United States
Environmental Protection
Agency

Air and Radiation
6202J

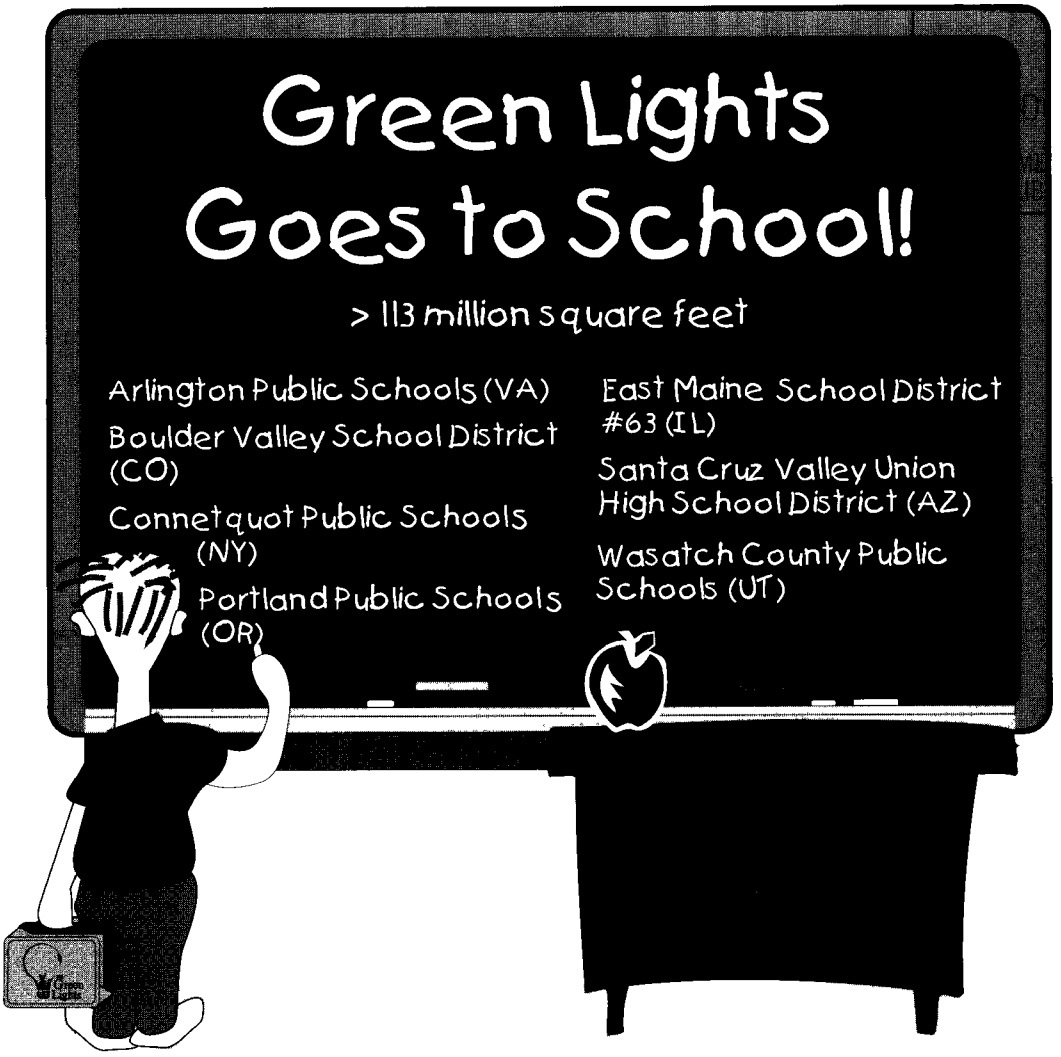
EPA 430-N-95-008
September 1995

EPA

Green Lights & Energy Star Update

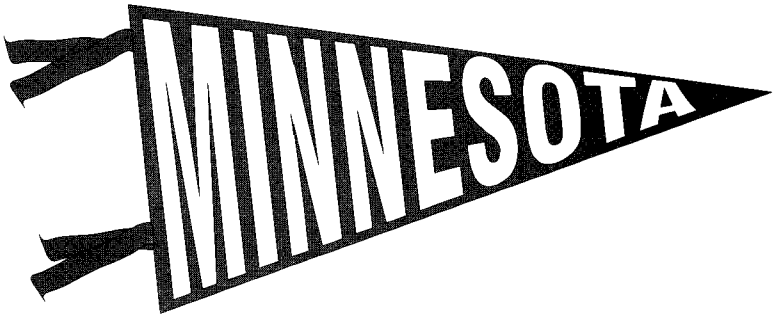
EPA Green Lights

3 DAYS ONLY



Will You Be Partner/Ally of the Year? See page 12

Also, University of Minnesota-Twin Cities Brings the Big Ten into Green Lights



401 M Street, SW (6202J), Washington, DC 20460
Energy Star Fax Line System • 202 233-9659
Green Lights/Energy Star Hotline 202 775-6650 • Fax 202 775-6680

PUBLIC SCHOOL SUCCESSES

It's Not Just Elementary

Public School Partners enrich students and the environment through Green Lights

Green Lights is not just for elementary schools. Public schools across the nation are finding out about the benefits of lighting upgrades for their classrooms, students and their electricity bills. The following public school Partners deserve all A's for their energy efficiency efforts.

Boulder Valley School District

Students of all ages have played an active role in Green Lights in the Boulder Valley School District in Boulder, CO. Elementary students helped perform the lighting surveys by taking footcandle measurements and counting lightbulbs in district buildings. Junior and senior architectural engineering students from the University of Colorado were hired to compile all survey information and do lighting designs.

The upgrades of all 50 district buildings have generated an annual energy savings of more than 4,600,000 kWh (a 45 percent reduction), and prevented the emissions of more than 4,000 tons of CO_2 per year.

Not only did students participate in the upgrades, they will learn from them as well. Beginning this fall, students in grades K-12 will learn about energy efficiency, recycling, hydropower and other topics. This will bring Green Lights results back into the classroom. Because the different district schools never see their electricity bills, they feel no accountability to turn off the lights, pointed out Colleen Walker, Project Engineer for the district. "By adding energy conservation to our curriculum we are bringing upgrades back into classroom and tying it all together," she said. Energy-efficiency themes will not just be part of the science curriculum either—energy themes can be part of music, art and theater classes as well. "Energy conservation is not above children's heads," observed Walker.

Arlington Public Schools

Arlington Public Schools teaches more than students and staff about the benefits of energy efficiency. Through its Energy Team, Arlington has promoted energy conservation to the community at large with articles about the school system's activities in *The Journal* newspaper as well as in PTA and facility newsletters. The 1995 Green Lights Co-Government Partner of the Year school system has also made presentations to community groups such as Arlingtonians for a Clean Environment and the Association of Professional Energy Managers. In addition, Arlington produced a series of videos for Cable TV Arlington on its energy conservation efforts.

Arlington's efforts to educate students and staff were equally impressive. Among Arlington's many activities were energy lessons printed on monthly student lunch menus, and supporting the Arlington

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Contents

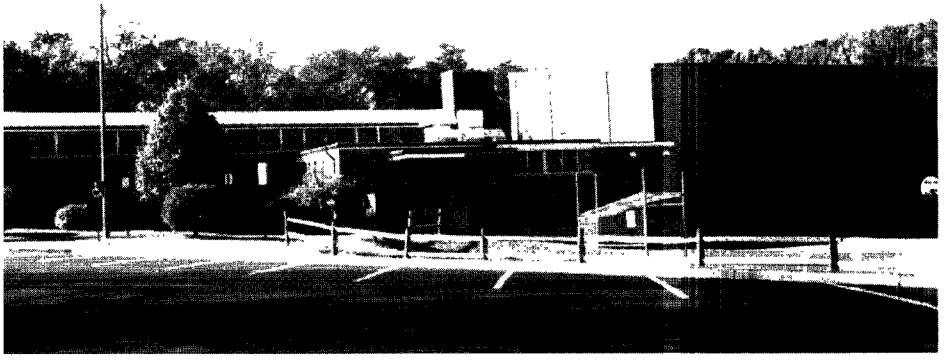
The *Green Lights & ENERGY STAR Update* is a free monthly publication with a circulation of over 40,000. Recipients of the *Update* include: Green Lights participants, program prospects, members of Congress, and interested members of the general public. **Receipt of this publication is not an indication that your organization is a participant.** To add your name to the subscription list, or to find out how to join Green Lights, call the Green Lights/ENERGY STAR Hotline at 202 775-6650.

Although publication of all submissions is not guaranteed, the *Update* encourages Partners, Allies, and Endorsers to submit articles of interest and to provide input for future issues. Please keep in mind that EPA seeks only to promote energy efficiency and does not endorse any particular product or service. If your organization would like to submit material for publication in the *Green Lights & ENERGY STAR Update*, please send materials to: Eric Carlson, *Update* Editor, EPA Green Lights (6202J), 401 M Street, SW, Washington, DC 20460, or fax to 202 233-9578.

continued from page 2

Energy Fair with displays, interactive energy games, and samples of student work. In addition, the school district sponsored an incentive program for schools to reduce their electricity usage and publicized winners at a recognition ceremony. "Staff and students of the Arlington Public Schools are working together to increase energy conservation, decrease utility costs and provide a cleaner environment," said Jo Ann Daly, Facility Manager for Arlington Public Schools. "Through our membership in the Green Lights program, we have been able to fulfill all of these goals."

Arlington is now saving over $172,000 per year on energy costs as a result of its Green Lights upgrades.



Taylor Elementary School – Arlington, VA

East Maine School District #63

When the State of Illinois passed legislation allowing state school districts to enter into performance contracts for energy-efficient upgrades, East Maine School District #63 in Des Plaines, IL wasted no time in seizing this opportunity. "The guaranteed energy-related improvements pay for themselves, improve the classroom environment, and free maintenance funds for other necessary projects," said Jim Reynolds, Director of Operations and Maintenance. "It is a no-lose program for the school district."

East Maine entered into a performance contract with Green Lights Ally Honeywell that guarantees annual savings of $358,000 over a 10-year period. The district paid for the upgrades with a long-term lease purchase agreement; Honeywell guarantees that the monthly savings will exceed the lease payments. If savings do not meet the guaranteed levels, Honeywell will write a check to the school district for the difference. "In this way the Board of Education is able to pay for long-term facilities improvements, and since the savings are guaranteed by Honeywell, the district cannot lose," explained Reynolds.

Honeywell upgraded the school district's 450,000 square feet of facility space and installed new temperature controls and an energy management system. After the first six months of the contract, actual savings are well above projected levels. "The upgrades have already reduced our utility costs significantly. I'm impressed that our school board had the foresight and wisdom to take advantage of legislation that encourages energy efficiency in schools," added Reynolds.

Santa Cruz Valley Union High School District

Through ingenuity and financial assistance, Santa Cruz Valley Union High School District in Santa Cruz, AZ, has not only proven that profitable lighting upgrades are possible for rural school districts but has also become a model for others. Recently, Santa Cruz experienced funding cutbacks and turned to Green Lights as a way to eliminate unnecessary spending. An energy audit of the district identified three areas that would result in significant savings and meet payback criteria: a lighting upgrade with motion-sensing switches, the installation of an energy management system and the installation of a plate and frame heat exchanger. With little available funding, Santa Cruz Valley was creative in obtaining financing. The district sought and received rebates from Arizona Public Service Company and a grant from the Department of Energy. The state also allowed Santa Cruz to add the amount of one years' lighting savings to its operating budget.

The upgrades to the 140,000 square-

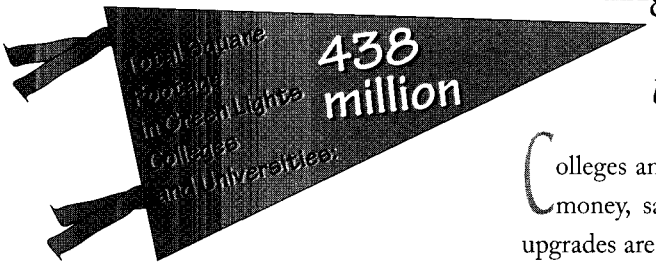
continued on page 8

Welcome to following new school Partners

Ann Arbor Public Schools (MI)
Carson Valley School (PA)
Cumberland County Schools (NC)
Dayton Board of Education (OH)
Fairmont School District (MN)
Fordham Preparatory School (NY)
Milpitas Unified School District (CA)
Murray City Schools District (UT)
Norristown Area School District (PA)
Oak Grove School District (CA)
Portland Public Schools (WA)
Springfield School District (PA)
Washington, DC Public Schools

UNIVERSITY SUCCESSES

Lighting the Way to Higher Learning



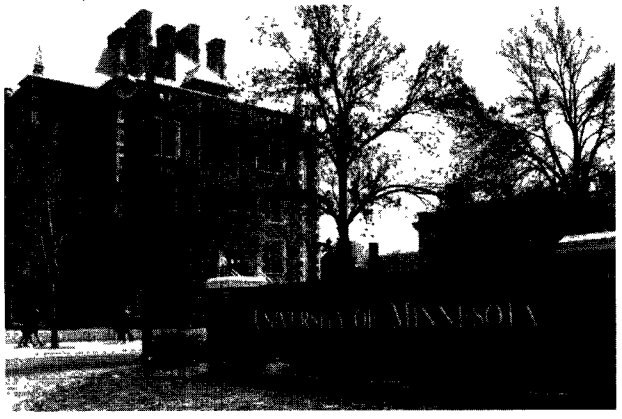
University upgrades improve classroom lighting

Colleges and universities are finding Green Lights upgrades an excellent way to save money, save energy and improve lighting quality in campus buildings. Lighting upgrades are becoming a required course for these Partners.

Welcome new College and University Partners

Coahoma Community College (MS)
East Carolina University (NC)
El Paso County Community College District (TX)
Florida International University (FL)
Northern Illinois University (IL)
Norwich University (VT)
Rennselaer Polytechnic Institute (NY)
Stanford University Academic Facilities (CA)
State University of New York System (NY)
Tarleton State University (TX)
University of Alaska, Anchorage
University of Alaska, Fairbanks
University of Arizona
University of California, Santa Cruz
University of Minnesota–Twin Cities
University of Texas Health Science Center at Houston

University of Minnesota – Twin Cities



University of Missouri–Columbia

By the end of its first year in Green Lights, the University of Missouri-Columbia upgraded more than 2.1 million square feet or more than 35 percent of its total floor space. These upgrades are expected to save the university more than $320,000 annually. To better implement the program, a Green Lights Building Coordinator was identified for each building to facilitate Green Lights implementation. Completed upgrades include the installation of occupancy sensors and a direct lighting control system programmed to minimize energy use while allowing variable user schedules.

As the 1995 Green Lights University Partner of the Year, Missouri believes it is important to promote its Green Lights energy-efficiency strategy to students, faculty, staff and the public. The university created an Energy Extravaganza, a one-day energy fair promoting energy-efficient technologies with a special emphasis in 1994 on Green Lights. The university conducted an extensive advertising campaign with Green Lights and provided information on new lighting technologies in campus newspapers and newsletters.

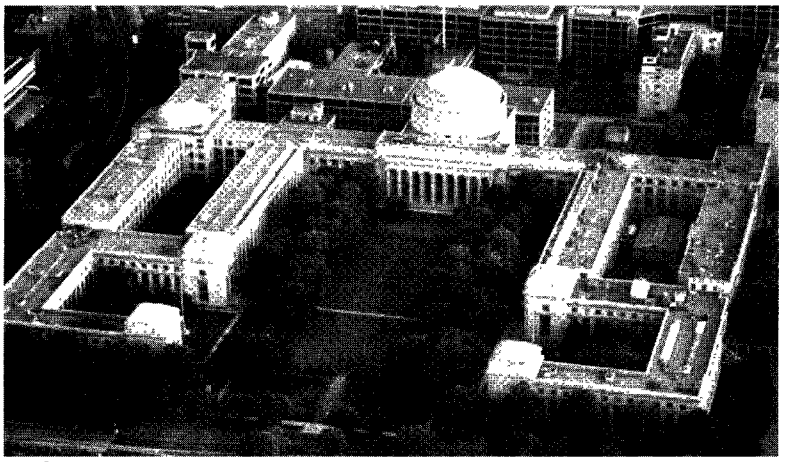
University of Minnesota–Twin Cities

As the first Big Ten school to join Green Lights, the University of Minnesota's Twin Cities campus in Minneapolis/St. Paul has saved an estimated $1.3 million annually in electricity costs as a result of Green Lights. The upgrades of 105,000 fluorescent lamps, and ballasts and 3,500 exit signs have saved an estimated 25 million kWh annually.

In June 1995 another energy-efficient lighting project began with the start of the incandescent upgrade which will replace incandescent lamps and fixtures throughout most of the campus' 200 buildings with compact fluorescents. The projected energy savings are estimated to be between four and six million kWh annually.

In addition to energy savings, environmental gains continue to add up as well. To date, based on the 25 million kWh saved, the university's investments in energy-saving products have contributed to an annual estimated reduction in SO_2 emission by 77 tons and 93 tons of NO_X.

The Facilities Management energy conservation program also includes conducting building energy audits to identify other savings opportunities. These audits are identifying cost-effective energy-saving investments that can be made to upgrade heating, cooling, and ventilation system controls, insulate steam piping, adjust fan



MIT

scheduling and determine where automated lighting controls are best placed.

Massachusetts Institute of Technology

At an institution known for its excellence in science and engineering, both Massachusetts Institute of Technology students and faculty have learned firsthand how Green Lights can translate to large financial savings in just a short period of time. Bill Wohlfarth, MIT's Green Lights Implementation Director, has found that Green Lights is an ideal way for students to learn about energy issues. To get students involved in MIT's efforts, Wohlfarth employed five student interns to perform the initial lighting survey. "MIT is very energy conscious as a community," said Wohlfarth. "We have had extensive coverage of Green Lights in the newspapers, and we have used students, where feasible, to assist in the program's efforts."

Since joining the program in 1992, the Cambridge, MA institution has realized annual savings of over $982,000. MIT has become a leader in the community for Green Lights as well. The Partner was recognized for its 10% Plan achievements and hosted the recognition ceremony to honor other Partners in the Boston area. Finally, the school hosted a Partner User Group (PUG) for participants to share their Green Lights experiences.

Union College

Union College, a small, private college in Schenectady, NY, has found a new approach to energy savings amidst its on-going Green Lights upgrades. Howard Billings, Energy Management Coordinator at the College wanted to upgrade the outdated emergency lighting in the dormitories.

In several dormitories, emergency hallway lighting was provided by banks of batteries that were 25 to 30 years old. These battery banks required regular maintenance to provide even reduced levels of safety coverage, and replacement costs were high. Inefficient incandescent lighting provided normal night-time and emergency lighting, but fixture size and the direct current from the battery source during emergencies precluded replacement with compact fluorescent lamps.

Maintenance-free lead-calcium six-battery systems plus inverters and new 15-watt, smaller compact fluorescent lamps provided the answer to Union College's problems. By using these batteries, Union College realized an 83 percent reduction in battery maintenance costs. The cost of the new system was actually less that the anticipated cost of older battery replacement. The new compact fluorescent lamps provide a 10,000-hour life expectancy compared to the 750 hours for incandescents, and they fit into existing fixtures. These upgrades reduced electrical consumption by over 12,000 kWh and electricity costs by $2,200 per building annually.

Eastern Illinois University

Eastern Illinois University (EIU) in Charleston, IL, took advantage of the Governor's Energy Efficiency Pilot Initiative to finance their upgrades and other energy conservation projects. The pilot initiative utilizes an innovative third-party financing approach which involves the private issuance of certificates of par-

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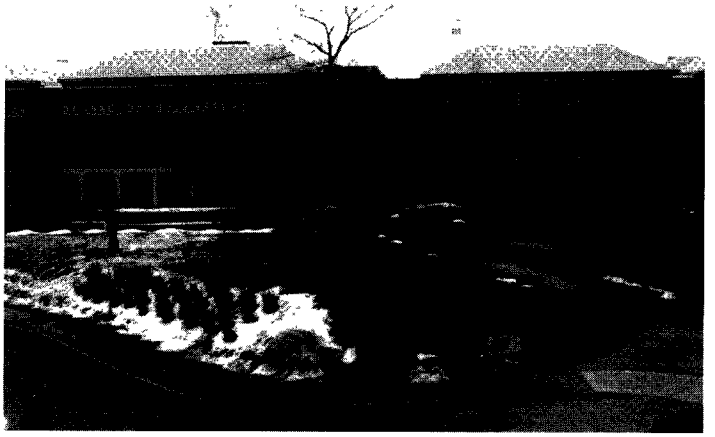
Union College

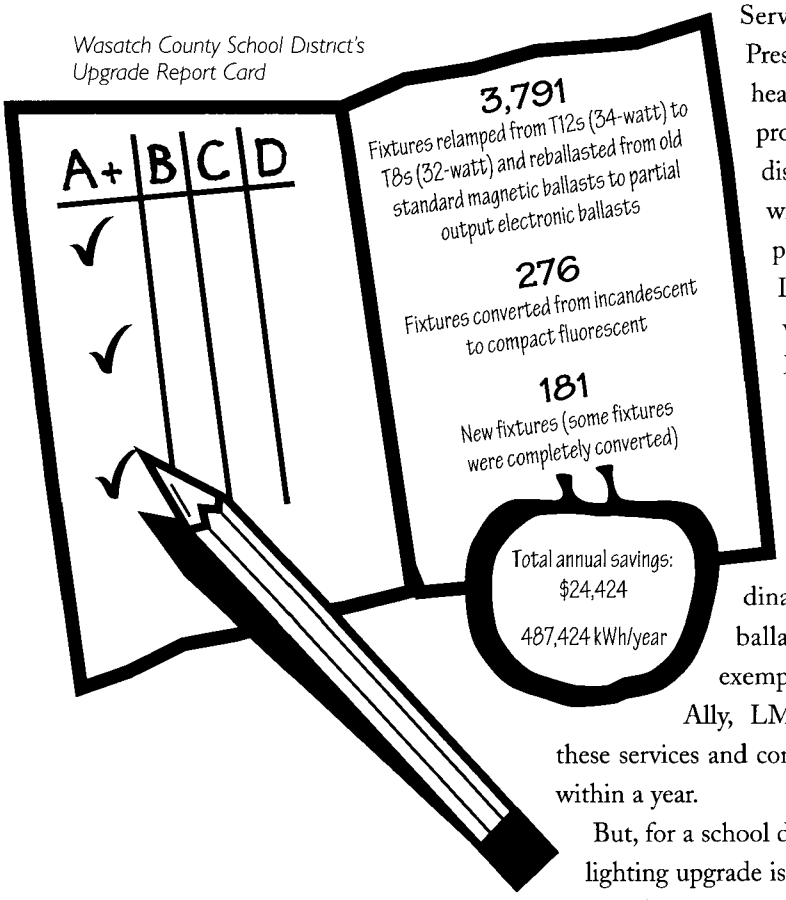


ALLY CORNER

Straight A's

School district gives Green Lights Ally an A+ on lighting upgrades

Utah's Wasatch County School District took its energy-efficiency lessons to heart and invested in the future of its students and the environment by joining the Green Lights program. "The Green Lights program enabled us to install the most energy-efficient lighting while ensuring an adequate payback," said Dr. Henry Jolley, Superintendent of Wasatch County School District and the Green Lights Implementation Director.



Wasatch County School District's Upgrade Report Card

Lighting Maintenance & Service, Inc. (LMS) President Chris Boren heard about Wasatch's project, presented the district's school board with a detailed proposal using the Green Lights approach, and won the contract. LMS's upgrade proposal included surveys, lighting design, financial analyses, installation, reporting, and coordination of lamp and ballast disposal. An exemplary Green Lights Ally, LMS delivered all of these services and completed the upgrade within a year.

But, for a school district, funding for a lighting upgrade is never a given. Bank One of Arizona provided the financing for the Wasatch upgrades through a program set up specifically for schools. The electricity cost savings from more efficient lighting will help repay the bank loan, and a bond referendum will cover the remaining amount.

LMS surveyed the school buildings and upgraded a total of 292,500 square feet. Most fixtures were relamped from 34-watt T12 lamps to 32-watt T8's. Old standard magnetic ballasts were changed to electronic, and incandescent fixtures were changed to compact fluorescents. High-intensity discharge lamps replaced fluorescent lamps at one of the four gymnasiums that were upgraded.

LMS coordinated the disposal of all lamps and ballasts removed from Wasatch buildings. Lighting Resources, a Green Lights Manufacturer Ally, disposed of the lamps in a hazardous waste landfill. "LMS helped us meet our goal of removing lighting products to make a safer environment for our students and did it in a cooperative and timely manner," said Jolley. In addition to the safe disposal of lamps and ballasts, the school district is proud of the environmental achievements from its lighting upgrades: the reduction of air pollution equivalent to the removal of 69 cars from U.S. highways or the planting of 142 acres of trees.

The work done by LMS for the Wasatch County School District is one of many examples of Green Lights Allies and Partners working together for financial benefits and environmental results. EPA's Green Lights program offers win-win opportunities for all of its participants. For more information, please contact the Green Lights Ally Hotline at 202 293-4527.

ENERGY STAR BUILDINGS

Making the CFC Phaseout Profitable

Stage 5: HVAC Plant Improvements

To introduce Green Lights participants to the ENERGY STAR Buildings program, the Update *is documenting the success of Showcase Buildings participants in each stage of program implementation. This article, the seventh and final in the series, describes Stage 5: HVAC Plant Improvements.*

Stage 5 focuses on upgrades to heating and cooling plants and peripheral equipment. These final upgrades take advantage of the load reductions achieved in Stages 1 through 3; reductions that may allow for the downsizing of heating and cooling equipment.

Cooling Plant Upgrades

Building owners are presently facing the phaseout of chlorofluorocarbon (CFC) refrigerants on January 1, 1996. As required by the 1990 Clean Air Act Amendments, the refrigerants currently used in most centrifugal chillers (CFC-11, CFC-12, and R-500) will no longer be produced and alternatives will be needed. Compliance with these regulations, however, should be viewed as an opportunity to increase the energy efficiency of a building. By implementing the ENERGY STAR Buildings staged approach along with a refrigerant management plan, the phaseout can be profitable. Building owners should prepare for the CFC phaseout by developing a refrigerant management plan that includes a combination of tightening existing systems, recycling refrigerant, upgrading systems, or replacement with more energy-efficient equipment using alternative refrigerants.

At the onset of Stage 5, many upgrades have already been completed and have likely brought about significant reductions in cooling load requirements. Therefore, purchasing a smaller, more energy-efficient chiller can lower equipment costs further. If a replacement is not possible, the chiller can usually be upgraded to use an alternative refrigerant, often still increasing efficiency. At Mobil Research and Development, a Showcase building, three CFC-11 chillers were replaced with energy efficient HCFC-123 chillers. This resulted in an annual energy savings of 990,000 kWh and an annual cost savings of $52,000. Previous ENERGY STAR upgrades resulted in a cooling load reduction of 212 tons. Therefore, Mobil Research and Development was able to purchase chillers smaller than previously required.

STAGE 5 UPGRADES

Showcase Participant	Mobil Research and Development	Mobil/ Reston
Type Of Upgrade	High-efficiency HCFC-123 chillers VSDs on cooling tower fans and chilled water pumps	VSDs on cooling tower fans
Square Feet	340,000	285,000
Upgrade Cost	$405,000	$8,400
Annual Cost Savings	$52,000	$2,400
IRR	13%	29%
Annual Energy Savings (kWh)	990,000	97,000

Heating Plant Upgrades

Approximately 20 percent of all commercial buildings use boilers for space heating. While the combustion efficiency of older boilers is generally between 65–75 percent, inefficient boilers can have efficiencies as low as 40 percent. Poorly operated boilers or those frequently run at part-load conditions can lose even more efficiency. In these situations, the best opportunity for energy savings is a complete system replacement. A move to a newer, energy-efficient boiler means increased heating surface area and improved controls for fuel and air flows over the range of load conditions. A system which includes several small boilers operating in combination, is even better, improving overall efficiency to 90 percent. Upgrading existing boilers can also dramatically improve efficiency. Installing new burners and/or controls can extend the useful life of heating systems and reduce emissions.

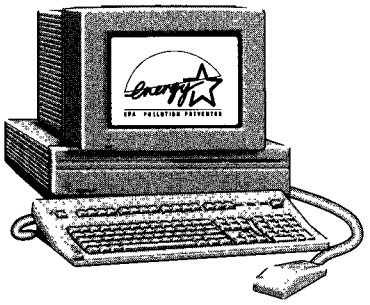
In addition to heating and cooling plant equipment, Stage 5 upgrades cover improvements to peripheral equipment. Variable speed drives (VSDs) can be installed on chilled water pumps, hot water pumps, and cooling tower fans, to save energy the same way they do on air handling systems and to optimize pumping configurations, especially if a central plant serves multiple buildings.

IN THE SPOTLIGHT

Green Lights & ENERGY STAR Go Online

As everyone jumps on the Information Superhighway, Green Lights & ENERGY STAR program information is now available on the Internet's World Wide Web via the EPAs Public Access Server. Program participants, potential participants and other interested Internet users can now access a wide variety of information about programs, including Memorandums of Understanding (MOUs), fact sheets, software tools, and publication listings. EPA programs with active home pages include: Green Lights, ENERGY STAR programs, ENERGY STAR Buildings, ENERGY STAR Office Equipment and others. Information about the College and University sector of Green Lights including the University fact sheet and participant list is now available.

Current issues of the *Update* can be accessed as well from the home pages. All programs can be reached from the EPA home page, the Office of Air and Radiation home page, or the Atmospheric Pollution Prevention Division's (APPD) home page. Pages can also be reached directly. E-mail questions and queries can be directed to the "EPA Manager" by clicking on the hotlink. All pages are optimized for Netscape 1.1, Mosaic 2.0 Beta 4 or better. Our Internet addresses (all are case sensitive) are:



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ES Office Equipment:	**.../GCDOAR/esc-home.html**
Green Lights:	**.../GCDOAR/GreenLights.html**
GL College & University:	**.../GCDOAR/college.html**

More pages will be posted as more information is made available.

continued from page 3

foot school resulted in a 48 percent reduction in electricity usage and an annual savings of almost $15,000.

Santa Cruz also used a unique strategy for installing its upgrades. The bus driver staff was used to do the work over the summer, which was an in-house cost-effective strategy that also created summer employment for valued school-year staff. The district's hard work earned them the 1995 Green Lights Co-Government Partner of the Award.

Connetquot School District

When Connetquot Central School District in Bohemia, NY joined Green Lights in July of 1994, Keith Anderson, Director of Plant and Facilities saw an opportunity to enhance the educational environment of the schools by providing higher lighting quality while lowering Connetquot's operating costs.

In order to lessen the burden on community taxpayers, Anderson aggressively pursued creative financing options. In total, Anderson has secured $340,000 in grant money, despite its decreasing lack of availability. Anderson also funded one of Connetquot's projects with $70,000 in grant money from the New York State Energy Office, and $25,000 from Long Island Lighting Company, leaving only a $45,000 district outlay. This project yielded annual energy savings of $55,000, with less than a one-year payback. And to continue to cut energy

continued on page 13

GREEN LIGHTS IMPLEMENTATION REPORT

OMB # 2060-0255 Exp 3/31/96

☐ **SURVEY REPORT** *(fill in sections 1,2,4,6, and 12 below)*

☐ **COMPLETED PROJECT REPORT** *(fill in sections 1-12 below)*

Date. _____

Page _____ of ___

(attach additional pages as needed)

1. FACILITY INFORMATION

Company Name:		Facility Manager:	
Facility Name:		Telephone No./FAX No.	
Facility address:		Total Floorspace for this Facility:	sq ft.
City/St./ZipCode		Floorspace included in this report:	sq.ft.
Facility type*	New Construction? Yes No	Is this the FIRST report sent to EPA for this floorspace?	Yes No

2. LIGHTING FIXTURES BEFORE UPGRADE *(*use codes on back)*

Fixture Type*	Fixture Quantity	Lamp Type*	Lamp Wattage	Lamps/ Fixture	Ballast Type*	Lamps/ Ballast	Wattage per Fixture	Lighting hours/year

3. LIGHTING FIXTURES AFTER UPGRADE *(*use codes on back)*

Upgrade Type*	Fixture Type*	Fixture Quantity	Lamp Type*	Lamp Wattage	Lamps/ Fixture	Ballast Type*	Lamps/ Ballast	Wattage per Fixture	Lighting hours/year

4. LIGHTING CONTROLS BEFORE UPGRADE

Type 1*	Quantity	Type 2*	Quantity	Type 3*	Quantity

5. LIGHTING CONTROLS AFTER UPGRADE

Type 1*	Quantity	Type 2*	Quantity	Type 3*	Quantity

6. MAINTENANCE METHODS BEFORE UPGRADE

Group relamping? Yes No Fixture cleaning? Yes No

7. MAINTENANCE METHODS AFTER UPGRADE

Group relamping? *Yes No Fixture cleaning? Yes No

8. COMMENTS

9. PROJECT COSTS

Survey	$
Administrative	$
Materials	$
Installation Labor	$
Disposal/Recycling Costs	$
Other Costs	$
Total Project Cost	$
Rebates/Grants	$

10. LIGHTING SAVINGS

Lighting Load Reduced	kW
Electricity Reduction	kWh/yr
% Lighting Savings	%
Energy Cost Savings	$/yr
Internal Rate of Return	%

11. IMPLEMENTATION METHODS:

Survey/Analysis*	
Equipment Provider*	
Installation Method*	
Financing Method*	

**** use codes on the back for these entries***

12. SIGNATURE

Are you? GL Implementation Director Facility Manager Other

Send to: Maria Theesen, Green Lights, US-EPA 6202J, 401 M St. SW, Washington DC 20460 , or FAX to (202) 233-9569. For questions, call the Green Lights technical hotline: 202-775-6650

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GREEN LIGHTS IMPLEMENTATION REPORT CODES

Facility Type

1000 Office
1001 Warehouse
1002 Industrial/Manufacturing
1003 Retail sales
1004 Health Care
1005 Lodging (hotels, dormitories etc.)
1006 Assembly (churches, auditoriums, etc.)
1007 Education (classrooms)
1008 Food sales and service
1009 Parking Garage
1010 Laboratory
1011 Outdoor

Fixture Type

13 Fluorescent- commercial- no lens
14 Fluorescent- commercial-clear lens
15 Fluorescent- commercial-translucent lens
16 Fluorescent - deep cell louver
17 Fluorescent - small cell louver
18 Fluorescent- industrial-open fixture
19 Fluorescent- industrial-enclosed fixture
20 Incandescent- downlight ("can")
21 Incandescent-spotlight/floodlight
22 Incandescent-decorative/sconce
23 Incandescent-pendant fixture
24 Incandescent-general illumination
25 Incandescent-exterior/landscape
26 Incandescent - track lighting
27 HID-outdoor-cobra head
28 HID-outdoor-shoe box
29 HID-outdoor-wallpak/flood
30 HID-outdoor-landscape
31 HID-outdoor-sports lighting
32 HID-indoor-high bay
33 HID-indoor-low bay
34 HID-indoor-recessed commercial
35 HID-indoor-sports lighting
36 Exit sign-incandescent
37 Exit sign-fluorescent
38 Exit sign-LED
39 Exit sign-electroluminescent
40 Exit sign- tritium
41 Exit sign- luminescent
42 Indirect

Installation by

2030 in-house staff
2031 contractor
2032 utility

Lamp Type

54 T-8
55 T-10
56 T-12 Energy Saving
57 T-12 Cathode cut-out
58 T-12 High Lumen
59 T-12 Standard
60 T-12 High Output (800ma)
61 T-12 VHO (1500ma)
62 T-17 VHO (1500ma)
63 T-5 single ended
64 Compact twin-tube
65 Compact quad-tube
66 Compact-integrated ballast
67 Compact-circular
68 Incandescent-general service (A, PS,T)
69 Incandescent-Reflector (R, PAR, ER)
70 Incandescent-decorative
71 Halogen-general service
72 Halogen-reflector (R,PAR, MR)
73 Halogen-tubular
74 HID-mercury vapor
75 HID-metal halide
76 HID-high pressure sodium
77 HID-white-HPS
78 Low pressure sodium
79 T-12 Slimline

Ballast Type

80 Fluorescent-old standard magnetic
81 Fluorescent-efficient magnetic
82 Fluorescent-hybrid/cathode cutout
83 Fluorescent-standard electronic
84 Fluorescent-integrated electronic
85 Fluorescent-extended output electronic
86 Fluorescent-partial output electronic
87 Fluorescent-dimming electronic
88 Fluorescent-step dimming electronic
89 Fluorescent-HO standard magnetic
90 Fluorescent-HO (800ma) electronic
91 Fluorescent-VHO standard magnetic
92 Fluorescent-compact magnetic
93 Fluorescent-compact electronic
94 HID-magnetic
95 HID-electronic
96 Fluorescent-HO efficient magnetic
97 Fluorescent-VHO efficient magnetic

Upgrade Type

110 Relamp only
111 Delamp only
112 Relamp and reballast
113 Specular reflector/delamp
114 Reflector/Reballast
115 New Lens/Reflector/Reballast
116 New lens/louver
117 New fixture
118 Convert Incand to Fluorescent or HID
119 Task Lighting

Control Type

100 Manual switching
101 Manual dimming
102 Occupancy sensor
103 Timed switching
104 Timed dimming
105 Daylight switching
106 Daylight dimming
107 Panel level dimming
108 Panel level EMS
109 Power reducer

Survey/Analysis by

2010 in-house personnel
2011 independent consultant
2012 electrical contractor
2013 utility representative
2014 equipment supplier
2015 lighting management company
2016 energy services company
2017 Green Lights Surveyor Ally
2018 Architect
2019 Lighting Designer
2024 Electrical Distributor

Equipment Provided by

2020 lighting equipment supplier
2021 lighting management company
2022 utility
2023 contractor

Financing by

2040 internal funds
2041 conventional loan
2042 utility
2043 lease/lease-purchase
2044 shared savings
2045 other

POLLUTION PREVENTION

You may want to estimate the pollution prevention of this project for your own use. Use the following formulas and factors.

CO2:	kWh/yr saved	x	emission factor	=	lbs/yr
SO2:	kWh/yr saved	x	emission factor	=	g/yr
NOx:	kWh/yr saved	x	emission factor	=	g/yr

EPA Regional Emission Factors (see note below)

REGION 1: CT, MA, ME, NH, RI, VT			
Emission per kWh saved:	CO2 1.1	SO2 4.0	NOx 1.4
REGION 2: NJ, NY, PR, VI			
Emission per kWh saved:	CO2 1.1	SO2 3.4	NOx 1.3
REGION 3: DC, DE, MD, PA, VA, WV			
Emission per kWh saved:	CO2 1.6	SO2 8.2	NOx 2.6
REGION 4: AL, FL, GA, KY, MS, NC, SC, TN			
Emission per kWh saved:	CO2 1.5	SO2 6.9	NOx 2.5
REGION 5: IL, IN, MI, MN, OH, WI			
Emission per kWh saved:	CO2 1.8	SO2 10.4	NOx 3.5
REGION 6: AR, LA, NM, OK, TX			
Emission per kWh saved:	CO2 1.7	SO2 2.2	NOx 2 5
REGION 7: IA, KS, MO, NE			
Emission per kWh saved:	CO2 2.0	SO2 8.5	NOx 3.9
REGION 8: CO, MT, ND, SD, UT, WY			
Emission per kWh saved:	CO2 2.2	SO2 3.3	NOx 3.2
REGION 9: AZ, CA, HI, NV, Guam, Am Samoa			
Emission per kWh saved:	CO2 1 0	SO2 1.1	NOx 1.5
REGION 10: AK, ID, OR, WA			
Emission per kWh saved:	CO2 0.1	SO2 0.5	NOx 0.3

Note: State pollution emission factors are aggregated by EPA region Factors for U.S. territories are national average emission factors. See the Green Lights Lighting Upgrade Manual.

TIP OF THE MONTH

On the Job Training

Using student interns for lighting surveys

A reliable survey is the first step in implementing profitable lighting upgrades. In order to conduct a survey, facility managers have a preliminary choice to make: dedicate staff time to training and surveying or hire a professional surveyor. Because staff may not have the extra time or expertise to conduct surveys and professional surveyors may be too expensive, a third option may offer a new solution: student interns. Several Green Lights Partners have successfully used interns to survey existing lighting systems and analyze potential Green Lights upgrades.

Economic Reasons for Using Interns: State of Arkansas

Many non-profit and government organizations are faced with limited resources to fund and complete lighting surveys. The State of Arkansas used interns to help ease the financial burden of surveying its more than 40 million square feet. Knowing that the state operates with a lean staff under a tight budget, Chris Benson, Arkansas' Green Lights Implementation Director, realized that he could not use contractors or his own employees to survey the facilities. With this in mind, he contacted Steve Menhart, a professor of electronics at the University of Arkansas at Little Rock to recruit six students to work as interns.

Benson took advantage of Green Lights to train the interns about lighting technologies. Menhart and his students attended a Lighting Upgrade Workshop to learn about technologies, applications, and the Green Lights program. Benson also utilized his Account Manager's services to provide a Q&A session, followed by a surveying lesson. With the guidance of the Green Lights Account Manager, the interns surveyed a building. After little training, the interns were surveying without a problem.

"The benefit of using interns is threefold," according to Menhart. "The students are learning a trade that will make them more competitive in the job market, the state will be able to implement profitable upgrades, and the Green Lights program is helping the environment breathe easier."

More Time for Implementing Upgrades: University of Miami

Employing interns allows a facility manager and the engineering staff more time to implement upgrades. Some organizations are not as large as Arkansas, but still require assistance. Jim Durante, Green Lights Implementation Director for the University of Miami hired Rajnish Kashyap, a university student, to help. Durante, already knowledgeable about lighting technologies and Green Lights, provided Kashyap the necessary training.

Kashyap surveyed over 900,000 square feet of the facility in three weeks and used *Report Kalc* to report progress to EPA. Kashyap also provides Durante the data, allowing Durante more time to concentrate on specifying the upgrades, selecting contractors, and other duties.

Financing Options: City of Ada

If paying interns is a problem, there may be several possible options at your organization's disposal. The City of Ada, OK turned to Oklahoma State University for help in performing its lighting upgrades. Ada did not want to hire an engineer to perform the lighting analysis because it would have required additional tax dollars. Ada hired graduate student interns from Oklahoma State who completed surveys of almost the entire city. Because surveying was part of the graduate students curriculum, interns were paid through Oklahoma State, requiring the City to pay for only a few miscellaneous expenses.

Colleges and universities have the option of offering credit or federal work study positions to interns. Morehead State University in Kentucky will be using a work study student to perform its surveys. The student will be paid through federal money allocated for work study students.

By spending less time and money on surveys, organizations have more time to spend on installing improvements. Students receive real world experience that can give them a competitive edge when looking for a job. And the environment benefits as well from less CO_2, SO_2, NO_X emissions.

REGIONAL FOCUS

Thomas Jefferson University Joins Green Lights

(left to right) EPA's Stanley L. Laskowski and Thomas Jefferson University's David L. Dobbins

Thomas Jefferson University in Philadelphia kicked off its Green Lights participation at a signing ceremony on June 7, 1995. Acting EPA Region 3 Administrator Stanley L. Laskowski signed as did David L. Dobbins, Associate Vice President for Physical Resources at Thomas Jefferson University. Also present from Thomas Jefferson were Dan Vallieu, Plant Operations; Richard Alberto, Hospital Administration; Martha Anderson, Environmental Health and Safety, and members of the University's Energy Team. Ellen Fishman, EPA Region Three Green Lights Coordinator, was also in attendance.

"Thomas Jefferson is proud to be participating in the Green Lights program," said Dobbins. "We are committed to reducing our energy consumption, protecting the environment, and saving money." The University committed approximately four million square feet to be upgraded with energy-efficient lighting technologies.

NEW PARTICIPANTS

Green Lights Welcomes New Participants

Forty-one (41) new participants joined Green Lights in June to take advantage of the benefits of energy-efficient lighting upgrades. Green Lights now has over 1,850 participants, committed to energy savings and pollution prevention through efficient lighting.

Green Lights welcomes its new participants and looks forward to working with them. If your organization would like more information about the program, please call the Green Lights/ENERGY STAR Hotline at 202 775-6650.

PARTNERS (27) *Burger King Corporation* ■ *City of Chicago* ■ *City of Lompoc* ■ *Cookson Fibers* ■ *El Paso County Community College District* ■ *Florida International University* ■ *Garden Fresh Restaurant Corporation* ■ *Henry General Hospital* ■ *Illinois Army National Guard* ■ *MCI Telecommunications Corp./Bensenville* ■ *MCI Telecommunications Corp /Willow Springs* ■ *One Town Center Associates* ■ *Panarem, Inc* ■ *Ralphs Grocery Company* ■ *Rensselaer Polytechnic Institute* ■ *Siebe Environmental Controls* ■ *Somerset Hills Hotel* ■ *Stanford University Academic Facilities* ■ *State University of New York System* ■ *Tarleton State University* ■ *United Energy of Missouri Inc.* ■ *U.S. Army/Aberdeen Proving Ground* ■ *University of Alaska, Anchorage* ■ *University of Texas Health Science Center at Houston* ■ *Utah State Hospital* ■ *Veterans Affairs Medical Center, Indianapolis* ■ *Washington DC Public Schools* **ALLIES (9)** *ACME Electric Corporation, Transformer Division* ■ *Beard Campbell Company* ■ *City of St. Charles Electric Utility* ■ *Conservalite Technologies, Inc* ■ *E. Sam Jones Distributor, Inc* ■ *Nevada Power Company* ■ *Systems Solutions of Georgia, Inc.* ■ *Taylor Electric Supply* ■ *WESCO Distribution, Inc* **ENDORSERS (5)** *Delaware State Chamber of Commerce* ■ *Earth Share* ■ *Land-of-Sky Regional Council* ■ *Lorax Environmental Club–NCSU* ■ *The Oregon State Superintendent of Public Administration*

TECH TALK

The ABCs of Classroom Lighting Upgrades

Improved lighting quality enhances the educational experience

Classroom lighting upgrades offer significant potential for reducing operating and maintenance costs for school administrations. By following the guidelines listed below, you can help protect the environment while enhancing the quality of the education experience.

Amount

The amount of light required in a space is dependent on three factors: the age of the people occupying the space, the type of task being performed and how critical it is that the task be performed accurately. Classrooms provide several challenges for creating efficient and effective lighting because of the many different tasks performed in these spaces. Classroom lighting should meet the highest footcandle needs for reading, writing and other tasks, but it should also be adjustable. A flexible lighting system will provide for the needs of students while saving energy.

Ballast Upgrades & Other Options

To achieve lighting quality and save electricity at the same time, consider the following lighting upgrade options.

Lamps and Ballast Upgrade

Source efficacy is the amount of lumens generated per watts consumed, and it depends on the lamp and ballast working together efficiently. Two lamp/ballast upgrades include:

T8 Lamp/Ballast System: This system is extremely efficient producing approximately 90 lumens per watt when used in a 4-lamp electronic ballast.

T10 Lamp: The use of T10 lamps instead of standard cool-white T12 lamps will increase light levels by about 20 percent. When used with T12 electronic ballasts, the efficacies of T10 applications are comparable to those for T8 applications.

Lens and Louver Upgrade

Fixture efficiency can be significantly improved by replacing translucent diffusers or small-cell louvers with clear acrylic lenses or large-cell parabolic louvers. Louvers provide superior glare control and high visual comfort compared with lens-diffuser systems. They also can eliminate the glare reflected on computer screens. Both deep-cell and small-cell louvers are available for use with existing fixtures.

Luminaire Replacement

Instead of upgrading individual luminaire components, consider the labor savings and quality improvements that may be achieved with new luminaires that feature high-efficiency components.

Deep Cell Parabolic Louver Replace existing luminaires with new luminaires that contain efficient components such as T8 lamps, electronic ballasts and large cell parabolic louvers. The results will be low glare, high-efficiency, and uniform distribution. Deep-cell parabolic louvers are particularly appropriate in classrooms with computers.

Indirect Luminaires These luminaires distribute at least 90 percent of the emitted light upwards to reflect off the ceiling, providing uniform, diffused lighting. Because the light sources are completely shielded from view, indirect systems provide relatively high visual comfort. Indirect lighting is ideal for libraries because it provides even illumination on vertical surfaces.

Controls

Controls offer the greatest energy savings potential for the classroom. Schools have a large portion of space that is unoccupied at various times during the day and can benefit greatly from control systems. At Catholic University in Washington, D.C., Green Lights Implementation Director Bob Burhenn installed light loggers in fixtures around the Catholic campus to determine the number of hours the lights were actually used per week. One lecture hall's lights logged 72 hours but it was only occupied 18 hours that week. The hall was empty for 75 percent of the lighting hours. Using occupancy sensors and scheduling controls can significantly reduce your lighting needs, and if your space has many windows, daylight dimming can further reduce your energy consumption.

For more information about lighting upgrade technologies, contact the Green Lights/ENERGY STAR Hotline at 202 775-6650.

ANNOUNCING THE 1996 PARTNE

Looking for a Few Good Partners and Allies

You could be the 1996 Partner/Ally of the Year. Mail in your entry today!

To apply...

Mail us the entry form on the facing page, along with your supporting materials. Official entry packets will be available Sept. 30, 1995. All submitted materials become property of EPA and will not be returned.

Recognition You Deserve

Many Partners and Allies in Green Lights are setting examples of environmental leadership—and this competition is one way for the EPA to recognize them. If your organization has done good work, why not apply? It's easy, and if you win, EPA will highlight your achievement in an outreach campaign throughout 1996.

Eligibility

- You must be an active participant in the Green Lights program. Achievements over the entire course of your Green Lights membership will be evaluated.
- You must have submitted your total organizational square footage to the EPA.
- You must have completed upgrades in at least 20% of your upgradeable space.
- You must have reported your upgrades in a format acceptable to EPA.
- If you have won this competition the previous year you must wait a year before recompeting.

Partner of the Year Award Categories

For 1996 Partner of the Year there will be 10 categories:

- Large Corporation (over 10 mil. sq. ft.)
- Corporation (1–10 mil. sq. ft.)
- Small Corporation (100,000–1 mil sq. ft.)
- Small Business (under 100,000 sq. ft.)
- Non-profit Organization
- University/College
- Small Hospital
- Large Hospital
- Government
- Public School

1996 Ally of the Year Award Categories:

- Manufacturer Ally
- Lighting Management Company Ally
- Utility Ally
- Distributor Ally

Evaluation

Partner of the Year Contestants:

- Implementation: 60% (only completed upgrades will be evaluated). Quality upgrades are the hallmark of an outstanding Green Lights Partner.
- Communications/Outreach Effort: 30%. Publicizing the program is an important component too.
- Other Special Endeavors: 10%. For example, these might include hosting a workshop.

Ally of the Year Contestants:

The different Ally categories will be judged on the same criteria, but with different emphases, as befits their particular industries (see table on page 13).

Timeline

- The EPA will be accepting applications until December 1, 1995. All reports of completed upgrades to be considered part of your application must be received by this date as well.
- By December 21, 1995, you will receive a snapshot of the upgrade reports that you have submitted to EPA.
- You will have until January 10, 1996 to submit corrected material to the snapshot.
- Winners of the contest will be announced by February 15, 1996.
- An awards ceremony will be held in the early spring.

ALLY OF THE YEAR COMPETITION

1996 Application Form

Partner/Ally of the Year

Organization Name _____

Contact Person _____

Title _____

Street Address _____

City _____ State _____ Zip _____

Telephone _____ Fax _____

I am applying for this category:

1996 Partner of the Year

- ❑ Large Corporation (greater than 10 million square feet)
- ❑ Corporation (1 to 10 million square feet)
- ❑ Small Corporation (100,000 to 1 million square feet)
- ❑ Small Business (0 to 99,999 square feet)
- ❑ Non-Profit Organization
- ❑ Government (including local, county and federal government institutions and public schools)
- ❑ University
- ❑ Large Hospital
- ❑ Small Hospital

1996 Ally of the Year

- ❑ Lighting Manufacturer
- ❑ Lighting Management Company
- ❑ Lighting Distributor
- ❑ Utility Ally

Any Partner or Ally is eligible for an award if they:

- are an active participant in Green Lights
- have submitted total square footage information about their organization
- have completed upgrades in at least 20% of their upgradeable space
- have reported their upgrades in a format acceptable to EPA
- have not won Partner nor Ally of the Year in 1995

ALLY OF THE YEAR CRITERIA

	Manufacturer	LMC	Utility	Distributor
Implementation (Completed Upgrades)	40%	40%	40%	40%
Innovation (tech/service)	20%	5%	5%	5%
Promotion of Green Lights	25%	25%	30%	40%
Financing work/innovation	5%	10%	15%	5%
Work/report for Partners	10%	20%	10%	10%

University Successes, continued from page 5

ticipation (COPs). The State will repay the COPs from guaranteed savings over the 10 year term of its agreement with the Energy Service Company (ESCO). "This arrangement allowed EIU to proceed with implementation of its energy conservation project in an era of limited state capital budgets," said Gary Reed, EIU's Utilities Manager. "Other schools should look for similar opportunities in their state." The university is in the process of upgrading 1.3 million square feet of campus space including academic buildings and residence halls, with another one million square feet in the planning stages.

To further increase its energy savings, EIU utilizes an energy management system to control the heating, ventilation, and air conditioning (HVAC) system when buildings are not in use. For example, the campus recreation center is closed from 10 pm to 7 am so EIU staff programmed the EMS to stop the HVAC system at closing and restart it just before opening to maximize energy savings. EIU expects to save 2.5 million kWh annually from their upgrades or approximately $150,000.

Public School Successes, continued from page 8

costs, Connetquot has signed on as an ENERGY STAR Buildings Partner.

Anderson has actively promoted the use of energy-efficient lighting both within Connetquot and in neighboring communities. At Connetquot, Anderson has distributed Green Lights literature and the Green Lights occupancy sensor video to teachers in order to provide an educational opportunity for students. He has also spoken at local school district facility manager meetings to promote the Green Lights message.

GLID PROFILE

Green Lights 101

Hofstra campus upgrades show that Green Lights works

To date, Green Lights has helped Hofstra University in Hempstead, NY, save $146,585 in annual energy costs and reduced lighting electricity savings by 68 percent. "At Hofstra, we started by upgrading one building, proving that the technologies and savings were real," explained Teresa Greis, Energy Manager at Hofstra. "Once we knew that Green Lights worked, we proceeded with confidence on the rest of our upgrades." The *Update* recently spoke to Greis about her work and Hofstra's Green Lights efforts.

■ *What are some of the challenges you have faced while running a large facility?*

Hofstra University covers 238 acres with more than 2.6 million square feet of facilities. One of the problems with such a large facility is standardizing equipment. Prior to upgrading the building lighting system, one might find a mix of cool white and warm white T12 lamps and a mix of magnetic and electronic ballasts. The upgrade enabled Hofstra to eliminate some old equipment, reduce stocking requirements and standardize equipment. As a result, lighting specifications for all new construction renovations have been written.

■ *How many facilities and square feet have you upgraded thus far?*

To date, the University has upgraded 1,480,000 square feet with an annual savings of 5,250,000 kWh. During 1993, Hofstra upgraded over 700,000 square feet including six dormitories, the library, a classroom building and the law school building. The upgrades in the three buildings resulted in an annual load reduction of 2,776,000 kWh. The next phase of upgrading 390,000 square feet is expected to start in the fall. The final 560,000 square feet is expected to be upgraded next year.

■ *How important are environmental efforts to Hofstra's administration?*

Hofstra's campus is a registered Arboretum accredited by the American Association of Botanical Gardens and Arboreta. The administration is very concerned with environmental issues. A university-wide recycling program has been in place for five years. By joining Green Lights, Hofstra found an additional way to enhance its commitment to protect the environment.

■ *How important is the public education side of your energy management efforts?*

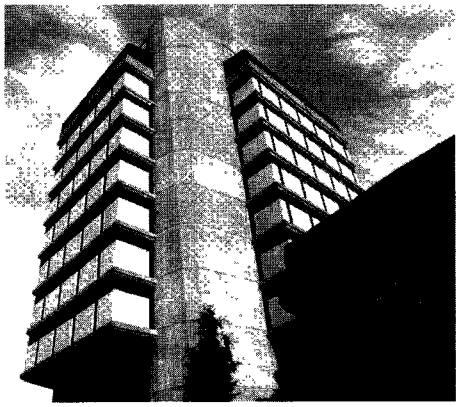
The Hofstra community is always informed of energy projects going on across the campus. Articles appear in the monthly publication, as was the case with the start of our 1995 upgrade project. When the library was upgraded in 1993, a newsletter described the project and invited staff to visit the facility and report their comments back to the physical plant.

■ *What are you planning for the future?*

Future projects at Hofstra include the completion of all lighting upgrades. After that, we will examine energy saving technologies in our HVAC system. Hofstra is also investigating the installation of a 2.3 megawatt cogeneration plant.

■ *How do you see your job evolving in the next few years?*

I envision continuing along the same path, and that is to investigate energy saving technologies, obtain funding, manage the project, and document savings achieved through Green Lights.



Right, Theresa Greis, below, Hofstra's Axinn Library

COMPLETED UPGRADES

June Upgrades

Congratulations to the following program participants who submitted implementation reports for completed upgrades during the month of June.

ALCOA, *Steve Schmidt*
Allergan, *Jon Reed*
American Express, *Michele Spiess*
American Standard, *Daniel Elliott*
Associated Students of UC Berkeley, *Jeffrey Peeks*
Baltimore County, Maryland, *F. Douglas Johnson*
Big Beam Emergency Systems, *Paul Markee*
Buffalo State College, *Frank Wenske*
Carrier Corporation North America, *Charles Veley*
Celeste Industries Corporation, *Paul Lentz*
Chestnut Hill Hospital, *Benjamin F. Antrim*
Citizens Bank of Maryland, *Richard L. Prosser*
Community Hospital-Anderson/Madison Co., *John A. Wesley*
Danaher Corporation, *Sue Beason*
Eastalco Aluminum Company, *John Ritenour*
Eli Lilly & Company, *Gavin Hadley*
Energy Simulation Specialists, *Emily Tuzson*
FHP, Inc., *Walter F. Lundin*
First Hawaiian Inc., *Ralph Mench*
General Electric Lighting, *Joseph Howley*
General Motors Hughes Electronics-Corp, *Renzo Venturo*
Georgia Institute of Technology, *Bill Halabi*
Holophane Company Inc., *John Forbes*
Johnson & Johnson, *Harry Kauffman*
KNP BT USA Inc., *Randall L. Teesdale*
Larry's Markets, Incorporated, *Larry McKinney*
Louisville & Jefferson Metro Sewer District, *James J. Hunt*
Marvel Lighting Corporation, *Paul Greenberg*
McNeil Real Estate Management, *Zack Maggart*
Medical College of Ohio, *Harvey Vershum*
Memorial Hospital at Gulfport, *Bill Deitenbeck*
Metropolitan Atlanta Rapid Transit Authority, *Olen A. Pressley*
Milwaukee Insurance, *Glen A. Perry*
Minneapolis Public Schools & Special District #1, *Allen L. Johnson*
Nationwide Mutual Insurance Company, Inc., *Theodore Kraschinsky*
Omaha Public Power District, *Marc Nichols*
Outrigger Hotels Hawaii, *Steve Timpson*
Oxford Properties Florida, *Robert C. Loida*
Pima Community College, *Lorenzo Cotton*
Providence Yakima Medical Center, *David W. Jones*
Rockwell International Corporation, *Kieran Bergin*
Shell Oil Company, *Ron Dudley*
Sica Electrical & Maintenance, *Ralph Sica*
Sisters of Christian Charity Holy Family, *Konrad Winger*
South Hills Health System, *Robert Giffen*
St. Joseph Hospital (NC), *Mark Carland*
The City of Portland, Oregon, *David Tooze*
The State of South Dakota, *Dale Knapp*
Toshiba America Cons Prod, *Douglas Bagrowski*
Trimblehouse Corporation, *James Smulian*
University of Miami, *James Durante*
Villa Lighting Supply, Inc., *Amy Villa*
Waldenbooks, *Rob Packnick*
Welborn Baptist Hospital, *William Gillam*
Wellington Sears Company, *T. Halliburton Wood*

Correction

Straub Clinic and Hospital (Hawaii) was inadvertently omitted from the 100% Healthclub list on page 5 of the July *Update*

Articles of Interest

"New Fixtures Offer Integrated Control Technology" *Energy User News*, May 1995, pp. 40-42.

"Recognizing Productivity, New Age of Lighting Retrofit" *Building Operations Management*, May 1995, pp. 44-48.

"Sorting Through EMS Options," *Building Operations Management*, May 1995, pp. 60-66.

"Whole-Bldg. Approach Can Be Applied to Retrofits" *Energy User News*, June 1995, pp. 23-26.

Green Lights Workshops

2½-Day Workshops Featuring:

- Lighting Upgrade Technologies
- Lighting Analysis Software
- Financing Analysis
- Green Lights Reporting
- Lighting Maintenance and Disposal
- Surveyor Ally Exam *(on third day)*

Preregistration Form: Green Lights workshops are free and open to the public. Space is limited, however, and priority will be given to Green Lights Partners. Complete details and instructions will be faxed to pre-registrants within 4 weeks of the workshop date.

Register by Phone: Call the Green Lights/ENERGY STAR Hotline at 202 775-6650

Register by Fax: Fax this form to the Lighting Services Group at 202 775-6680

Register by Mail: Mail to EPA Green Lights (6202J), 401 M Street, SW, Washington, DC 20460

Please Indicate Preferred Workshop*:

❑ Washington, DC Sept. 6–8

❑ New York, NY Sept. 20–22

*Please call 202 775-6650 for current workshop information The Surveyor Ally exam will be given on the morning of Day 3 and will conclude by 11 00 a m

NAME **TITLE**

COMPANY/ORGANIZATION

ADDRESS

CITY **STATE** **ZIP**

( )
PHONE

( )
FAX (IMPORTANT IN PROCESSING THIS FORM)

STATUS: (PLEASE CHECK ONE)

❑ Partner ❑ Prospective Partner

❑ Ally ❑ Surveyor Ally Candidate

❑ Other

EPA

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Environmental Protection Agency
Air and Radiation (6202J)
Washington, DC 20460

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