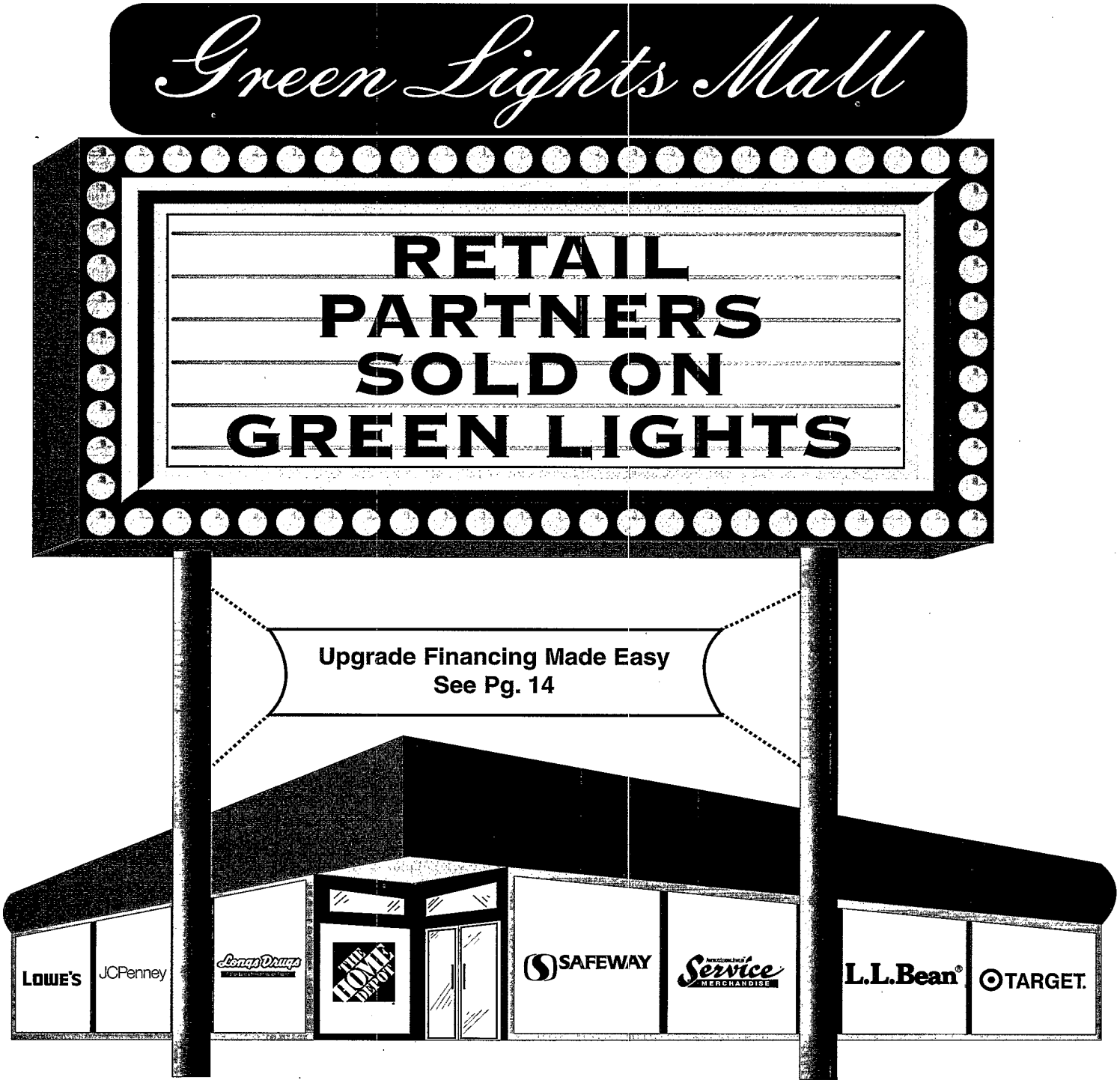
United States Environmental Protection Agency
Air and Radiation 6202J
EPA 430-N-95-009 October 1995

EPA

Green Lights & Energy Star Update

EPA 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

Hitting the Mark for Energy-Efficient Lighting

Target and other retail Partners upgrade lighting without sacrificing quality

Highlighting merchandise is a prime consideration for all retailers. Proper illumination, color rendition, removal of glare, and control of shadows need to be addressed in all retail lighting designs. The following Green Lights Partners show how upgrades not only save money and energy, but also improve lighting quality.

⊙TARGET

Imagine saving enough energy to power 60,000 American homes for one year. That's exactly what Target Stores' company-wide efforts have saved over the past five years. One store helping Target's efforts is its Fullerton, California store, a showcase building in EPA's ENERGY STAR Buildings program. During its first year of operation alone, the upgraded Fullerton store is expected to save enough energy to power 140 Fullerton homes for a year. The store's reduction in energy will be made possible by an extensive upgrading of everything from lighting to freezers. Skylights have been installed to make use of natural light. Mirrors are used to track the sun to provide maximum light, while existing lights on a dimming system work in tandem with the skylights, providing more or less light as necessary. This daylighting technique provides a more pleasant atmosphere for customers and shows the "true colors" of merchandise.

Other energy-efficient lighting techniques in use include electronic ballasts, smaller lamps and reflectors, all of which create a brighter atmosphere. The store will also feature a new air conditioning system, new cooking equipment, refrigerators, and freezers (utilizing non ozone-depleting refrigerants). To help monitor the changes, a new computer system is being used to operate and control all of the lighting and air conditioning systems.

The Fullerton store will also function as a model for other Target stores as it tests the new systems installed as part of the upgrade project. The systems that prove most successful in saving energy and providing a pleasant shopping and work atmosphere will be implemented in other stores around the country.

The upgrading crew at Target's Fullerton store installs a skylight that will serve as part of the store's energy-saving daylighting system.

Contents

The Green Lights & Energy Star Update is a free monthly publication that is distributed to over 40,000 participants of the Update include Green Lights partners, 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 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 does not endorse any particular product or service. If your organization would like to submit materials 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.

UCCESSES

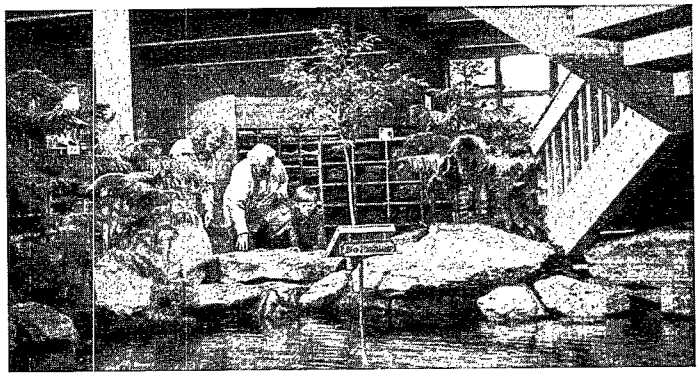
L.L.Bean®

Upgrades at L.L. Bean's Freeport, Maine retail store prove that Green Lights can improve lighting quality. In January 1993, the company began replacing fixtures and ballasts in the oldest section of the store. In the footwear department, L.L. Bean upgraded from four-lamp fixtures with standard ballasts and energy-saving lamps to four-lamp T8 electronic ballasts with reflectors. This made a very dark floorspace 40 percent brighter. In the Fishing/Hunting department, 2x4–four-lamp trotters were switched to 2x4–three-lamp T8 parabolic fixtures. This upgrade made the whole area brighter and allowed the items on display to stand out better. "All areas of the retail store have always been better off after a Green Lights upgrade project," said Ron Jacques, lighting specialist for L.L. Bean. Not only did lighting quality increase, so did the savings. L.L. Bean saves more than 71,000 kWh and over $6,800 annually from this upgrade.

The outfitter is in the process of upgrading the rest of the Freeport retail store as well as its North Conway factory store. Jacques said employee and customer reactions to these projects were extremely positive. "Everyone I've spoken to said the areas were better lit and that the items on display stood out more clearly." The company's Concord, New Hampshire and Rehoboth Beach, Delaware factory stores were built with energy efficiency and visual comfort in mind in accordance with ASHRAE 90.1 standards.

LOWE'S

It seems appropriate for a store dedicated to home improvement projects to also be dedicated to energy-efficient store construction. All Lowe's stores meet the minimum requirements of the Green Lights Memorandum of Understanding when they are built. Even before joining Green Lights in 1993, Lowe's was installing energy-efficient equipment and fixtures. For example, Lowe's has been installing 400-watt, metal halide lights in its sales areas since 1980. Many Lowe's stores were being constructed with higher ceilings and, as a result, designers found they had to install more fluorescent lights in order for the light to adequately reach the floor. Because of the stores' high display racks, lighting designers needed to be concerned with vertical as well as horizontal footcandles, explained Frank Patterson, Lowe's environmental systems manager. "Metal halide lamps make good business sense because you get more light for less money and energy," said Patterson. Out of more than 21 million square feet of sales space, over 95 percent uses energy-efficient metal halide lighting.



Inside L.L. Bean's Freeport, Maine retail store.

In addition, Lowe's began installing building management systems in all new stores in 1986. The systems are programmed and monitored at Lowe's general office in N. Wilkesboro, North Carolina and control all store lighting and electrical loads. The building management system utilizes time-of-day, demand limiting and photocell control strategies to reduce energy usage. The company also uses high-efficiency rooftop HVAC systems to heat and cool the sales areas as well as a unique "nighttime purge" method to pre-cool the stores. "Energy conservation is very important to Lowe's senior management," said Patterson. "By building efficiently and utilizing available technology, we are being energy-conscious from Day 1."

Longs Drugs

"The Best Drug Store In Town"

Longs Drugs Stores, a retail drug chain with almost 300 stores in the western U.S., understands what lighting quality and design can mean to business. After research showed that customers who

continued on page 4

Longs Drugs store in Hilo, Hawaii.

continued from page 3

couldn't see the indoor lamps thought the facility was closed, Longs upgraded to fixtures that were visible from outside of the store. Since 1992, Longs has upgraded fixtures in more than 150 stores. These buildings used open strip fixtures which are common to many retail stores. Open strip fixtures provide a direct/indirect combination of lighting that is effective at illuminating retail spaces, but has a high power density that uses excess electricity. In addition, these fixtures produced a glare that drew the customer's eye away from merchandise and towards the ceiling. The new fixtures provide optimum light dispersal and maximize light in the vertical plane. Light is evenly distributed throughout the sales area without hurting lighting levels on the bottom shelves. "For retail lighting, many factors must be taken into consideration," said Dave Alexander, facilities manager for Longs Drug Stores. "Color rendition, attractive fixtures, removal and control of shadows, and ease of maintenance are all important areas to address for effective retail lighting."

Longs successfully upgraded more than 100 of its stores and is now saving $1.5 million annually and 32 million kWh per year. Approximately 27,000 fixtures were upgraded with specular reflectors, electronic ballasts, and 4100K lamps. Alexander said that customers have noticed the upgrades too. "I get comments such as 'I can see deeper into the store now' and that colors appear brighter and products look clearer."

Service Merchandise

Service Merchandise is using a two-phase approach for implementing Green Lights. The first phase is upgrading. Service Merchandise has contracted with Sylvania Lighting Services (SLS), a Lighting Management Company Ally, to upgrade approximately 50 stores a year. SLS is removing all T12s and incandescent lamps and replacing them with T8s and compact fluorescents.

The second phase of Service Merchandise's Green Lights implementation is in new construction. Lighting Distributor Ally E. Sam Jones, is working to provide all T8s, electronic ballasts, and PAR halogen lamps for highlighting the jewelry display cases. Two- and four-lamp T8 combinations in a variety of fixtures highlight all of the products that Service Merchandise has to offer. More than 60 stores have already been built with them.

Service Merchandise store in Miami, Florida.

"The Green Lights upgrades have received an A+ from all of our employees, ranging from people in the warehouses to people on the sales floor," said Terry Mayo, assistant vice president for maintenance and facility services at Service Merchandise. "Due to the improved light levels and color rendering of the T8 lamps, the appearance of the store has improved 100 percent."

JCPenney

Lighting may not be the most tangible part of retailing but it is one of the largest components of general expense next to labor or salary costs and it can have a positive effect on sales. "Retail is a very competitive business and typically retailers would rather spend money on new merchandising fixtures than new light fixtures," said Alan Rose, energy programs manager for JC Penney. "Lighting is an integral part of merchandising presentation and I suspect not all retailers realize that fact."

JC Penney's general lighting upgrades have included changing HID metal halide lamps with magnetic ballasts to compact fluorescent T5 lamps. These upgrades to high-efficiency fixtures have significantly improved the color rendering index (CRI) in the stores. The higher the CRI, the more natural the light inside the store becomes. This translates into colors appearing more 'true to life' for consumers. JC Penney's upgrades have greatly improved illumination levels and also improved the CRI from 65 to 81 or 82 in its stores. Rose said that customer comments range from knowing 'something's different' to fewer complaints that merchandise colors look different outside of the store.

One area of JC Penney that has experienced a marked difference in lighting are the hair styling salons. According to Rose, both stylists and customers have noticed the improvements from the upgrades. Improved illumination is especially important for stylists when coloring hair because it allows them to perceive colors better.

Green Lights represents an excellent

money-saving opportunity for retailers, according to Rose. "Retail is ripe for Green Lights. Many retail facilities were built over 20 years ago, using a lot of inefficient lighting and, therefore, have the potential to save large amounts of energy." JC Penney is a prime example. Its stores in which the program has been implemented are saving JC Penney more than $4 million annually in energy costs and reducing electricity usage by 56,884,000 kWh per year.

SAFEWAY

When grocery shopping, there is nothing worse than a dark store where shelves are so poorly lit that it's hard to tell the difference between apples and oranges. That is why when Safeway upgrades one of its stores, the first consideration is always the presentation of the product. According to Corporate Maintenance and Utility Manager Randy McAdam, when Safeway decides to upgrade, it is tasked with improving or at the very least not reducing light levels in its stores. McAdam has found that by using newer triphosphate lamps, Safeway is able to get excellent light quality as well as energy-efficient lighting. To date, Safeway has upgraded 355 stores across the U.S., equaling about 12.5 million square feet. And customers and employees have noticed the upgrades, added McAdam. "Employees have commented on the color rendition and customers like the improved brightness."

According to McAdam, Green Lights is an ideal program for supermarkets looking to reduce energy costs and consumption. Supermarkets generally operate on a slim profit margin. Next to the cost of food sold and the cost of labor, energy is their largest expense. It is not unusual for grocery stores to report profits in the range of 1.5 to 2 cents on the dollar. With those types of margins it takes $50.00 in grocery sales to pay for one dollar of electricity. Green Lights upgrades will typically reduce electrical consumption in a store by about eight to 10 percent. McAdam said that programs such as Green Lights, which can show how to significantly reduce electricity expenses are very attractive to his company's senior management. "Green Lights upgrades can save us millions of dollars. That's an opportunity not to be missed."

JC Penney

THE HOME DEPOT

For new retailers, the advantage of building energy efficiently in the first place offers a headstart on their Green Lights commitment. The Home Depot, founded in 1978, is a shining example. All of its older stores have completed their upgrades and all new construction meets criteria for Green Lights. Another advantage that Home Depot has is a commitment by management to support Green Lights and energy efficiency. "Our President is very supportive of what we are doing and without that commitment you go nowhere," said Jim Laird, corporate engineering manager. "He is the biggest proponent of energy savings." Energy costs have a big effect on the bottom line, therefore, energy cost-saving efforts are important to consider. According to Laird, saving $1 in energy costs is equal to almost $20 in sales.

It is also important to Home Depot to publicize its efforts to its customers. A "We Care about the Environment" banner, highlighting the stores' involvement in Green Lights, recycling programs, and other environmentally conscious measures, is hung in the front of all 400 stores. To further inform the public about its commitment to energy efficiency, the store publishes the *Environmental Newsprint.* This newsletter focuses on the stores' efforts to sell environmentally sound products, recycle cardboard containers, and perform other important actions, including Green Lights.

As part of its energy-efficient lighting, most Home Depots utilize metal halide lights with acrylic refractor lenses for up lighting. The acrylic refractor lenses replaced metal refractor lenses, which had given the impression of a dimly lit ceiling. Good lighting that "opens up" the ceiling is important for a warehouse store like Home Depot because it wants to highlight the fact that merchandise is stocked from floor to ceiling and, therefore, selection and value are excellent. In addition, many stores take advantage of daylighting to increase footcandles when needed.

Welcome New Retail Participants

Dayton Hudson Corporation – Department Stores Division
Lands' End
Venture Stores

Green Lights Attends APPA Conference

EPA spreads energy-efficiency message to college and university facilities managers

Colleges and universities around the country learned how Green Lights and ENERGY STAR programs can save money and energy at the Association of Higher Education Facilities Officers (APPA) 1995 Education Conference and Annual Meeting in Philadelphia, Pennsylvania. APPA is an international association dedicated to advancing excellence in facilities management in higher education. Its members include more than 1,500 colleges and universities worldwide.

More than 600 top-level facilities professionals learned about the latest technology, government and regulatory policies, and solutions to facilities operation and maintenance issues. Participants learned how Green Lights and ENERGY STAR programs can help higher education facilities lower their expenditures and save energy on their campuses. Attendees spoke one-on-one with Green Lights representatives Doña Canales from the U.S. EPA and Mindee Denmark from EPA Region III. A roundtable session was also held for Green Lights Partners and prospective participants to learn more about the program and its benefits.

Making the Most of Your GL Participation

Workshop addresses marketing and communications needs of participants

How do you internally market your pollution prevention program? Use Green Lights to give your organization a competitive edge? Answers to these communications questions and others were given at the first "Maximizing Your Green Lights Participation" workshop held on July 11, at Honeywell, Inc. in Minneapolis, Minnesota. The workshop, the first in a national series, addresses the internal marketing and external communications needs of Green Lights participants.

Thirty participants from the Minneapolis/St.Paul area learned about the communications tools and services EPA has available to further Green Lights marketing needs from Green Lights and ENERGY STAR Communications Director Sol Salinas. Attendees also received practical guidance on ways to promote their Green Lights commitment and strategized with their colleagues to identify additional communications efforts.

The Green Lights communications team will be working with participants in Minnesota and Wisconsin to implement the communications projects and activities outlined at the workshop, including the placement of articles and public service advertisements.

The next "Maximizing Your Green Lights Participation" workshop is tentatively scheduled for November in Los Angeles. For information about future workshops and how EPA can help you promote your pollution prevention efforts, contact the Green Lights/ENERGY STAR Hotline at 202 775-6650.

FOCUS

A Whopper of an Event

Miami Ceremony recognizes Burger King and other new and established participants

It was the hottest thing to hit Miami since "Miami Vice," as new and established Green Lights participants were honored for their pollution prevention efforts at the University of Miami on July 21st. Participants in the Summer Recognition Ceremony were recognized for their Green Lights accomplishments and were later given a tour of the University's newly upgraded space. The 20 new Partners' total facility space equals 75 million square feet and a potential $14 million in savings.

In his address to the attendees, EPA Regional Administrator John Hankinson congratulated both new and existing Green Lights Partners for their commitment to help clean up the environment. "Green Lights proves that environmental stewardship can also yield significant cost savings through reduced expenditures," said Hankinson. Other speakers included Nichole Hefty, manager, Pollution Prevention Programs, Dade County Department of Environmental Resources Management and Vic Atherton, assistant vice president of the University of Miami.

Awards were also presented to 15 established Green Lights Partners and Allies for their excellence and commitment to the program. Many of the companies had completed all upgrades and others were well on their way to achieving all of their Green Lights goals. Certificates of merit were presented to: One Enterprise Center, Cape Canaveral Marine Services, Inc., Johnson Controls World Services, Inc., Okeechobee School Board, MorLite, Energy Planning Associates, First International Asset Management, Broward County, University of Miami, Dade County, Bell South Telecommunications, Southern Company Services, Inc., W.R. Grace & Company, LTI International, Inc., and North Shore Medical Center.

(l-r) EPA Regional Administrator John Hankinson thanks Jim Durante of the University of Miami for hosting the 1995 Green Lights Summer Recognition Ceremony.

Plans are being made for other signing and recognition ceremonies to take place around the country. Keep reading the *Update* for additional information. Green Lights wishes to thank the University of Miami and all participants involved for taking time out to focus on energy efficiency and improved bottom line, and good government.

"Organizations like Columbia/HCA Healthcare Corporation and Burger King, through their voluntary enrollment in Green Lights, demonstrate that business and the environment do not have to be miles apart."

–John Hoffman, Director of EPA's Atmospheric Pollution Prevention Division

Congratulations to the following new participants who were recognized at the Miami Ceremony:

- ABB Power T & D Co., Inc.
- ACME Electric Corporation (Transformer Division)
- Burger King Corporation
- Coahoma Community College
- Columbia/HCA Healthcare Corporation
- Cookson Fibers
- E. Sam Jones Distributor, Inc.
- East Carolina University
- Florida Army National Guard
- Florida International University
- Georgia Army National Guard
- Great Smoky Mountains National Park
- Henry General Hospital
- Mississippi Army National Guard
- Pattie A. Clay Hospital
- Southeast Energy Technical Group
- Southern Appalachian Mountain Initiative
- Systems Solutions of Georgia, Inc.
- Tennessee Army National Guard
- The West Company

A Lighting Upgrade Must

Parabolic luminaires provide energy-efficient, uniform illumination

In commercially lit space the fluorescent luminaire is generally accepted as the most efficient form of illumination. Although there are many different types of fluorescent luminaires, the parabolic luminaire is considered the most efficient. One common problem in commercial offices is the frequent use of video display terminals (VDT's) and glare caused by fluorescent luminaires. Most luminaires have little glare control, allowing the light to escape at high angles. This light is often reflected in the VDT's, making it difficult to see the screen. The parabolic reflector poses an advantage here as well. Light that is reflected downward has almost no chance to reflect in the VDT screen and, thus, glare is significantly reduced.

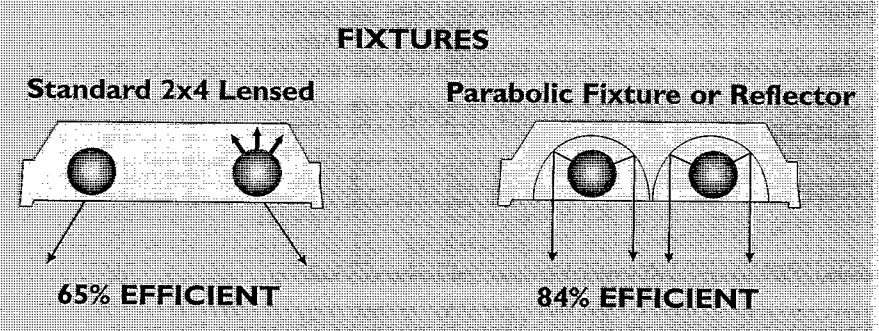
A parabolic luminaire is named for the shape of the reflector around the lamp which is in the form of a parabola. Light leaving a parabolic luminaire is focused down towards the task with little horizontal component. Parabolic luminaires have excellent glare control because light that would exit at higher directions has been captured and directed downward. Consequently, as walls receive less light, the task receives more light. The improvement in light output reaching the task is as much as 20 percent. Therefore, a three-lamp parabolic will suffice at 75 percent of the energy where one might have used a four-lamp flat lensed luminaire for nearly

Compare the performance of a four-light lensed luminaire in a wide open space to the same space when luminaires are replaced with two-light parabolics using T8 lamps and electronic ballasts. To maximize efficiency we will employ a specular finish to the luminaire with high light output T8 lamps and four-lamp standard power electronic ballasts tandem-wired (two fixtures per ballast) in a space with an RCR of one. We will also assume that the area is presently overlit (75 foot candles) and are seeking a light level closer to 40-50 foot candles.

Data provided by a fixture manufacturer show a CU for the four-light lensed luminaire to be .70 and the CU for a two-light specular parabolic to be .86.

As the table shows, the parabolic luminaire system provides the target light level while saving 70 percent in energy use. The efficiency gain of the parabolic luminaire system is about double the system efficiency of the standard luminaire. This means that a facility lit with parabolic luminaires, T8 lamps, and electronic ballasts can be lit for half the watts per square foot than used in conventional lighting designs.

	Standard Luminaire T12/Std Ballast	Standard Luminaire Upgraded T8/Elec Ballast	Parabolic Luminaire T8/Elec Ballast
Lamp/Ballast Lumens	11590	10980	5490
Lumen Directed/Task	8113	7840	4721
Light Level at Task	75 FC	72 FC	44 FC
System Watts	174	110	53
Watts/FootCandles	2.45	1.53	1.25
% Energy Savings	N/A	37%	70%



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 Name:

Facility address:

City/St./ZipCode

Facility type*

New Construction? Yes No

Facility Manager:

Telephone No./FAX No.

Total Floorspace for this Facility: sq.ft.

Floorspace included in this report: sq.ft.

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

92009

6200 (11/28/94)

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.

the same light level.

Consider this experiment. Shine a flashlight into a door mounted mirror that is partially opened in an otherwise dark room. The light, which normally travels in a straight line, is reflected by the mirror to a particular point outside of the room. As the door is moved inward the ray of light comes closer to its source (the flashlight). As the door is opened the ray of light begins to approach a straight line. If you had multiple mirrors on the door at increasingly open angles, the light would be reflected in multiple directions covering a wide swath outside the room. If, instead of multiple mirrors, the mirror were curved in a seamless line, the light reflection would be wide, smooth and uniform.

This is what happens in a luminaire. In order to see the work on our desks adequately, our offices must have light reflected out of a housing (lighting fixture or luminaire) containing lamps that can illuminate our desks uniformly. This is one of the primary functions of a luminaire. The other function of a luminaire is to capture as much light as possible to minimize the energy required to deliver an appropriate light level.

To increase the efficiency of a luminaire, evaluate all rays leaving the light source and ensure that each path taken delivers that ray to the task. For example, in a typical 2x4 lay-in fluorescent luminaire, there are as many as four one and a half inch diameter (T12) lamps. Light generated by the lamps gets trapped behind them and never exits the luminaire. One way to minimize this is to reduce the number of lamps in the luminaire; this means that more light gets out per lamp. Think of this process as maximizing the surface area of the reflector with respect to each individual lamp. A 2x4 four-lamp luminaire has less surface area of reflectance per lamp than a 2x4 two-lamp luminaire.

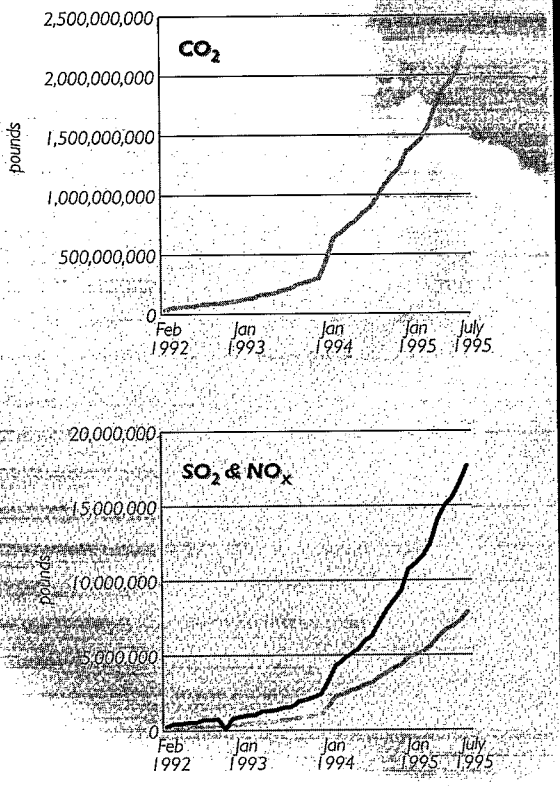
A second way to improve the efficiency is to change the curve of the reflector to deliver as much of the light as possible to the task and less to non-critical areas. As in the mirror example, by changing the shape of the curve we can change the direction and spread of the light. The perfect solution would have every ray of light traveling directly towards the task. To do this, a curve representing the shape of a parabola must be employed. The interesting point about the parabolic curve is that it has a focal point at which lines drawn from the point and reflected at the curve, are all reflected in a parallel direction.

Improvements in efficiency in parabolics begin first by limiting the number of lamps. A two-lamp parabolic is up to four percent more efficient than a three-lamp one for the same space and light level. Also, deepening the chambers and using a specular surface (like a mirror) will also increase the level of light delivered to the task. Maximizing the energy savings can then be accomplished by employing highly efficient T8 lamps and electronic ballasts in the luminaires.

The fixture industry uses two measures to demonstrate the efficiency of a luminaire. Fixture efficiency is a calculation that shows the percentage of luminaire light output against the rated light output of the lamps and ballasts. Unfortunately, fixture efficiency does not tell where the lumens of light are directed. A second term, called the coefficient of utilization (CU), projects the percentage of light that is actually directed to the lighting task. Because getting proper illumination on the task is not just a function of the luminaire but also is effected by reflection of light off the ceilings and walls, the CU is dependent on room dimensions. These room dimensions are boiled down to a ratio called the room cavity ratio (RCR). Fixture manufacturers provide tables for each luminaire that show the CU at different RCR's. Wide-open spaces have longer room dimensions, which correlate to lower RCR's and fewer light reflections off the walls affecting the illumination levels. Consequently, wide open spaces with lower RCR's will show higher CU values for luminaires.

Under the Green Lights MOU commitment, participants agree to maximize energy savings. When fluorescent lighting is in use or proposed for commercial installations, be sure to consider parabolic luminaires.

IMPLEMENTATION SNAPSHOT: CO_2, SO_2 and NO_x Prevented by Green Lights Upgrades



TIP OF THE MONTH

Scaring Away Old Lamps

The next stage of the Energy Policy Act of 1992

As of this Halloween, some commonly used incandescent and fluorescent lamps will become ghosts as the next stage of the National Energy Policy Act of 1992 (EPAct) takes effect. On October 31, 1995, some widely used incandescent R and PAR lamps, as well as a few types of inefficient four-foot fluorescent lamps will no longer be manufactured or imported into the United States. Although the lamps will no longer be available, retailers will be allowed to sell-off their existing stock of non-compliant lamps after October 31st.

EPAct sets minimum energy efficiency standards for electric motors, heating and cooling systems, vehicles, power transmissions, gas pipelines, and lighting. To comply with EPAct, lamps must meet minimum efficacy (lumens per watt) and color rendering requirements. Non-general service lamps are exempt from EPAct, such as traffic signal, decorative, impact-resistant, reprographic, and plant-growth lamps.

On April 30, 1994, EPAct outlawed the manufacturing and importing of inefficient eight-foot fluorescent lamps. On October 31, 1995, several types of commonly used PAR and R incandescent lamps and general service four-foot and two-foot U-bent fluorescent lamps will no longer be manufactured or imported. The table on the left provides a quick reference of lamps that will soon become extinct and those that will remain.

EPAct sets only minimum standards for efficiency, but a Green Lights approach will maximize energy savings. For example, an EPAct-compliant substitute for the 40-watt cool white fluorescent lamp (F40T12) is an energy-saving 34-watt cool white lamp (F40T12/ES). In addition, an EPAct-compliant substitute for a 100-watt PAR38 incandescent lamp would be an 85-watt PAR38 lamp with a krypton gas fill. Although these substitutes save energy, they are not the most energy efficient. A Green Lights upgrade might use F32T8 fluorescent and compact fluorescent lamps and other energy efficient technologies. By using a Green Lights upgrade instead of a minimum Energy Policy Act upgrade, you can save almost 40 percent more electricity and increase the lamps' color rendering index. In addition to the substantial increase in energy savings, the Green Lights upgrade also improves lighting quality.

EPAct Standards

(as of October 31, 1995)

Incandescent Reflector Lamps

Wattage	Minimum LPW	Some Popular Lamps That Will Not Comply	Popular Compliant Lamps
40–50	10.5	75PAR38, 100PAR38	Halogen PAR lamps Halogen/Infrared PAR lamps
51–66	11.0	150PAR38, 75/65PAR38	Elliptical Reflector (ER) lamps
67–85	12.5	100/80PAR38, 150/120PAR38	Krypton-filled R-Lamps
86–115	14.0	75R30, 75R40	
116–155	14.5	100R40, 150R40	
156–20	15.0	200R40	

Fluorescent Lamps

Lamp	Wattage	Minimum CRI	Minimum LPW	Some Popular Lamps That Will Not Comply	Popular Compliant Lamps
F40	>35	69	75	F40CW	32-watt T8
	28–35	45	75	F40WW	40-watt T10
				F40WWX	40-watt T12*
				F40W	34-watt T12
F40U	>35	69	68	F40D	
	28–35	45	64		

*Triphosor lamps with CRI 69 will comply

IN THE SPOTLIGHT

Whistle While You Work

Increasing worker productivity with Green Lights

Reducing pollution and increasing energy savings are two of the most widely publicized benefits of participating in Green Lights. Yet the program offers many other advantages that make organizations more profitable. After upgrading their lighting, several Partners have noticed increases in worker productivity and morale as well as improved color rendering and clarity. For industries such as manufacturing, increased morale can translate into a stronger product and increased sales.

One of the most overlooked aspects of any company is office lighting. Outdated fixtures that produce improper and unbalanced lighting plague most offices. In a recent Harris Survey, 47 percent of respondents reported eye strain on the job. Eye strain limits a worker's ability to focus, an essential part of any job requiring skilled labor or attention to detail. Unfortunately, most office space comprises of overhead units, whose lighting is inconsistent at best. A good way to reduce eye strain is to incorporate task lamps, which give users better clarity while using less energy.

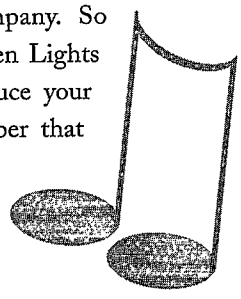
While upgrading a lighting system is the fastest way to save energy and reduce costs, it can also significantly improve visual comfort. Offices and warehouses that once had harsh, uneven or murky lighting are now crystal clear, with exceptional color rendition and clarity. "Green Lights promotes quality efficient lighting. This helps people see better, which reduces mistakes, increases quality, and boosts productivity," said Ron Strandlund, Green Lights Implementation Director for SUPERVALU Inc. Assembly workers who enjoy quality lighting can produce better products. Distractions are no longer a problem, since new lighting technology has eliminated age-old problems such as lights that hum or flicker. Possibly one of the greatest benefits of a lighting upgrade is customization—employees can now adjust lighting to their personal preference, not being held hostage by general office settings. Allowing workers to control their environment reduces stress and work-related injuries while enhancing morale.

Improving the working environment through Green Lights upgrades helps generate profits. Wellington Sears, a Valley, Alabama textile manufacturer, has upgraded approximately 30,000 square feet of one of its facilities. Harold Lauderdale, manager of the company's Langdale mill, points out, "not only do we obtain cost-savings in electricity bills, but our productivity has also improved."

Boeing, one of the country's largest aircraft manufacturers, has also reaped the many benefits of being a Green Lights Partner. According to Boeing's Green Lights Implementation Director Fay Weaver, the difference in clarity and color rendition made by lighting upgrades "is tremendous. It's like night and day." Allies have seen the Green Lights benefits as well. "There's really no downside. We've improved color, visual comfort and productivity, we've saved money, and we've helped prevent pollution," said Amy Cox, lighting consultant for International Energy Conservation Systems, Inc.

One of the best steps a Green Lights participant can take is to consult workers before implementation. Publicizing the program through informational workshops allows employees to fully understand the program and also opens the door for suggestions. "Employees have shunned the attitude of 'this isn't my house, this isn't my money'. Instead they have recognized that a corporate energy efficiency initiative deserves their support," said Daniel Stewart, principal engineer at Rhone-Poulenc, Inc., about educating co-workers about Green Lights. Many participants recommend designing two to four "test" lighting examples to help find the most effective layout. Flexibility to employee preference is important—after all, they are the ones who are directly affected by the changes.

Investing in energy-efficient lighting upgrades demonstrates management's concern for employee comfort and safety, which in turn generates stronger morale throughout the company. So while joining in Green Lights will significantly reduce your energy costs, remember that it can also help boost your organization to the top.



ALLY CORNER

Allies Helping Allies

Grainger and Illumetek work together to fulfill Green Lights commitment

A Grainger showroom.

Green Lights Allies Grainger and Illumetek, an equipment distributor and a lighting management company, share a corporate commitment to bettering our environment in ways that make good business sense. In 1993, Illumetek President Jim Pulk approached Al Tierney of Grainger's Real Estate Department for a unique partnership. Two years later, 60 upgrades are the result. "We're a good team because we work as partners; we meet and discuss things and bounce ideas off of one another," said Tierney.

Grainger, headquartered in Lincolnshire, Illinois, has successfully upgraded more than 200 showrooms and warehouses—71 percent of its four million square feet. By mid-1996, 50 additional Grainger locations are scheduled for completion, the environmental equivalent of removing 620 cars from the road.

Pulk approached Tierney with a proposal to survey Grainger's showrooms, warehouses, and office spaces and recommend special design features based on Grainger's lighting requirements. Pulk also proposed to schedule labor, conduct installation, provide data for Green Lights reporting, research and help file for rebates, and coordinate recycling and disposal of lamps.

"We provide services based on client need rather than on established practice, and at a cost-effective price," said Pulk. Since the Grainger-Illumetek alliance began, Illumetek has completed 23 showroom and office upgrades and 37 warehouse upgrades for Grainger.

To meet Grainger's showroom lighting needs, Illumetek installed T8 lamps, electronic ballasts, and deep-cell parabolic louvers. Track lighting was installed to accent displays and improve color rendering. After the upgrades, lighting quality improved and energy consumption fell from approximately 3.5 to 1.5 watts per square foot.

As part of a unique warehouse lighting plan developed by Grainger, Illumetek arranged fixtures in continuous diagonal rows across the ceiling to accommodate relocation of product racks and ensure even light distribution. The upgrade exceeded Grainger's warehouse target illuminance level and improved the color rendering index.

Because Grainger's upgrades have been so successful, the company is piloting a "Service Provider Program" to promote Green Lights and assist clients with lighting upgrades. The program teams the company's own sales force with a group of contractors—selected and qualified by Grainger—to provide complete lighting upgrade services.

Grainger remains "flexible and innovative, using specialized energy-efficient lighting products wherever feasible," said Frank Muir, Grainger's Green Lights communications director and energy program manager.

In Grainger's San Jose, California warehouse, Illumetek installed two photo cells to take advantage of sunlight from 54 skylights. The use of natural lighting decreased electricity use in the facility by 70 percent by reducing the annual hours of lighting operation from 2,860 to 800.

Calling All Allies!

Green Lights has been recognizing the marketing and implementation work that its Allies have performed by highlighting you in case studies that are available through the Green Lights/ENERGY STAR Hotline. If your company has done an outstanding job of marketing the Green Lights program, or has completed upgrades for Green Lights Partners, please contact the Ally Hotline at 202 293-4527. If your company qualifies, we would love to showcase your company's efforts in a Green Lights Ally case study.

NEW PROGRAMS & PRODUCTS

Voluntary Reporting of Greenhouse Gases

A new way to gain recognition for environmental leadership

In addition to Green Lights, many other voluntary programs exist to help protect the environment. The Energy Information Administration of the U.S. Department of Energy (DOE) has begun a program for organizations to report the emissions of greenhouse gases such as carbon dioxide, methane, nitrous oxide, and halogenated substances. Increasing levels of these gases in the atmosphere may contribute to an increase in global temperatures.

Why Report DOE?

This program gives you the opportunity to record your emission reduction or carbon sequestration achievements. Your participation will demonstrate your support for achieving environmental policy goals through voluntary efforts. The information contained on the report forms will contribute to an informed public debate on the reduction of greenhouse gas emissions.

Who Can Report to DOE?

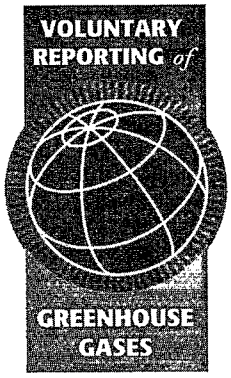
You can report if you are an individual or organization that initiates, controls, or participates in an activity that reduces emissions of greenhouse gases.

Are There Minimum Reporting Requirements?

The program allows considerable flexibility in defining the activities you report and estimating the effects of those activities on greenhouse gas emissions and sequestration. The report form is designed to minimize reporting burden while meeting the minimum information requirements.

How Do You Report Your Emissions to DOE?

Two forms are available for reporting your greenhouse gas emissions. Form EIA-1605EZ is provided as an alternative to the long form EIA-1605. The short form provides for a brief summary of your greenhouse gas reduction projects while the long form lets you create an in-depth public record of your emissions efforts. Choose the form that best meets your reporting needs.



If you have questions about reporting or would like additional information, please contact the Energy Information Administration at 1 800-803-5182 or e-mail at infoghg@eia.doe.gov. Or you can access information via the Internet at http:\\www.eia.doe.gov, under Greenhouse Gas Emissions Report.

A New Stop on the Information Superhighway

FacilitiesNet℠ puts lighting and other facilities information at your fingertips

Did you have a question about the newest electronic ballast on the market? Or want to know how another facility manager surveyed his building? FacilitiesNet℠ is a new on-line service that provides facilities professionals immediate access to this information and more. Launched in September at World Workplace '95, FacilitiesNet℠ was created for professionals who design, construct, manage, and maintain buildings by the publisher of *Building Operating Management* and *Maintenance Solutions*. FacilitiesNet℠ provides comprehensive facilities information including in-depth reports about lighting, roofing and building automation technologies. The service also provides the latest information about new products and trade shows. Management and technology electronic bulletin boards are available for users to post questions. Search for a job or post job openings in your profession using the career opportunities bulletin board. In addition, current and past issues of *Building Operating Management* and *Maintenance Solutions* are available on-line.

If you're already connected to the Internet, no special software is required to access FacilitiesNet℠. For more information about subscribing to FacilitiesNet℠, please call 1 800-727-7995. Interested users can test drive the service at http:\\www.facilitiesnet.com.

NEW PARTICIPANTS

Green Lights Welcomes New Participants

Twenty-eight (28) new participants joined Green Lights in July to benefit from energy-efficient lighting upgrades.

Green Lights welcomes its new participants and looks forward to working with them.

PARTNERS (23) *Amway Corporation* ■ *Auten Technical Services* ■ *Auto Collision, Inc.* ■ *Bon Wit Plaza - Unit Owner's Association* ■ *Centerplex, Seattle* ■ *Columbia/HCA Healthcare Corp.* ■ *Deaconess Hospital/Cincinnati, OH* ■ *East Carolina University* ■ *Energy Capital Partners/MA* ■ *Lands' End, Inc.* ■ *Murray City Schools District* ■ *New York State Office of Mental Health* ■ *PPG Industries, Inc. - General Office* ■ *Portland Public Schools* ■ *Quebecor Printing Providence, Inc.* ■ *Rising Sun Energy Center* ■ *Roger Associates Architects* ■ *San Diego Model Railroad Museum* ■ *Springfield School District* ■ *State of Wisconsin* ■ *State University of New York System* ■ *Uintah Basin Medical Center* ■ *University of Minnesota - Twin Cities* ■ **ALLIES (5)** ■ *Integrated Building Solutions, Inc.* ■ *Matsushita Home and Commercial Products Company* ■ *Northstar Diversified Technologies* ■ *Shane Industries* ■ *Tri-State Light & Energy, Inc.*

A Bright Idea for Energy Project Financing

New participant Energy Capital Partners lends money for energy efficiency projects

Commercial companies, hospitals, universities, and the federal government now have a new source of capital for energy conservation projects. Boston-based Energy Capital Partners, a new Green Lights participant, is a financial institution dedicated to funding energy-saving projects that save money and valuable environmental resources.

Matthew Heller, senior vice president of Energy Capital Partners, said that the firm was formed "to offer a way to save energy without any up-front investment. Funds dedicated to financing energy conservation are scarce, and many companies and institutions cannot afford to set aside valuable capital for energy conservation measures, regardless of how cost-effective these measures may be."

Through Energy Capital Partners' shared savings lending program, a client pays no money up front but instead shares a percentage of the actual energy dollars saved with the contractor after the project is completed. The program works like this: a company receives an energy audit from a lighting or mechanical contractor. The contractor contacts Energy Capital Partners who finances the construction and completion of the project. When the work is completed, the building owner/manager pays the contractor a percentage of the energy dollars saved annually. The contractor then repays the loan to Energy Capital Partners out of its share of those energy savings.

Fred Wainwright, vice president of marketing, said that his company is looking forward to working with other Green Lights Partners. "We are very comfortable working with Green Lights Partners because we know they have the right commitments and that makes funding their projects much easier."

For more information about Energy Capital Partners' lending program, please call Fred Wainwright at 617 330-7600.

Joining Green Lights was a natural step for Energy Capital Partners, said Wainwright. "It wouldn't make sense for us to be financing energy conservation projects without taking care of our own energy usage."

COMPLETED UPGRADES

July Upgrades

Congratulations to following participants who submitted implementation report forms during the month of July.

JA-M Electric Company, Inc., *Edward S. Saag*
ALCOA, *Steve Schmidt*
Abbott Laboratories, *Al Musur*
Alabama Power Company, *Joe Meadow*
Alta Bates Medical Center, *James B. Reiger*
Arlington Hospital, *James B. Cole*
Arlington Public Schools, *Jo Ann Daly*
Barney Roth Co., *Fod Vick*
Bechtel, *Geoffrey Smith*
BellSouth Telecommunications, *Harold Drain*
Braid Electric Company, *Robert W. Schmitt*
CTEC Corporation, *Walter D. Roberts*
Camping World, *Tom Walker*
Carolina Freight Carriers Corporation, *W.T. Brogdon*
Cibola County Schools, *Michael Cusack*
City of Ada, Oklahoma, *Marilyn Ellis*
Cleveland State University, *Constantin Draganoiu*
ComPonX, Inc., *David Fitzgerald*
Commonwealth Electric Company, *Joseph M. Sollecito*
Consolidated Edison of New York, Inc., *John Mitchell*
Craig Hospital, *Lee Means*
Cumberland County Schools, *Kathy Miller*
Duracell, *Irwin Tronchin*
First Hawaiian Inc., *Ralph Mench*
Fisk University, *Jerry M. Shelton*
Grainger, *Arshad Ali*
Gulf Power Company, *Ron Nall*
Halliburton Company, *D. Bradford Moore*
Home Savings of America, *Larry Ridley*
Howard Industries Inc., *Mike Dodds*
Huntsville City Schools, *Don Sadler*
IN-N-OUT Burger, A California Corporation, *Dan Milojevich*
INOVA Health Systems, *Nettie Garcia*
Illuminating Technologies, *Robert Hunt*
JH Larson Electrical Company, *Edward Chesen*
Johnson Controls World Services, Inc., *Judy Mallette*
Kansas City Power & Light, *Larry Dolzi*
Kennametal Inc., *William L. Gregory*
Kirby Risk Supply Company, *Lisa Jo Layton*
Louisville & Jefferson Metro Sewer District, *James J. Hunt*
McDonald's Corporation, *Joe Megacz*
McNeil Real Estate Management, *Zack Maggart*
Metropolitan Water Rec Dist/Gr Chicago, *Lionel Gomberg*
Monsanto Company, *Thomas Schaefer*
MyTech Corporation, *Melinda Overstreet*
New Mexico Energy Consultants, *Wayne K. Bond*
Northern VA Regional Park Authority, *Julie A. Kutruff*
OSRAM Sylvania, Inc., *Paula Ziegenbein*
One Town Center Associates, *Don Sutton*
Orange Coast Electric Supply, *Rick Brown*
Outrigger Hotels Hawaii, *Steve Timpson*
Pathmark Stores, Inc., *Richard DeToro*
Pomona Valley Hospital Medical Center, *Bill Sergent*
Rockwell International Corporation, *Kieran Bergin*
Savannah Electric Power, *Karen Prentice*
Service Merchandise Company, Inc., *Terry Mayo*
Shealy Electrical Wholesalers, Inc., *Travis Sutton*
St. Joseph's Hospital, *Harold L. Walters*
St. Joseph's Medical Center (CA), *Jerry Cotten*
St. Luke's Regional Medical Center (ID), *Bill Morgan*
St. Michael Hospital (WI), *James F. Dimino*
State Farm Mutual Automobile Insurance Co., *Joseph Miskulin*
Subway Sandwiches and Salads, Inc., *Steve Kaplan*
Swedish Covenant Hospital, *Saliba Kokaly*
Tennessee Valley Authority (TVA), *R. Craig Smith*
The City of San Jose, California, *Nayeem Sheikh*
The Melville Corporation, *Carl Nottberg*
The National Security Agency, *John McKay*
The State of Maine, *Ron Dyer*
The Toledo Hospital, *Ray Vining*
Toshiba America, *Doug Bagrowski*
Trojan, Inc., *Dennis Duzyk*
UNISYS Corporation, *Oscar D. Smith*
US West, Inc., *Kent Hardcastle*
USX/Marathon Oil, *B.L. Troup*
Union Camp Corporation, *Ray Scholten*
University of California, Berkeley, *Jeffrey Kessel*
Ventura County, California, *David Inger*
Vought Aircraft Company, *Martin H. Davis*
Wachovia Corporation, *Robert Cashner*
Whirlpool, *Michael Bacon*
Witco Corporation, *George Gerritsen*
Yellow Freight Systems, Inc., *Richard Cooper*

A Winning Combination

Green Lights helps the Golden Arches complete upgrades in four company-owned restaurants

For a quick service restaurant that serves extra value meals, McDonald's has found Green Lights to be a good investment and the best approach to reducing energy costs and preventing pollution. "Green Lights fits nicely with our environmental policy and enhances our leadership position on environmental issues," explained Joe Megacz, McDonald's Green Lights Implementation Director.

McDonald's teamed up with Green Lights Ally Continental Lighting Services for its upgrades. To ensure their success, McDonald's and Continental Lighting spent 18 months testing products and light levels. After the testing and the initial surveys, Continental began upgrading primarily interior lighting.

"Part of our commitment to the partnership with McDonald's is to make the implementation process as simple as possible. We want to make sure that the quality is second to none," said Continental Lighting CEO Robert Waldrip. Part of this service is arranging electric utility rebates for the project and coordinating disposal of the lighting. Continental Lighting also developed a tracking system which helps McDonald's keep tabs on how far each region has progressed with the program.

Each McDonald's store saves almost $300 per month as a result of its lighting upgrade. The four Ohio restaurants combined are saving McDonald's a yearly average of over $12,000 in utility expenses. Lighting upgrades in 124 McDonald's stores are saving the company more than $430,000 per year. The air pollution reduction is equivalent to the removal of 903 cars from U.S. highways or planting 1,850 acres of trees in U.S. forests.

Workshops

Lighting Upgrade Workshops are currently being planned for the following locations. Please note that this schedule is tentative, and workshops/locations are subject to change or cancellation. To find out the latest information about confirmed workshops and/or to pre-register, please call the Green Lights/ENERGY STAR Hotline at 202 775-6650.

Fall 1995

- **Chicago, IL**
- **Albany, NY**
- **Cleveland, OH**
- **Trenton, NJ**
- **Austin, TX**
- **Los Angeles, CA**

Online

Information about the Green Lights & ENERGY STAR programs is now available on the Internet's World Wide Web via the EPA's 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.

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. Our Internet addresses (all are case sensitive) are:

EPA home: http://www.epa.gov

APPD home: http://www.epa.gov/docs/GCDOAR/OAR-APPD.html

ES Programs: http://www.epa.gov/docs/GCDOAR/EnergyStar.html

ES Buildings: .../GCDOAR/esb-home.html

ES Office Equipment: .../GCDOAR/esc-home.html

Green Lights: .../GCDOAR/GreenLights.html

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

EPA

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

Official Business
Penalty for Private Use
$300

BULK RATE
Postage and Fees Paid
EPA
G-35