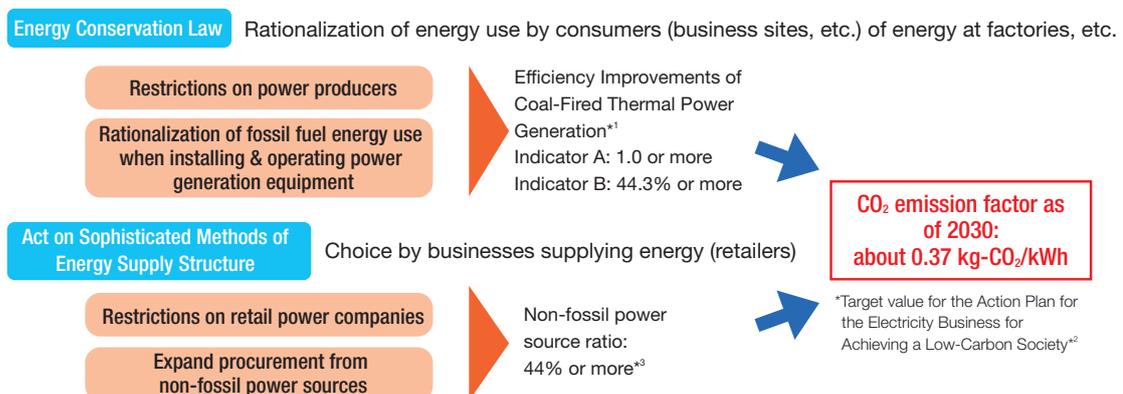
The Act on the Use of Non-Fossil-Fuel Energy Sources by Energy Suppliers and the Promotion of the Effective Use of Fossil Energy Sources (Act on Sophisticated Methods of Energy Supply Structure) calls on electricity retailers*¹ that supplied 500 million kWh or more of electricity in the previous business year to use non-fossil-fuel sources*² to supply at least 44% of their electricity in FY2030.

In response we are taking appropriate action to achieve FY2030 targets by working to raise the percentage of non-fossil fuel sources as a proportion of power sold. These efforts include the use of nuclear power generation with a heavy focus on safety and the proactive development and introduction of renewable energy.

*1 Electricity retailers, general electricity transmission and distribution utilities, and registered specified electricity transmission and distribution utilities under the Electricity Business Act

*2 Nuclear power, renewable energy, and large-scale hydroelectricity

■ Role of Energy Conservation Law and Act on Sophisticated Methods of Energy Supply Structure Toward Achieving the Energy Mix



*1 Indicator A: expresses success rate of performance efficiency for generating efficiency target for each fuel type: coal, LNG, oil, etc.
Indicator B: total generating efficiency of thermal power generation considering the power source structure of, and conformity to, the national energy mix

*2 Medium-to-long-term plan for independent action by the electric power industry to mitigate climate change, formulated in 2015 by 12 Federation of Electric Power Companies and proposed new entrants

*3 Target procurement share for electricity generated with non-fossil fuels (nuclear power, renewable energy, large hydropower) by retailers for a power source structure that conforms to the national energy mix