

## **Power supply contracts for lamps used for road lighting facilities and use of power-saving lamps**

“With regard to road lighting facilities, the Board demanded rectification and improvement measures be taken to review the electricity supply capacity under contracts, and to save electricity costs, by promptly replacing light bulbs with more energy-efficient ones that offer economic and practical advantages in terms of maintenance and reduction of environmental burden.”

### (1) Summary of the project

As part of the road maintenance and improvement project under the auspices of the Ministry of Land, Infrastructure, Transport and Tourism (“MLIT” hereinafter), the national road offices install road lighting facilities and replace non-working light bulbs in the course of road lighting maintenance work.

A national road office enters into a contract with an electric company, based on the supply contracts, for the supply of electricity for road lighting facilities, and pays a monthly electricity bill.

MLIT provides that road lighting facilities should be installed in accordance with the criteria for the installation of road lighting facilities formulated by MLIT itself (“installation criteria” hereinafter). According to the installation criteria, long-life light bulbs with high luminous efficiency and appropriate color rendering properties should be used in road lighting facilities; it is therefore necessary to select light bulbs that are suitable for the relevant locations. There are many different types of light bulbs, e.g. mercury-containing light bulbs, high-pressure sodium bulbs, and ceramic discharge metal halide lamps. Compared to high mercury-containing light bulbs, for the same brightness, high-pressure sodium bulbs and the ceramic discharge metal halide lamps consume 50% less electricity and their operating lives are 1.5 to 2 times longer. Consequently, these types of bulbs contribute to a reduction in both maintenance costs and environmental burden.

In response to the Law Concerning the Promotion of Procurement of Eco-friendly Goods and Services by the State and Other Entities (Law No. 100 of 2000), MLIT has formulated and published guidelines on the promotion of procurement of eco-friendly goods, advocating the use of high-pressure sodium bulbs or ceramic discharge metal halide lamps

(“energy-saving light bulbs” hereinafter) in road lighting facilities.

The installation criteria provide that the road lighting facilities shall be properly maintained. With regard to light bulbs in use, individual non-working bulbs may be replaced on a case-by-case basis, or all bulbs, both working and non-working, may all be replaced simultaneously after a specified time interval. Of these two approaches, the more appropriate one should be adopted in reference to the operating lives of the bulbs in use.

When new supply of electricity is required for installation of road lighting facilities, the contract type and the load-leveling system to be used under the contract (“contracted load-leveling system” hereinafter) shall be clarified in the contract application to be submitted to the electric company. The same requirements shall apply to submission of an application for contract amendment. The contract type used for public street lights will be applied to road lighting facilities, and the contract capacity to be decided in reference to the total capacity of the contracted load-leveling system may be changed by application to the electric company when the capacity of the contracted load leveling system either increases or decreases. When the contract capacity is decreased, the electricity bill will be reduced proportionate to the decrease in the contract capacity.

## (2) Results of audit by the Board

As a result of the audit, the following issues were identified:

### (i) Electricity bill for road lighting facilities

23 national road offices did not review contracts for the supply of electricity and did not submit to the electric company applications for contract amendment when non-working mercury-containing light bulbs were replaced with the energy saving light bulbs and the capacity of the contracted load-leveling system thereby decreased.

As a consequence, no electricity cost was saved under 2,594 contracts (for 9,469 light bulbs in use in road lighting facilities, with a total JPY127.82 million paid over a period of two years from Fiscal 2007 to 2008).

It was acknowledged that, had the contract capacity been properly reviewed and had these contracts for the supply of electricity been amended, the proper electricity costs over the two-year period from Fiscal 2007 to 2008 would have been JPY85.34 million in total, enabling for savings of JPY42.47 million.

(ii) Use of energy-saving light bulbs

23 national road offices replace non-working bulbs on a case-by-case basis. There were still 8,643 mercury-containing light bulbs in use in road lighting facilities within the jurisdictions of these offices at the end of March 2009, the majority of which had already exceeded their operating lives.

As mentioned above, compared to mercury-containing light bulbs, energy-saving bulbs offer economic and practical advantages in terms of maintenance and reduction of environmental burden. It was therefore acknowledged that, by paying attention to the local situation and in reference to the installation criteria, the appropriate approach to be adopted was to promptly replace those mercury-containing light bulbs still in use before their operating life has been lost with energy-saving bulbs, in order to save on electricity costs.

It was estimated that, had the 8,643 mercury-containing light bulbs still in use been replaced with energy-saving bulbs of the same brightness at the beginning of Fiscal 2007, JPY127.3 million in electricity costs would have been saved over the two-year period from Fiscal 2007 to 2008.

(iii) Rectification and improvement measures demanded by the Board

The Board demanded that, with regard to road lighting facilities managed by national highways offices, MLIT should review the electricity supply capacities under contracts in order to save on electricity costs, and should select, in an appropriate manner, energy-saving bulbs that offer economic and practical advantages in terms of maintenance and reduction of environmental burden, in order to deliver rectification and improvement, as follows:

- A. Review immediately those contracts for the supply of electricity with excess contract capacity, so as to save on electricity costs;
- B. Comprehensively implement measures to promote the use of energy-saving bulbs that offer economic and practical advantages in terms of maintenance and reduction of environmental burden, promptly replace mercury-containing light bulbs still in use with energy-saving bulbs, and set out specific guidelines to be followed by national road offices in order to ensure implementation of a review of capacity under contracts for electricity supply.