

RELIGHTING FOR ENERGY CONSERVATION

LIGHTING SAVINGS... ...PUT MONEY IN THE BANK



World Bank Main Complex, Pennsylvania Avenue, Washington DC

The World Bank and International Finance Corporation is an international banking operation that is very concerned with the environment. Their involvement in promoting and implementing energy conservation projects is evident throughout the developing world.

When it comes to their own facilities, they believe in using quality equipment. The new equipment must be engineered and designed to maximize energy savings and reduce maintenance costs, while enhancing and improving the overall aesthetics of the space their clients occupy.

After extensive research on which energy service company (ESCO) would best be suited to implement the project, the United States Department Of Energy-Federal Energy Management Program Qualified team of Energy Solutions was chosen to provide the "turnkey" lighting energy reduction project for their creative approach and innovative solutions the Bank was definitely looking for.

THE WORLD BANK GROUP Washington, DC

FACILITY DESCRIPTION
Office Buildings & Parking Garages

SQUARE FOOTAGE
Over 3.5 million square feet
Encompassing 5 Buildings

HOURS OF OPERATION
3,000 – 8,760 per year

ANNUAL ENERGY SAVINGS
Over \$800,000.00 (lighting)

TOTAL KW REDUCTION
Over 4,500 kW (lighting)

RETURN ON INVESTMENT
52%



ENERGY SOLUTIONS

A division of O.K. Electric Supply Company

**222 Washington Street
Perth Amboy, NJ 08862**

THE ENVIRONMENT

All lamps and ballasts on this project were recycled, preventing the release of mercury and PCB's.

The 4,500,000 kilowatt-hours of savings on this project annually eliminates the release of:

7,200,000 lbs/yr of CO₂

36,900,000 g/yr of SO₂

11,700,000 g/yr of NO_x

All of the above oxides are the major causes of global climate change and acid rain.



John King III, Chief of Plant Operation for The World Bank, explains, "This project was completed with remarkably few problems, and what few problems we did encounter were resolved quickly, professionally and to my complete satisfaction."



World Bank "I" Building, 1850 Eye Street, NW, Washington

RECESSED FLUORESCENT LIGHTING

As in many commercial facilities, the main source of illumination is recessed lighting fixtures. Well over (16,000) 1x4, (18,000) 2x2, and (9,000) 2x4 deep cell parabolic recessed fixtures utilizing a combination of one, two, three or four F40T12 straight lamps and F40T12 "U" shaped and biax lamps with magnetic ballasts were upgraded with one, two or three F32T8 and F17T8 extended life lamps, electronic ballasts, and custom designed reflector kits. This strategy not only reduced energy consumption by 50-75%, but also eliminated the future purchase and stocking inventory of expensive and cumbersome "U" shaped and biax lamps.

ACCENT FLUORESCENT LIGHTING

Over (3,750) accent fluorescent lighting fixtures such as cove lighting in strategic areas like conference rooms, restrooms, lobbies, and a large auditorium and cafeteria utilized T12 lamps and magnetic ballasts. These fixtures were upgraded with F17T8, F25T8, and F32T8 extended life lamps, and low power electronic ballasts respectively. Special attention was given to choosing the proper lamp color so as not to compensate on the cove lightings aesthetic function. Energy consumption was reduced an average of 57% without decreasing the quality of light.

INDUSTRIAL FLUORESCENT LIGHTING

Used in mechanical spaces throughout the facility, well over (2,500) linear fluorescent lighting fixtures were upgraded to energy efficient technology with F32T8 extended life lamps, electronic ballasts, and custom designed enhanced aluminum reflectors as required. As a result, light levels were maintained or improved, and expensive and cumbersome 8-foot lamps were eliminated. A 35-65% in energy reduction was also realized.

Prior to the lighting upgrade, lamp colors included lamps in the 2700K range all the way to 4100K. All lamps utilized in the retrofit, including compact fluorescent lamps were standardized to 3500K, providing a consistent, even look to the facility.



World Bank "H" Building, 600 19th Street, NW

COMPACT FLUORESCENT LIGHTING

In hallways, lobbies, auditoriums, conference rooms, restrooms, and cafeterias over (350) 100-watt mercury vapor down lights were converted to 26-watt compact fluorescent, with new reflectors. Well over (300) 75-watt mercury vapor high hats were also retrofit with a 26-watt R40 compact fluorescent kit. In the main lobbies, more than (100) recessed 175-watt mercury vapor high hats were retrofitted with double 26-watt compact fluorescent. The new lighting system features a new low-glare 2-piece reflector system and universal mounting strap that reduced installation time.

A major maintenance headache was the (225) 150-watt quartz wall washers that were creating excess heat and had short lamp life. These were retrofitted with a 13-watt compact fluorescent wall wash kit. Small recessed 4-inch fixtures with 50-watt PAR20 lamps received a new custom trim and 5-watt R30 compact fluorescent kit.

All of the new compact fluorescent retrofit systems were manufactured and designed by Janmar Lighting. The retrofits increased light levels, and improved the color, quality of light and overall ambiance since the mercury vapor lamps suffer from a great deal of lamp lumen depreciation. To further enhance the décor, the Bank added artwork to show off their new look.

ELECTRONIC TIMER SWITCHES

In maintenance rooms, besides upgrading the lighting, (310) electronic timer switches were installed. These rooms often had the lights burning 24-hours/day – 7-days/week with almost no occupancy. The new timer switches will automatically shut the lights off after a pre-determined set time. The switches come equipped with a safety feature which signals the occupant of the space by flashing lights on and off for two minutes before turning off the lights.

EXIT SIGNS

More than (1,450) incandescent and fluorescent exit signs were replaced one for one with new LED technology exit signs. The new exit signs have a 25-year lamp life, which practically eliminated lamp maintenance issues. Besides reducing maintenance, the new signs lowered annual operating costs per sign from \$60.00-\$90.00 per year, to less than \$2.00 per year.

NEW FLUORESCENT LIGHTING

In the underground parking garages, over (150) industrial and strip linear fluorescent fixtures in bad shape which utilized (2) F40T12 lamps and magnetic ballasts as their light source, were completely replaced one for one with new vapor-tite fluorescent fixtures with (1) F32T8 extended life lamp, electronic ballast and reflector to increase light levels. The new fixtures are enclosed and gasketed to withstand the conditions normally associated with parking garages.

NEW EQUIPMENT WARRANTIES

Special attention was paid to maximizing warranties for the new lighting equipment in an effort to reduce future maintenance risk. The combination of Philips lamps and Advance ballasts provided an extended 3-year lamp warranty, along with a five-year ballast warranty. New LED exit signs carry a 5-year warranty, and the new Janmar compact fluorescent kits were warranted for 5-years.



World Bank "J" Building, 701 18th Street, NW

THE BOTTOM LINE

One of the major benefits was that prior to the upgrade, the number of different lamps used in the facility was reduced from 16-types to 9-types. This provided for reduced future inventory thus reducing the purchasing budget for lamps. The bottom line is a project that not only reduced energy consumption and future maintenance concerns, but also had a good payback, that is environmentally friendly, and one which will provide good performance in the future.

The World Bank

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

1818 H Street N.W.
Washington, D.C. 20433
U.S.A.

(202) 477-1234
Cable Address: INTBAFRAD
Cable Address: INDEVAS

August 5, 1998

Mr. Bernie Erickson
OK Electric Supply Co.
224 Washington Street
Perth Amboy, NJ 08862

Dear Bernie,

I would like to thank you for your excellent work in consulting, designing, and managing the energy efficient improvement projects for the World Bank's "H" & "I" buildings at our Washington, DC Headquarters.

Your team's analysis of energy efficient opportunities was excellent, and your design was tremendously effective in balancing our diverse aesthetic, light quality, energy efficiency, and maintenance needs.

In addition, the management of the projects was truly exceptional. The installation processes and procedures that were developed to perform the work after hours with virtually zero impact on the Bank's day to day operations proved to be exceptional. I am also pleased to say that the few small problems that did occur were handled quickly and professionally.

In summation, your team's energy efficient lighting upgrades tremendously improved our quality of light, substantially reduced lamp replacement and fixture maintenance costs, and helped fulfill the Bank's environmental mandate by reducing the pollution caused by excessive energy usage.

It has been a pleasure working with you. Please feel free to use me as a reference for future projects

Sincerely,



Greg Oliver
Facilities Operations
General Services Department