



# Green Lights Update



3 DAYS ONLY  
earth  
day  
'95



EPA Helps  
Participants  
Plant the  
Seeds for  
Earth Day '95

*Look inside to learn*

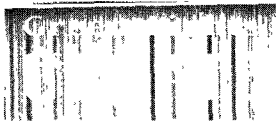
*how participants*

*celebrated the twenty-fifth*

*anniversary of Earth Day by*

*spreading the word about energy-*

*efficiency and pollution prevention.*



## Northeast Participants Pilot 10% Plan

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The *Green Lights Update* is a free monthly publication with a circulation of over 35,000.

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/or 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 Update*, please fax material to Moira DeRosa at 202 233-9569 or send materials to: Update Editor, EPA Green Lights (6202J), 401 M Street, SW, Washington, DC 20460.

To recognize the efforts of Green Lights participants in New England, New York, and New Jersey, Green Lights created the 10% plan. The plan, which was based around the twenty-fifth anniversary of Earth Day, rewards participants with public recognition for lighting projects reported to EPA during the first few months of 1995.


Participants in these regions were asked to submit Green Lights implementation reports representing new upgrades in 10% of their square footage between February 15 and April 3, 1995. To help participants achieve this goal, Green Lights personnel worked closely with participants to help them resolve any technical or reporting questions that were preventing successful completion of an upgrade or an implementation report. This assistance included provided telephone and intensive on-site assistance to help participants overcome barriers and questions. In addition, Partner networks were organized and held in Boston (March 3) and New York City (March 20) to provide a forum where Partners could meet to discuss common barriers and solutions and to share ideas on how to meet the 10% goal.

The qualifying participants received information and materials from EPA

designed to highlight their achievement and assist them in communicating their success during the twenty-fifth anniversary of Earth Day. Participants received:

- A certificate of accomplishment from the EPA;
- An Earth Day press kit complete with customized press lists to help participants place an article about their environmental accomplishment in a local and/or regional paper;
- A top ten list of actions to do for Earth Day (i.e.: plant a tree to absorb the carbon dioxide generated by power plants; encourage your office to hold a conference or show films about renewable resources and energy efficiency); and
- A sample Earth Day editorial which could be placed in a regional paper or magazine explaining the organization's environmental achievement.

Look for a list of successful 10% Plan participants and their Earth Day activities in future issues of the *Update*.

In an ongoing effort to recognize and publicize the continued growth and success of its participants, EPA looks forward to developing and implementing similar initiatives nationwide. 

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*"The 10% Plan is a pilot project in the Northeast intended to accelerate Green Lights upgrades and reward participants with public recognition for their achievements."*

— Jackie Krieger, Green Lights Implementation Team Leader



## Participants Spread the Word About Green Lights

Since its inception in 1970, Earth Day has grown from a simple environmental wake-up call to a week-long celebration reaching over 200 million people in 140 countries. Earth Day now symbolizes ongoing environmental education, action and change. This year on April 22, the nation celebrated the 25th Anniversary of Earth Day. The focus of the Anniversary was energy efficiency, both the successes of sustainable energy practices and the continuing challenge to reduce pollution.

To facilitate participation in Earth Day, EPA sent all Green Lights participants suggestions for ways to demonstrate their organization's commitment to environmental awareness and energy efficiency. Ideas included:

- Participating in local Earth Day celebrations;
- Setting up demonstrations of new lighting technologies at a company open house;
- Writing an article about involvement in Green Lights for publication in a local press outlet or an internal newsletter; and
- Participating in a school Earth Day program to educate children about air pollution and energy conservation.

Learn About Lighting  
With Flossie




EPA prepared the following products to help participants publicize their involvement in Green Lights during Earth Day activities:

*Learn About Lighting With Flossie* – coloring/activity book about lighting geared towards K-3 grade students.

*Earth Day 25th Anniversary, Green Lights Poster* – an attractive display poster.

*Green Lights Brochure* – a brochure that explains the impact lighting has on the Earth and how organizations that belong to Green Lights are helping to reduce air pollution.

Look in future issues of the *Update* to learn how Green Lights Partners participated in Earth Day 1995. 

## Earth Day Challenge: Racing to Prevent Pollution

By joining Green Lights, participants have already demonstrated their commitment to a healthier planet. To recognize the hard work and dedication of participants, and to inspire them to increase implementation of energy efficient lighting, EPA created the Earth Day Energy Challenge.

Open to all Green Lights participants in the cities of (and surrounding regions) Boston, New York, Denver, Atlanta, Washington, D.C., Chicago, Dallas, and Los Angeles, the Earth Day Energy Challenge encourages participants to increase pollution prevention efforts


between Earth Day 1995 and Earth Day 1996 (April 22, 1995–April 22, 1996). Interested participants agreed to put forth their best efforts in preventing pollution through energy-efficient lighting upgrades by signing up by April 20th.

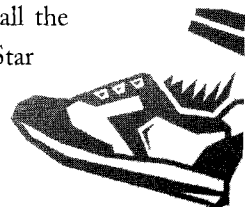
And, the winner is... the region that prevents the most pollution through implementing and reporting efficient lighting upgrades. Participating organizations in the winning region will be eligible to receive:

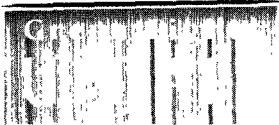
- The Earth Day Energy Challenge Recognition of Achievement;
- The opportunity to be the focus a

nationally recognized public service advertising campaign;

- Recognition in a feature story in the *Green Lights Update*; and
- Much, much more!

Watch future issues of the *Update* to learn which Green Lights participants are working to become part of the most energy efficient region in the United States. For more information, call the Green Lights/Energy Star hotline at 202 775 6680. 



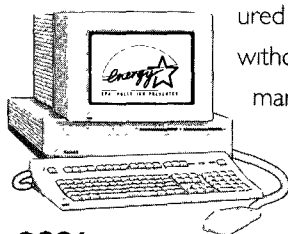


## The Energy Star Purchasing Policy

*Going to "sleep" saves big bucks for buyers*

### How Much Can You Save?

Energy Star equipment should cost no more than a comparably configured system

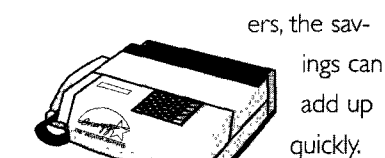


without power management. A single Energy Star computer and monitor can save approximately \$30 per year in electricity bills, and Energy Star printers save about

**\$30/year**

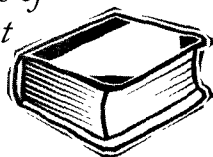
**\$35/year**

Even a stand-alone fax machine saves \$15 per year. Whether you are a home user or a business with hundreds of computers, the savings can add up quickly.



**\$15/year**

*Articles of  
Interest*



The Energy Star Computers Program has grown to include over 450 manufacturers who currently produce more than 2000 compliant models. Energy Star equipment includes energy-efficient computers, monitors, printers and fax machines that come equipped with an energy saving feature which allows them to power down and go to "sleep" when not in use. The Energy Star<sup>SM</sup> logo identifies these products which can be readily found anywhere you buy computer equipment. So who is buying Energy Star?

The entire U.S. federal government — the largest computer buyer in the world — has committed to purchasing only Energy Star computer equipment. And many other organizations, from large private corporations to state and local governments, have also made that same choice by signing the Energy Star Purchasing Policy. These organizations include: the State of Ohio, the State of California, Carrier, and Warner-Lambert. Throughout the year, EPA will continue to encourage organizations to join the list of Energy Star buyers.

The Energy Star Purchasing Policy is a one-page document that outlines an organization's commitment to purchase Energy Star equipment. By signing the Purchasing Policy, organizations make a

top-down commitment to revise their purchasing or procurement specifications to specify that all new purchases of computer equipment meet the Energy Star guidelines, as long as performance needs are met and no significant cost differences exist. The Purchasing Policy requests that organizations encourage their employees to turn off their machines at the end of each day and educate them on the economic and environmental benefits of using Energy Star equipment. Organizations may sign EPA's suggested policy statement or create a customized version (just send EPA a copy upon completion).

If you would like to obtain a copy of the Purchasing Policy, please call the Energy Star hotline at 202 775-6650 and we will send one (or more) to you. Alternatively, you can request the packet called "Purchasing Energy Star Computers" from the Fax-back Line (202 233-9659) which contains the Buyer's Guide and the Purchasing Policy Statement. (You can request multiple copies of the four-page Buyer's Guide by calling the hotline.) Signed copies of the Purchasing Policy should be sent to EPA who will then keep track of these commitments and highlight them in occasional press announcements. ■

"Chico Schools' Energy Management Automation Eliminates 1.04 MmkWh Annually", *Energy User News*, January 1995, page 4.

"Director of Engineering for Three Hospitals Uses Team Approach to Sell Energy Projects", *Energy User News*, January 1995, page 36.



# GL: First Step to Total Building Efficiency



## Stage 1: Green Lights

To help Green Lights participants follow EPA's Energy Star Showcase Buildings initiative (launched June 16, 1994), the Update is documenting the results of Showcase Buildings participants as they implement each stage of the program. This article, the third in a series, describes Stage 1: How Green Lights optimizes benefits from the Energy Star Buildings program.

In commercial buildings, lighting typically consumes up to 40 percent of the total energy used, and Green Lights upgrades can produce lighting loads by as much as 75 percent. However, lighting systems do more than just convert electricity to light. Lights generate heat, and inefficient systems generate more heat than energy-efficient ones.


Lighting systems therefore affect heating, ventilating, and air-conditioning (HVAC) systems, increasing the cooling necessary to keep a building comfortable. One kilowatt of lighting load produces almost one kilowatt of heat (3,413 BTUs) — so using fewer watts for lighting reduces electricity used and heat created. As shown below, Green Lights upgrades installed by Energy Star Showcase participant Mobil R&D are producing annual energy cost savings of \$42,000 and reducing the cooling load by 45 tons. This reduction in cooling load saved Mobil R&D \$18,000 when they bought new chillers. In addition, Mobil R&D is saving \$8,700 a year in cooling costs due to

Green Lights upgrades.

Green Lights upgrades allow Energy Star Buildings to take fuller advantage of HVAC upgrades, including:

- Installing variable speed drives (VSDs);
- Reducing fan motor sizes; and
- Downsizing chillers, while maintaining cooling comfort for peak loads.

Without the cooling load reductions from Green Lights upgrades, many HVAC upgrades are far less profitable or are ineffective. Even though installing the most energy-efficient lighting will increase initial lighting upgrade costs, the extra HVAC savings will often offset this increase. The annual energy cost savings shown below indicate the role Green Lights upgrades can play in Energy Star Buildings.

The June Update will take a closer look at Stage 2: Building Tune-Ups. To learn more about the Energy Star Buildings and showcase programs, call the Green Lights/Energy Star Hotline at 202 775-6650. 

## Implementing Stage 1

## Three Showcase Buildings

Participant	FANNIE MAE	Mobil R&D	Connecticut Mutual
Square Feet	250,000	340,000	484,000
Lighting Upgrade Costs	\$375,000	\$210,000	\$343,000
Annual Lighting Cost Savings	\$85,000	\$42,000	\$147,000
IRR	23%	20%	43%
Net Present Value (NPV)	\$261,000	\$107,000	\$755,000
Annual Lighting Energy Savings (kWh)	1.3 million	1.2 million	2.0 million
Electricity Load Reduction (kW)	221	112	223
Cooling Load Reduction (tons)	33	45	50
Potential Cost Reduction of Cooling System Upgrades**	\$20,000	\$18,000	\$26,000
Annual HVAC Cost Savings due to Lighting Upgrades (operation)	\$15,300	\$8,700	\$8,600

\*\*This cost reduction is a result of Green Lights upgrades.

# Quality & Efficient Fluorescent Lamps

*Delivering the best of both worlds*

*When it comes to fluorescent lighting, becoming more energy-efficient does not mean sacrificing quality. Use "T8" or "T10" lamps for maximum energy-efficiency and improved lighting quality — the best of both worlds.*



Fluorescent lamps are available in a variety of shapes and sizes. T8 and T10 lamps — so-named because of the diameter of the bulb — produce more light output per watt than conventional T12 lamps. And with the use of rare-earth triphosphor coatings, these lamps produce light that brings out the true color of your surroundings. T8 and T10 lamps can be used in a variety of settings to reduce energy use and prevent pollution.

## T8 Lamps

Many Green Lights participants have chosen to convert their T12 lighting systems to T8 systems. As of February 1995, participants have installed over 6 million T8 lamps. When making the

transition to the T8 system, keep the following factors in mind:

■ T8 lamps with electronic ballasts are designed to produce light levels that are comparable to conventional T12 lamps and magnetic ballasts, while consuming 30–40% less energy.

■ T8 lamps require compatible electronic ballasts to operate.

■ T8 lamps are generally available in two versions of color rendering: A thin triphosphor coat produces a color rendering index (CRI) in the 70s, and a thick triphosphor coat produces a CRI in the 80s (see definition of CRI on the next page). Standard "cool-white" lamps have a CRI of 62.

■ T8 lamps and electronic ballasts are available to serve nearly all full-size fluorescent applications with lamp lengths of 2', 3', 4', 5', and 8'. In addition, several U-shaped versions are available.

■ T8 lamps usually cost less than T12 lamps with the same color rendering index.

## T10 Lamps

T10 lamps offer improvements in efficacy and color rendering that are comparable to T8 lamps. However, significant operating differences exist:

■ T10 lamps produce over 20% more light than standard T12 lamps, while consuming approximately the same amount of energy.

■ T10 lamps may be used with T12 ballasts.

### REPRESENTATIVE PERFORMANCE VALUES

Assuming 3-lamp, rapid-start electronic ballasts (ballast factor = 0.88)

Lamp	CRI	Initial Lamp Lumens	Lamp Lumen Depreciation	Maintained System Lumens <sup>1</sup>	System Wattage	Maintained Lumens per Watt
32W-T8	75	2850	0.91	6862	90	76
	85	3050	0.93	7521	90	84
40W-T10	80	3700	0.89	8713	110	79
40W-T12	62 <sup>2</sup>	3050	0.87	6997	107	65
	73	3200	0.90	7603	107	71
	85	3300	0.90	7841	107	73
34W-T12	62	2650	0.87	6073	92	66
	73	2800	0.90	6653	92	72
	85	2900	0.90	6867	92	75

<sup>1</sup> Maintained System Lumens = 3 lamps/ballast x initial lumens x lamp lumen depreciation x ballast factor (0.88).

<sup>2</sup> 40-watt T12 lamps with a CRI less than 69 will no longer be manufactured or imported after 10/31/95. Cool-white lamps have a CRI of 62.

■ T10 lamps have a color rendering index of 80, compared with a CRI of 62 for "cool-white" lamps.

■ T10 lamps have a longer life — 24,000 hours.

■ T10 lamps are only available as 4-foot straight lamps.

■ Although these higher-output lamps cost more than conventional lamps, they are cost-effective for improving light levels or offsetting light-level reductions resulting from delamping.

## Conclusions

■ Use T8 or T10 lamps with electronic ballasts to improve the efficacy and color rendering performance of your fluorescent lighting systems.

■ When using T8 lamps, specify lamps with a CRI of 82–85 to yield maximum efficacy and improved color rendering. (Note, however, that special T8 lamps with a CRI over 90 will sacrifice efficiency to achieve such unusually high color rendering.)

■ The use of triphosphor coatings improves color rendering, boosts efficacy, and reduces lumen depreciation over the lamp's life, resulting in further increases in overall system performance.

■ As the table below shows, 40W-T10 lamps provide over 24% more light than standard 40W-T12 lamps while consuming only about 3% more energy; 32W-T8 lamps with a CRI of 85 produce over 7% more light than standard 40W-T12 lamps while consuming about 16% less energy.

■ When converting a 3-lamp fluorescent system consisting of standard 40W-T12 lamps and magnetic ballasts to a T8/electronic ballast system, expect energy savings of 30–40%.

More detailed information is provided in the *Lighting Upgrade Manual* and at the Lighting Upgrade Workshops (see the back page for a schedule of upcoming workshops). In addition, the *ProjectKalc* analytical software tool can now be used to evaluate the performance of any lighting system. ■

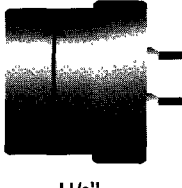
T-8 (8/8")



T-10 (10/8")



T-12 (12/8")



The names of these lamps are based on the diameter of their bulbs.

**T-8: Maintains light output, reduces energy**



**T-10: Increases light output, minimal energy increase**



**T-12: Conventional technology**



## Glossary

**Fluorescent Ballast:** A device used to provide the necessary starting voltage, while limiting and regulating fluorescent lamp current. Available as magnetic, electronic or hybrid; choose electronic or hybrid ballasts for high efficiency.

**Color Rendering Index (CRI):** A scale of a light source's effect on the color appearance of an object, compared to its color appearance under a reference light source. CRI is expressed on a scale of 1 to 100, where 100 indicates no color shift. Colors appearing under low-CRI light sources appear dull or unnatural. A CRI in the range of 75–100 is considered excellent.

**Color Temperature:** A measure of the "warmth" or "coolness" of a light source. Measured in Kelvins, a lamp is considered "warm" when it has a color temperature less than 3200K (emphasizing the red side of the spectrum); a lamp is considered cool when it has a color temperature greater than 4000K (emphasizing the blue side of the spectrum). Color temperature is an architectural choice that has little impact on color rendering or efficacy.

**Efficacy:** A measurement of the "efficiency" of a light source. This metric used to compare light output to energy consumption. Unlike "efficiency," light source efficacy is measured in dissimilar units — lumens per watt. (For example, another efficacy metric is "miles per gallon.")

**Initial Lamp Lumens:** The light output of a lamp after the first 100 hours of operation. During the first 100 hours, the light output of a lamp may drop by as much as 8%. Before measuring the initial light levels produced by your upgrade, let the lamps "burn-in" for 100 hours.

**Lamp Lumen Depreciation (LLD):** All lamps have the tendency to produce less light as they age. Lamp lumen depreciation curves for specific lamps are available from manufacturers. The lumen output at 40% of the lamp's rated life is indicative of the average light output to be expected over the lamps operating life.

**Maintained Lumens:** The output of a light source after accounting for lamp lumen depreciation. The light output of a lamp at 40% rated life represents its lifetime average. Initial lamp lumens multiplied by lamp lumen depreciation yields the maintained lumens. Also known as "design lumens."

**Triphosphor Coatings:** A blend of three kinds of rare-earth phosphors that provide outputs that highlight red, green, and blue — colors that blend together to produce white light. Also referred to as trichromatic, rare-earth, tri-stimulus, and prime-color. Older technology coatings — such as cool-white or warm-white standard-grade halophosphors — are less efficacious and generally yield lower CRI values than triphosphor coatings.

## Clean Air Cab Riders Enlightened

*Big opportunities for a small business*

Since January 1995, Washingtonians have been learning about Green Lights just by hailing a cab. Green Lights Partner **Clean Air Cab Company, Inc.** is spreading the word on the sides of its cabs and with a PSA inside that explains what Green Lights is all about.

According to David Moerderndorfer, Vice President of Sales and Marketing, the company was delighted when EPA offered the small business a big opportunity to promote Green Lights. With its fleet of 15 natural gas-powered cabs, Clean Air Cab supports using environmentally friendly technology. Moerderndorfer worked with EPA to develop a Green Lights logo decal that could be applied to the sides of their cabs. A PSA was developed that is placed in the back of the cabs where passengers can read about Clean Air Cab's participa-

tion in Green Lights and the benefits it gains from the program. A cab ride can now help you learn how to prevent pollution and save money.

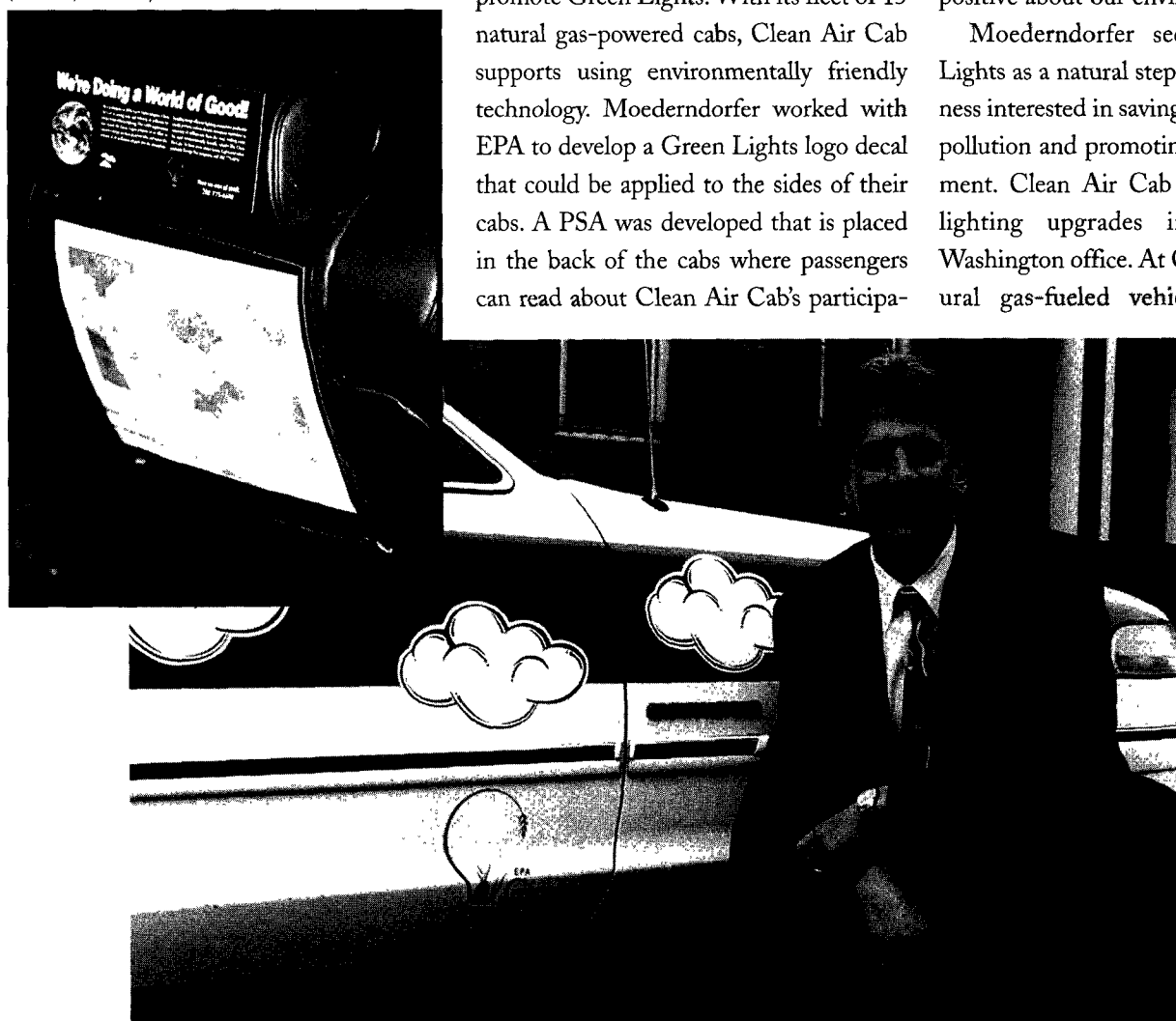
Drivers have indicated that their passengers' responses to the decals and PSAs have been very positive. "The ridership is very supportive of what we're trying to do here," says Moerderndorfer. "Other small businesses that want to help the environment should know that people are very positive about our environmental efforts."

Moerderndorfer sees joining Green Lights as a natural step for any small business interested in saving money, preventing pollution and promoting a better environment. Clean Air Cab plans to complete lighting upgrades in its downtown Washington office. At Clean Air Cab, natural gas-fueled vehicles and energy-

efficient lighting are both ways a small firm can prevent pollution while saving on operating cost. If you want to learn more about how small businesses can benefit from the Green Lights program, call the Hotline at 202 775-6650.



David Moerderndorfer, Vice President of Sales and Marketing for Clean Air Cab poses in front of a newly decorated cab.





## ALLY CORNER

## AEP Generates Environmental Results

*Creating improved utility-customer relationships*

According to Hal Powers, Lighting Programs Coordinator for **American Electric Power** (AEP), employees have been swearing they look years younger ever since this Green Lights Utility Ally replaced the harsh, cool-white lamps in the rest rooms and common areas of its Columbus, OH, headquarters with softer, more flattering T-8 lamps. While workers enjoy more youthful appearances, AEP is making substantial strides in energy conservation and pollution prevention.

AEP joined EPA's Green Lights program in December 1992, becoming the largest coal-fired Utility Ally at the time. With seven operating companies supplying electricity to 7 million customers in seven states, AEP agreed to survey and upgrade 10.4 million square feet of facilities.

Implementing  
Upgrades

To oversee lighting projects in 2,700 of its buildings, power plants, and substations, AEP convened an 11-member Green Lights Task Force headed by Dale Heydlauff, AEP's Vice President-Environmental Affairs and Green Lights Implementation Director. The task force has orchestrated 2,348 lighting surveys in 84 percent of AEP's facilities.

The utility's 31-story, 627,000 square foot headquarters building has been surveyed, and 18 floors have been upgraded. AEP is replacing 40-watt T-8 lamps with energy-efficient

32-watt T-8s and electronic ballasts. By installing occupancy sensors, LED exit signs, and compact fluorescents with electronic ballasts AEP was able to save even more. When AEP has completed upgrades to all its buildings by 1997, EPA estimates the utility will prevent more than 10 million pounds of CO<sub>2</sub>, SO<sub>2</sub>, and NO<sub>x</sub> emissions and save approximately 32 million kilowatt-hours annually.

AEP's Task Force is relying on internal funds and energy cost savings projections to finance its lighting upgrades. According to Powers, as a government-regulated utility, this is the only funding option that does affect the company's bottom line. Streamlining the review process and

obtaining cost savings through large-volume purchases helps reduce upgrade expenses. The project is figured into AEP's annual operating expenses.

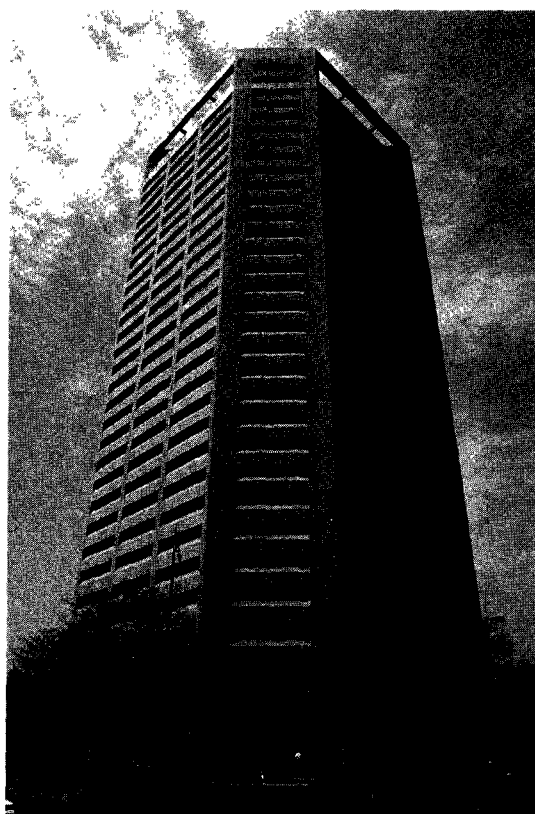
Recruiting Green  
Lights Participants

AEP is hoping others also can save money, prevent pollution, and improve lighting quality. The utility has established a recruiting program, with each of its operating companies using its marketing representatives and customer service power engineers to contact 25 to 30 industrial and commercial customers each year to discuss Green Lights.

For example, AEP's West Virginia-based Wheeling Power Company co-sponsored a seminar with Sylvania Lighting to educate Wheeling Power customers about Green Lights. Additionally, AEP's Virginia-based Appalachian Power occupied a booth at the Connection '94 Electro Expo and generated strong interest in Green Lights among the more than 5,000 conventioners.

To help others in their lighting upgrade endeavors and reward energy efficiency initiatives, AEP will launch an audit and financing program later this year. The program, for commercial and industrial customers, will offer low-interest loans for upgrade projects. According to Powers, the audits and financial assistance will create improved utility-customer relationships, which are the key to future energy-saving programs.

To learn how your organization can do more, call the Green Lights/Energy Star Hotline at 202 775-6650.



**TIPS OF THE MONTH**

## Simplifying Reporting

All Green Lights program participants are asked to report at least once per year on any progress they have made with lighting surveys and upgrades. Reporting has several benefits for both program participants and EPA, including: summarizing progress; verifying savings; and calculating pollution prevented. But, reporting does not need to be complicated or time-consuming. To simplify reporting, EPA recommends the following:

million square feet with only two lines on one report form! **Lowes, Inc.** reported all upgrades at their stores on one form, and **Wachovia** is consolidating over 100 of their Georgia offices onto one form. Likewise, **Kindercare** summarized projects at over 1100 facilities on just one form.

### Tip 3: Use Your Contractor

If you use one, ask your lighting contractor for help. This is a great opportunity to work with Green Lights Allies and Surveyor Allies, who can easily help with, or complete reports themselves. **Hofstra University** is requiring their contractor to complete all report forms. **Service Merchandise** asked **Sylvania Lighting Services** to complete report forms for more than 80 upgraded buildings. Ask your contractor to contact your Account Manager for advice on reporting.

Telling us what you are doing is important to the success of Green Lights, so make it easy. Plan in advance, consolidate information, use your contractor, and work with your Account Manager. EPA uses the information from these forms to inform Congress about your work preventing pollution. This data also helps EPA determine other profitable opportunities for improving your lighting efficiency and quality. ■

### Tip 1: Plan Ahead

Talk to your Account Manager (formerly known as your Implementation Support Specialist) before you begin lighting surveys and upgrades. Your Account Manager can help you keep reporting simple. If you are computer compatible, *ReportKalc* is simple and well-organized. In addition, the upcoming version of *ProjectKalc* (version 2.0) software, EPA's project analysis tool, will allow users to export project data directly to *ReportKalc* and thus, EPA's report form.

### Tip 2: Consolidate Your Information

Consider ways to consolidate your information; your Account Manager can help. For example, condense all information about a building (or many buildings) in one report. **JC Penney** reported on 22

### Lighting-Related Events

Green Lights Workshops are listed on the back page of this *Update*.

#### 1995 LIGHTFAIR

Location: Chicago, IL  
Contact: AMC Tradeshows,  
404 220-2215  
Date: June 7-9, 1995

#### NeoCon'95/The Buildings Show

Location: Chicago, IL  
Contact: NeoCon,  
800 667-6278  
The Buildings Show,  
312 527-7598  
Date: June 12-14, 1995

#### 1995 Illuminating Engineering Society of North America (IESNA) Annual Conference

Location: New York, NY  
Contact: Valerie Landers,  
212 248-5000, ext. 117  
Date: July 29-August 3, 1995

# GREEN LIGHTS IMPLEMENTATION REPORT

OMB # 2060-0255 Exp. 3/31/96

<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; margin-bottom: 5px;"></div> <b>SURVEY REPORT</b> <i>(fill in sections 1,2,4,6, and 12 below)</i>	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto; margin-bottom: 5px;"></div> <b>COMPLETED PROJECT REPORT</b> <i>(fill in sections 1-12 below)</i>	Date: _____ Page _____ of _____ <i>(attach additional pages as needed)</i>
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## 1. FACILITY INFORMATION

Company Name: _____ Facility Name: _____ Facility address: _____ City/St./ZipCode: _____ Facility type* _____	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

## 4. LIGHTING CONTROLS BEFORE UPGRADE

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

## 6. MAINTENANCE METHODS BEFORE UPGRADE

Group relamping?	Yes	No	Fixture cleaning?	Yes	No
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## 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	%

## 12. SIGNATURE

Are you?    GL Implementation Director    Facility Manager    Other

Send to: Jackie Krieger, 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

## 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

## 5. LIGHTING CONTROLS AFTER UPGRADE

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

## 7. MAINTENANCE METHODS AFTER UPGRADE

Group relamping?	Yes	No	Fixture cleaning?	Yes	No
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## 11. IMPLEMENTATION METHODS:

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

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

# GREEN LIGHTS IMPLEMENTATION REPORT CODES

<b>Facility Type</b>		<b>Lamp Type</b>		<b>Upgrade Type</b>		<b>POLLUTION PREVENTION</b>	
1000	Office	54	T-8	110	Relamp only	You may want to estimate the	
1001	Warehouse	55	T-10	111	Delamp only	pollution prevention of this	
1002	Industrial Manufacturing	56	T-12 Energy Saving	112	Relamp and reballast	project for your own use. Use the	
1003	Retail sales	57	T-12 Cathode cut-out	113	Specular reflector-delamp	following formulas and factors:	
1004	Health Care	58	T-12 High Lumen	114	Reflector/Reballast		
1005	Lodging (hotels, dormitories etc.)	59	T-12 Standard	115	New Lens/Reflector/Reballast		
1006	Assembly (churches, auditoriums, etc.)	60	T-12 High Output (800ma)	116	New lens/louver		
1007	Education (classrooms)	61	T-12 VHO (1500ma)	117	New fixture		
1008	Food sales and service	62	T-17 VHO (1500ma)	118	Convert Incand. to Fluorescent or HID		
1009	Parking Garage	63	T-5 single ended	119	Task Lighting		
1010	Laboratory	64	Compact twin-tube				
1011	Outdoor	65	Compact quad-tube				
		66	Compact-integrated ballast	<b>Control Type</b>			
		67	Compact-circular	100	Manual switching		
		68	Incandescent-general service (A, PS,T)	101	Manual dimming		
		69	Incandescent-Reflector (R, PAR, ER)	102	Occupancy sensor		
		70	Incandescent-decorative	103	Timed switching		
		71	Halogen-general service	104	Timed dimming		
		72	Halogen-reflector (R,PAR, MR)	105	Daylight switching		
		73	Halogen-tubular	106	Daylight dimming		
		74	HID-mercury vapor	107	Panel level dimming		
		75	HID-metal halide	108	Panel level EMS		
		76	HID-high pressure sodium	109	Power reducer		
		77	HID-white-HPS				
		78	Low pressure sodium	<b>Survey/Analysis by</b>			
		79	T-12 Slimline	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		

## Green Lights Welcomes New Participants

Sixty-four new participants joined Green Lights in January and February to take advantage of the benefits of energy-efficient lighting upgrades. Green Lights now has more than 1,700 participants,

with expectations of enormous energy savings and pollution prevention through the program.

Green Lights welcomes its new participants and looks forward to working

with them. If you organization would like more information about the program, please call the Green Lights Hotline at 202 775-6650.

### **PARTNERS (40)**

Albert Einstein Medical Center ■ Alexandria City Public Schools ■ Anne Arundel County Public Schools ■ Audubon Society of New Hampshire ■ BMC West Corporation ■ Becton Dickinson and Company ■ Black Dome Mountain Shop, Inc. ■ Boswell Engineering ■ Bucks County, Pennsylvania ■ Centinela Hospital Medical Center ■ The City of Chesapeake, Virginia ■ County of San Mateo ■ Dimensional Oil Field Services, Inc. ■ Donaldson Company, Inc. ■ Dudley Street Neighborhood Initiative ■ Eisenhower Medical Center ■ General Motors Hughes Electronics-Corporate Headquarters ■ JPS International Company ■ Kenetech Windpower ■ Kent County Public Schools ■ Lodi Unified School District ■ The City of Loma Linda, California ■ Magnavox Electronic Systems Company ■ Manko, Gold & Katcher ■ Morehead State University ■ Nuestra Comunidad Development Corporation ■ One Enterprise Center ■ Patagonia ■ Robert F. Kennedy Medical Center ■ The City of San Jose, California ■ The City of Santa Monica, California ■ Saugus Union School District ■ Seagate Technology, Inc. ■ The City of St. Paul, Minnesota ■ Sumitomo Bank of California ■ TD Industries ■ The West Company ■ Toy Chest-Kid's Closet ■ Tulane University Medical Center ■ Woodlake Towers ■

### **ALLIES (14)**

CIC Supply ■ Digital Power Company, Inc. ■ GEC Lighting Supply ■ Mason County Public Utility District No. 3 ■ Northstar Technologies & Lighting ■ Prolume Corporation ■ Quality Lighting ■ Southland Electrical Supply Company ■ Stuart C. Irby Co. ■ The Hite Company ■ TMP, Inc. ■ Tucson Electric Power Company ■ United Energy Associates ■ Wheatstone Energy Group, Inc.

### **ENDORSERS (10)**

American Hospital Association ■ Boulder County Clean Air Consortium ■ The Electrical Association of Philadelphia ■ HVS Eco Services ■ Massachusetts Municipal Wholesale Electric Co. ■ National Association of State Facilities Administrators ■ Pacific Northwest Ski Areas Association ■ Pennsylvania Association of School Business Officials ■ The Regional Air Pollution Control Agency ■ Sacramento Metropolitan Chamber of Commerce

**SOFTWARE CORNER**



## Updated Directory Released in Spring '95

Updated information on utility and third-party rebate and financing options is currently being collected for the *Green Lights Financing Directory*. The updated directory should be available in the late spring and can be ordered through the Green Lights Hotline at 202 775-6650.

■ An expert advisor module is being developed for *ProjectKalc*. The expert advisor will allow users to request fixture upgrade recommendations for existing fixtures, select upgrades from the fixtures recommended or enter their own upgrade

solutions. The expert advisor will also integrate the selected upgrades with the lighting, energy savings, and financial calculations provided in the *ProjectKalc* software. The *ProjectKalc* expert advisor will be beta tested during the summer and is expected to be released in the fall.

■ A MS-Windows version of the progress reporting software, *ReportKalc*, is being planned. Watch for the next issue of Software Corner for more information on the *Windows-ReportKalc* development and release schedule. ■

**EXTRAS**

## Sound Investment for Uncertain Times

*Upgrades achieve returns with lower risk than stocks & bonds*

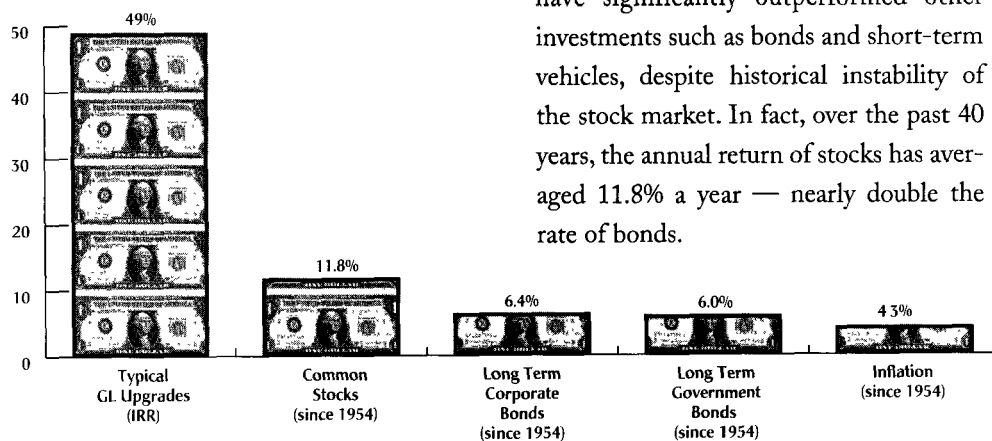


With another year of volatile market activity in both stocks and bonds, investors are undoubtedly feeling more unsure than ever about how to wisely invest their money. Strategists continue to advise investors that especially in times of market uncertainty, the key to successful investing includes a diversified portfolio.

As the chart below indicates, stocks have significantly outperformed other investments such as bonds and short-term vehicles, despite historical instability of the stock market. In fact, over the past 40 years, the annual return of stocks has averaged 11.8% a year — nearly double the rate of bonds.

Green Lights participants, however, discover that stocks aren't the last word in profitable financial investing. Properly designed lighting upgrades, based on those reported by Green Lights participants, leave stocks as well as bonds in the dust, with internal rates of return (IRR) typically above 40% per year. The current average IRR for all reported Green Lights upgrades is 49%, as shown below. Keep in mind that Green Lights upgrades achieve these returns with much lower risk than stocks and bonds.

Looking for a safe, high-return investment with which to diversify your portfolio? Look no further than Green Lights. Join Green Lights, upgrade your facility space with energy-efficient lighting and congratulate yourself on your investment acumen in outperforming the financial markets. ■



## COMPLETED UPGRADES

### January and February Upgrades

The following program participants submitted implementation reports on completed lighting upgrades during January and February.

#### January

Abbott Laboratories, *Al Musur*  
Aladdin Lighting Supply, *Ted Murphy*  
Alta Bates Medical Center, *Joseph Rieger*  
Ashland Oil, Inc., *Michael J. Vogt*  
Ball Corporation, Metal Container Operations, *David Stockard*  
Browning-Ferris Industries, *John Joyner*  
CF Industries, Inc., *Pat Fairrow*  
City Lighting Products Company, *Lester L. Hohl*  
Consumer Lighting Products, *David Simon*  
Data General Corporation, *Blair M. Wentworth*  
Embarcadero Center, *Daryl Berg*  
Energy Specialties, Inc., *Thomas Grimm*  
Enersave, Inc., *Jeffrey A. Titus*  
Epson Portland, Inc., *Randy McEvers*  
First Union National Bank, *Jim Snell*  
Fulton County, Georgia, *Jim Winslett*  
Graybar Electric Company, *William Trussell*  
Halliburton Company, *Gene Ballew*  
Harris Corporation, *Ray E. Rader*  
Hewlett-Packard Co., *Robert Lanning*  
Huntsville City Schools, *Don Sadler*  
ITT Corporation, *William Eisenbrey*  
International Technology Corporation, *Frank C. Rice*  
JFMC Facilities Corporation, *Richard Gordon Katz*  
Kent County, Maryland, *James Wright*  
Lupo & Associates, *Don Lupo*  
Lutheran Homes of Oshkosh, *Alan R. Abraham*  
MTI International, *Vandana Upadhyay*  
Milwaukee Insurance, *Glen A. Perry*  
Montgomery County, Maryland, *Homeira Razavi*  
New Hampshire Hospital Association, *Debbie Augustine*  
New Mexico Energy Consultants, *Wayne K. Bond*  
Northern Arizona University, *Mark Flynn*  
Prince Georges County, Maryland, *Andrea Leahy-Fuebeck*  
RUST Geotech, Inc., *Anita Gorski*  
Rochester Institute of Technology, *Lou Boyon*  
Spartan Printing Co., *Jack Hutchinson*  
Summit Electric Supply, *Becky Gary*  
The Washington Times, *James Yokota*  
USX/US Steel Group, *Roy J. Weiskircher*

Valley Motors, Incorporated, *John Gracki*  
Van Der Horst, USA, *Clarence Fritz*  
WW Grainger, Inc., *Arshad Ali*  
Walt Disney Studios, *Roy Huebner*  
Wellington Sears Company, *T. Halliburton Wood*  
Wisconsin Public Power, Inc. System, *Michael Dolinac*  
Wolff Brothers Supply, *Carl Burns*  
Woman's World Shops, Inc., *Norman Lieberman*  
YESCO, *John Rouscher*

#### February

Albertson's, Inc., *Donald Burk*  
Alliant Techsystems, Inc., *Val Munshi*  
Alta Bates Medical Center, *Joseph Rieger*  
American Standard, *Daniel Elliott*  
BP Exploration - Alaska, *James Fairbanks*  
Bank of Hawaii, *John Hashizume*  
BellSouth Telecommunications, *Harold Drain*  
Border States Electric Supply, *Barry Nelson*  
Burrito Brothers, *Peter Fox*  
California Steel Industries, Inc., *Russell W. Stark*  
Cardolite Corporation, *David Li*  
Citicorp/Citibank, *John J. Ritter*  
Defiance City Schools, *Gary Dowler*  
Dolco Packaging Corporation, *Robert C. Lee*  
E Source, Inc., *David J. Houghton*  
Embarcadero Center, *Daryl Berg*  
Energy Matrix, *Peter Alpert*  
First Hawaiian, Inc., *Ralph Mench*  
Glenview (IL) School District #225, *Gary Rainier*  
Good Samaritan Hospital (Oregon), *Kenneth Ryker*  
Graybar Electric Company, *William Trussell*  
H&H Industries, *Michael Stenwell*  
Harco Distributing Services, *Paul Reczek*  
Huntington Memorial Hospital (IN), *Paul Queen*  
Illumetek Corporation, *James M. Pulk*  
Jantzen, Inc., *Scott Perry*  
La Porte Hospital, *Ed Mullins*  
Lights of America, *Jose M. Espiro*  
Long Island Lighting Company (LILCO), *Bruce Humenik*  
Longs Drug Stores, *David Alexander*  
Marine Midland Bank, *Donald J. Jones*  
Marion General Hospital, *Donald L. Endsley*

Marriott Corporation, *Alan Watson*  
Maytag, *Doug Wilson*  
McKeesport Hospital, *Tom Patton*  
Mercy Hospital (OH), *Jim Estes*  
Mid Atlantic Lighting, *Gene Grassel*  
Minneapolis Public Schools & Special District #1, *Allen L. Johnson*  
Motorola Incorporated, *Edward W. Lewis*  
Multek, *Gary W. Wood*  
National Westminster Bancorp, Inc., *Thomas F. Tobin*  
New York Marriott Marquis, *Charles W. Duffner*  
Pennsylvania Hospital, *Wendy L. Cody*  
Phillips Petroleum, *Daniel G. Mann*  
Prescolite Controls, Inc., *Richard F. Pritchett*  
Quad Graphics, *Al Berens*  
Royal Maccabees Life Insurance Company, *Robert Hornbacker*  
San Diego County, California, *Tom DuMont*  
San Diego County, California, *Mindy Tao*  
Sarasota County, Florida, School Board, *Brent Shuette*  
Silverlight Corporation, *James W. Zarlenga*  
St. Joseph's Hospital, *Harold L. Walters*  
Superior Light & Sign Maintenance Co., *Rick T. Swarbrick*  
The City of Naperville, Illinois, *Ned P. Becker*  
The City of Pasadena, California, *Rebecca Lambert*  
The Immune Response Corporation, *Gary Filimon*  
The State of Maryland, *Donald Milsten*  
UNISYS Corporation, *Oscar D. Smith*  
USX/US Steel Group, *Roy J. Weiskircher*  
Underwriters Laboratories, Inc., *John J. Ritchie*  
WF Harris Lighting, *John Riggan*  
Warner-Lambert, *Dan Patterson*  
Wasatch County School District, Utah, *Henry E. Jolley*  
Westinghouse Corporation, *James P. Brennan*  
Yellow Freight Systems, Inc., *Richard Cooper*

#### Correction/Clarification

In a previous edition of the Green Lights Update, the utility Ally providing Merck & Co., Inc. with rebates was incorrectly designated. Jersey Central Power & Light supported Merck's efforts through their rebate program. EPA regrets any misunderstandings this may have caused.



# U.S. EPA Green Lights

LIGHTING UPGRADE WORKSHOPS



## 2 1/2-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 preregistrants 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

Name \_\_\_\_\_ Title \_\_\_\_\_

Company/Organization \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP Code \_\_\_\_\_

Phone ( ) \_\_\_\_\_ Fax \_\_\_\_\_  
area code

Attendee fax number is very important to expedite the processing of this form.

Status (Please check one) ☐ Partner ☐ Prospective Partner ☐ Ally ☐ Surveyor Ally Candidate/Other

### Please Indicate Preferred Workshop\*:

- ☐ Chicago, IL May 2-4 ☐ Detroit, MI June 29-July 1 ☐ New Brunswick, NJ August 2-4  
☐ Raleigh, NC June 14-16 ☐ Minneapolis, MN July 19-21

\*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.



United States  
Environmental Protection Agency  
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Washington, DC 20460

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