



Green Lights Program

The First Year

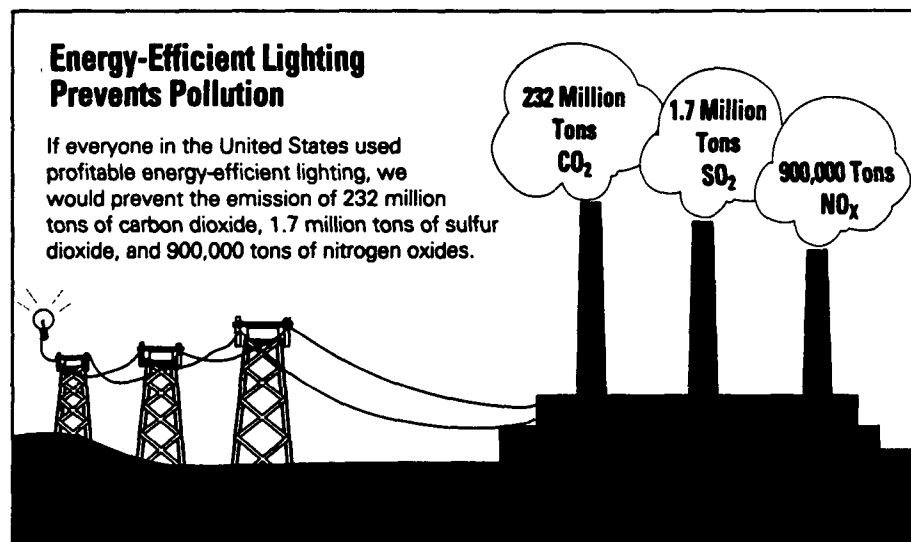


Program Summary

The Environmental Protection Agency's Green Lights Program was officially launched on January 16, 1991. The program's goal is to prevent pollution by encouraging major U.S. institutions—businesses, governments, and other organizations—to use energy-efficient lighting. Because lighting is such a large consumer of electricity (about 25 percent of the national total) and so wasteful (more than half the electricity used for lighting is wasted by inefficient technology and design practices), the Green Lights program offers a substantial opportunity to prevent pollution, and to do so at a *profit*. Lighting upgrades reduce electric bills and maintenance costs and increase lighting quality; typically, investments in energy-efficient lighting yield 20 to 30 percent rates of return (IRR) per year.

EPA promotes energy-efficient lighting by asking major institutions to sign a Memorandum of Understanding (MOU) with the Agency; in this MOU, the signatory commits to install energy-efficient lighting in 90 percent of their space nationwide over a 5-year period, but only where it is *profitable* and where lighting *quality* is maintained or improved. EPA, in turn, offers program participants a portfolio of technical support services to assist them in upgrading their buildings (see opposite page). Sample MOUs are available upon request.

Every kilowatt-hour of electricity not used prevents the emission of 1.5 pounds of carbon dioxide (the most important greenhouse gas), 5.8 grams of sulfur dioxide (a principal component of acid rain), and 2.5 grams of nitrogen oxides (precursor to both acid rain and smog), as well as the pollution attendant upon mining and transporting power-plant fuels and disposing of power-plant wastes.



If energy-efficient lighting were used wherever profitable, the nation's demand for electricity could be cut by more than 10 percent, leading to 4 to 7 percent reductions in the emissions of carbon dioxide, sulfur dioxide, and nitrogen oxides. In terms of carbon dioxide, energy-efficient lighting offers the same pollution prevention opportunity as taking 42 million cars off the road, the equivalent of one-third of the U.S. fleet.

EPA's Commitments

When EPA signs the Memorandum of Understanding, it agrees to provide



Decision Support System - a state-of-the-art computer software program that allows Green Lights corporations to survey lighting systems in their facilities, assess their options, and select the best energy-efficient lighting upgrade.



Training Workshops - programs, scheduled nationwide, that feature comprehensive training on the Decision Support System as well as lighting fundamentals, technology, project management, and Green Lights reporting.



National Lighting Product Information Program - an independent lighting information program that provides an objective source of name-brand product information.



Financing Registries - computer databases containing information on utility-sponsored financial assistance (e.g., auditing and technical support, lighting design services, free installation, rebates, and loans), energy-service company programs, and government grants and low-interest loans.



Lighting Services Group - offers technical support, problem solving, and training for Green Lights participants installing energy-efficient lighting.



Corporate Communications - advertising and marketing materials designed to recognize participants for their commitment to the program and to keep them informed.



Ally Programs - individual programs designed for manufacturers, lighting management companies, and utilities to ensure that the lighting industry is involved in the program and aware of the environmental and economic benefits of Green Lights.

Partner's Commitments

When a Green Lights Partner signs the Memorandum of Understanding, it agrees to



Appoint an implementation manager to coordinate the program.



Survey the lighting in all of its U.S. facilities.



Consider a full range of lighting options to reduce energy use.



Upgrade 90 percent of the square footage of its facilities with the options that maximize energy savings to the extent that the upgrade is profitable and does not compromise lighting quality. There are no technology prescriptions.



Complete upgrades within 5 years of signing the agreement.



Annually document the improvements it makes.



Design all new facilities to meet most current building efficiency standards.

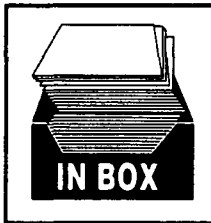


Educate its employees about the benefits of energy-efficient lighting.

When companies sign the Green Lights Memorandum of Understanding, they agree to upgrade their facilities with energy-efficient lighting. In return, the EPA commits to provide a wide variety of products and services designed to make the job easier. Over the program's first year, the EPA has delivered on every one of its commitments.

Why Green Lights?

An often-asked question runs, "If energy-efficient lighting is so profitable, and is so good for the environment, and delivers such superior lighting quality, why does the Federal Government have to get involved?" The answer lies in the haze between the ideals of economics and the reality of lighting today. Energy-efficient lighting technologies, design practices, and maintenance systems evolve over decades (if not centuries, if one considers the evolution from the open fire to the candle to the oil lamp to Edison's light bulb), and market penetration is often slow. The energy-efficient lighting technologies and design principals available today were introduced 5 to 10 years ago but have been rarely used, typically capturing between 1 and 5 percent of the market. There are six principal barriers, and Green Lights is attacking all of them:



- **Problem—Low Priority:** Lighting is not a high priority for the vast majority of U.S. institutions. Typically the province of facility management, lighting is viewed as an overhead item. Because of this, most facilities are equipped with the lowest first-cost (rather than the lowest life-cycle cost) lighting systems, and profitable opportunities to upgrade the system are ignored or passed over in favor of higher visibility projects. As a result, institutions pay needless overhead every year, reducing their own competitiveness and that of the country. And wasteful electricity use becomes a particularly senseless source of pollution.

Solution: By signing the Green Lights Memorandum of Understanding, a corporation's senior management makes clear that energy-efficient lighting is now one of the business' high priorities. Authority is granted, budgets are approved, procedures are streamlined, and staff are assigned to make the upgrades happen.



- **Problem—Information and Expertise:** Lighting is more complex than screwing in a light bulb, and the technologies and design strategies are diverse and sometimes complex. To arrive at an energy-efficient lighting solution for a particular space requires accurate, comparable information about dozens of lighting technologies, design ability, and an investor's eye for long-term profit. Unfortunately, information is often scarce or suspect, design is frequently overlooked in favor of "cookie-cutter" solutions, and few institutions focus on lighting as a profit (rather than cost) center.

Solution: Green Lights has created the institutions and tools to help overcome these barriers.

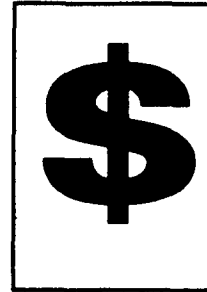
On November 4, 1991, Green Lights released its lighting Decision Support System, the most sophisticated lighting survey and economic analysis software available. The system allows a building surveyor to rapidly inventory the current lighting system and choose from more than a thousand different upgrade options to find the system that will be most energy-efficient. The financial analysis is done on a life-cycle basis and allows the user to capture all relevant streams of costs and benefits, including taxes and depreciation, operation and maintenance expenses, and the potential benefits of improved lighting quality. The software is offered to Green Lights participants free of charge at a series of training workshops held twice a month around the country.

A second institution created by Green Lights is the National Lighting Product Information Program (NLPIP), based at Rensselaer Polytechnic Institute's Lighting Research Center. NLPIP produces name-brand reports on lighting hardware, covering dozens of manufacturers and models. All data are gathered

using standardized procedures and allow direct comparison between competing products for *all* relevant performance characteristics. These reports are sent free of charge to all Green Lights participants.

Green Lights is also working with several lighting professional societies to build a national certification program for lighting professionals. This will permit individuals with true expertise in lighting to demonstrate their skills and distinguish themselves in the marketplace.

- **Problem-Financing:** In existing buildings, the lighting system is usually working, and any improvements are traditionally viewed as an expense, despite the fact that they are actually an investment that is frequently more profitable, and lower risk, than any other investment the company might make. Even where lighting investments are demonstrably more lucrative than other investments, companies will sometimes have different "hurdle rates" for different kinds of investments: a low one for core business investments, and a higher one (paradoxically) for lower-risk cost-cutting investments. Smaller businesses and governmental agencies frequently have no capital to spare for any cost-cutting investment and accept paying a higher operating overhead year after year.



Solution: Green Lights has developed a unique registry of financing resources. First offered in February 1991, it has since been updated twice. The registry provides detailed information on more than 200 utility programs that offer lighting rebates and free installations to their customers. It also provides a directory of more than 75 companies that can finance lighting efficiency upgrades using leasing, shared savings, guaranteed savings, and other financing techniques. The registry is provided free of charge to all Green Lights participants.

- **Problem-Restricted Market:** Because energy-efficient lighting has captured only a tiny fraction of the overall lighting market, unit prices have often been high compared with the "garden variety" products they replace. When new technology is introduced, R&D costs and new factories have to be amortized, and the unit marketing costs for low-volume products further raises the price. Distributors are often reluctant to reserve valuable shelf space for slower-moving products. Innovators are slow to introduce new technology. As a result, energy-efficient lighting hardware has remained expensive, further slowing its penetration in the marketplace.



Solution: Green Lights. The program is catalyzing a rapidly increasing demand for energy-efficient lighting products, with visible impacts on shipment volumes and prices. New competitors are entering the market, bringing innovative technologies and further price and service competition. Green Lights and other lighting efficiency programs are projected to increase the market share of energy-efficient lighting products from its current 5 percent to around 40 percent by 1995. Prices of some products have been already been falling (by as much as 25 percent in the last 12 months) and are expected to continue declining as shipment volumes increase.

- **Problem-Split incentives:** There is often no incentive to upgrade lighting systems. For example, a typical lease in a master-metered building requires the tenant to pay a fixed rent, which includes a pro-rata share of the building's utility charges. If that tenant wanted to upgrade the lighting system and reduce their electricity consumption, the lease would need re-



negotiation to allow pass-through of the savings. In addition, without direct metering, it is difficult to validate the exact amount of savings due to that tenant. Conversely, with all of the utility charges passed through to the tenants, the landlord rarely sees it in his interest to install more efficient lighting systems when the building is first built. Instead, the lowest first-cost system is chosen.

Solution: Green Lights has initiated a project to develop standard lease language that will remove the split incentive barrier, and the program will encourage participants to use the model language in lease negotiations. The program is also working to accelerate the adoption of submetering by encouraging Partners to submeter their lighting upgrades.



- **Problem—Market Fragmentation:** Buyers and sellers of lighting equipment and services often have trouble communicating. Most lighting manufacturers produce and market only one kind of product: lamps, ballasts, fixtures, and so on. Lighting purchasers need *systems* composed of many different products and need “system thinking” from their vendors. Vendors, in turn, are frustrated by the low priority assigned to lighting by most major businesses and by their lack of understanding of the importance of good lighting.

Solution: The Green Lights Allies programs. Green Lights Allies are members of the lighting manufacturing and service industries as well as electric utilities, who join Green Lights on terms very similar to those of the Green Lights Partners. However, in addition to committing to upgrade their facilities, Green Lights Allies also commit to help EPA and the Green Lights Partners successfully implement the program. Allies have delivered on this commitment in a variety of ways: recruiting new Partners, providing data to the National Lighting Product Information Program, helping to design the Decision Support System, and advertising their membership in and allegiance to the principals of the Green Lights Program. While Green Lights does not endorse the products or services of the Green Lights Allies, the existence of the program has enhanced communication throughout the lighting industry on the subjects of energy efficiency, environmental protection, and lighting quality.

Program Highlights

Recruitment

Green Lights is a voluntary program. As such, the program must *persuade* lighting users that energy-efficient lighting is good for the environment, good for their bottom line, and a good opportunity to work in cooperation with EPA. The program office has used a variety of marketing tools to recruit new members to Green Lights.

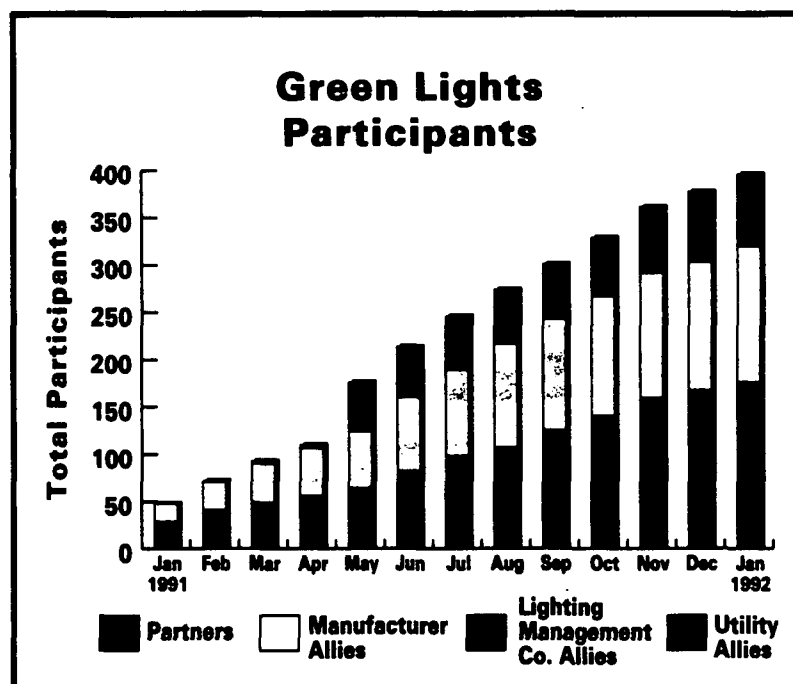
- **Conferences:** Green Lights conducted three large marketing conferences in 1991 (Washington in January, Portland Oregon in May, and Atlanta in July), attended by representatives of 600 corporations.
- **Direct Visits:** Green Lights staff have visited dozens of corporate and governmental headquarters, a process that accelerated with the inauguration of a full-time travelling sales campaign in October 1991.

- **Telemarketing:** Starting in July 1991, the program office built a telemarketing system, complete with the latest telemarketing software, to assist in selling the program to the 8,000 contacts stored in the program's marketing database.
- **Mass Communication:** Green Lights is increasingly using advertising and news coverage to reach a broader audience. More than a hundred Green Lights news stories have appeared in dozens of media outlets, and Green Lights advertising (sponsored by the program office or by program participants) is increasingly visible in the popular, business, and trade press. Green Lights advertising has appeared in the *Portland Oregonian*, the *Atlanta Constitution and Journal*, *Atlanta* magazine, *BusinessWeek*, and *Discover*.

The typical organization takes approximately 4 months to decide to join Green Lights, with some taking up to a year. The process starts with an EPA presentation, a piece of direct mail, an article in a newspaper, or an advertisement in a magazine. Several rounds of visits, telephone contact and technical support follow, sometimes including a lighting survey of a major facility to validate the savings opportunities available to the potential Partner. It is normal for several different groups within the organization to get involved: facilities management, environmental compliance, energy, finance, strategic planning, public affairs, and so on. Each department may require direct contact with EPA to ensure that all of its questions and concerns are addressed. The final step is the signing of the Memorandum of Understanding by a senior officer and the initiation of the lighting upgrade program.

Scorecard

On January 31, 1991, Green Lights had 40 participants. As of February 18, 1992, 402 institutions had signed Memoranda of Understanding with EPA to join Green Lights. This number includes 168 Corporate Partners, 9 Government Partners, 144 Manufacturer Allies, 48 Lighting Management Company Allies, and 27 Electric Utility Allies. In addition, 6 trade and professional organizations have endorsed the program. The program participants collectively own or lease 2 billion square feet of facility space, about 2.5 percent of the national total. This is equivalent to all of the leasable office space of the metropolitan areas of New York City, Los Angeles, Chicago, San Francisco, Washington, D.C., Philadelphia, and Dallas.



Implementation

Green Lights participants have five years to complete their lighting upgrades. The typical plan for most companies has been to use the first year or two to survey buildings, develop expertise, train staff, and acquire budgets. The first two years also include, in most cases, some lighting upgrades; this helps with the training process and allows staff to develop procedures for budgeting, procurement, installation, contracting, reporting, and so on. Years three and four will be the time of major upgrades by Green Lights participants; several are planning national procurements for firms that will supply upgrade materials and installation labor for all of their facilities.

Green Lights staff and contractors assist participants in implementing the program. The program offers two-day training courses twice a month across the country:

Washington, D.C.	Nov. 1991	Chicago	April 1992
Ashland, KY	Dec. 1991	Oklahoma City	April 1992
Los Angeles	Dec. 1991	Boston	April 1992
New York City	Jan. 1992	Raleigh, NC	May 1992
New Orleans	Jan. 1992	San Francisco	May 1992
Nashville	Feb. 1992	Boulder	June 1992
Washington, D.C.	Feb. 1992	New York City	June 1992
Tampa, FL	March 1992	Seattle	July 1992
Washington, D.C.	March 1992	Kansas City	July 1992

The training courses feature an intensive introduction to energy-efficient lighting, instruction on the use of the Decision Support System software, and ideas on how to be an effective project manager. Green Lights staff and contractors also have conducted more specialized meetings at participants' buildings, either to help perform a lighting survey or to help the company organize its resources to implement Green Lights. The program also operates two hotlines: the Customer Service Center answers general questions about the program and mails out program materials (approximately 2000 envelopes per month), while the Lighting Services Group operates a hotline for Partners with technical questions. Participants also receive a monthly newsletter, the *Green Lights Update*. Finally, the Green Lights Electronic Bulletin Board will come on-line on March 2, 1992.

Implementation Scorecard

Because program participants report their progress on an anniversary basis, the signatory "classes" of January and February 1991 recently reported their upgrade status. Several non-anniversary participants also have submitted interim reports on their progress to date. All told, as of February 23, 1992, 181 buildings were in the officially-reported "upgrade pipeline," covering 77 million square feet of facility space (equivalent to the office and warehouse space of the Baltimore metropolitan area). Forty-nine buildings have been fully upgraded, with a typical reduction in lighting electricity use of 40 to 70 percent. The table at right provides further details.

Green Lights Implementation Scorecard

as of February 23, 1992

Number of companies reporting 40

Buildings	Number	Million Sq.Ft.
surveyed	109	46.3
trial installation	7	3.0
partial upgrade	16	6.7
complete upgrade	49	21.0

**Percentage of reporting
participants' square footage
in the "upgrade pipeline" 23%**

**Typical lighting
electricity reductions 40-70%**

Typical rate of return 30-60%

**Kilowatt-hours avoided
by completed upgrades 35.2 million
(per year)**

Pollution pre- vention (per year) from completed upgrades		(lbs)
	CO ₂	52.8 million
	SO ₂	449,692
	NO _x	193,833

**Cost of conserved
energy at com-
pleted upgrades 1-3 cents per kWh
(range)**

Ally Program Highlights

- Manufacturers Prolight, American Energy Management and Sylvania Lighting recruited Domino's Pizza, Brach Co., and Westin Hotels, respectively, as Partners. And, at least seven LMC Allies recruited one or more Partners—the biggest being the Melville Corporation, recruited by Mira Lighting and Electric Service.
- Lamp and ballast manufacturers as well as Lighting Management Company Allies provided information for the publication *Survey and Forecast of Marketplace Supply and Demand for Energy-Efficient Lighting Products*.
- Ballast manufacturers cooperated with the Lighting Research Center to produce the first NLPPIP *Specifier Report* on ballasts. Reflector and power reducer manufacturers are now working on future *Specifier Reports*.
- Several Lighting Management Company Allies provided case studies and gave comments on the Green Lights Lighting Upgrade Manual.
- Manufacturers and Lighting Management Company Allies sit on the Decision Support System user advisory group. Allies beta-tested the system, and in September, 40 Allies came to a prescreening of the system to review the software and help develop a list of prices for the database.
- Portland General Electric and EPA sponsored a Green Lights workshop in Portland, Oregon, in May. More than 300 participants representing 200 corporations attended the marketing event. Twenty manufacturers exhibited their technology and services at the Green Lights conference in Atlanta in July, helping to make the event a big success.
- Magnetek developed its own Green Lights brochure and launched its Green Zone program to promote energy-efficient lighting, targeting Green Lights Partners. Other companies (e.g., Sylvania Lighting) developed brochures promoting the environmental benefits of energy-efficient lighting, and Lithonia Lighting incorporated Green Lights into their LEEP (Lithonia Energy-Efficiency Program), using the Green Lights logo extensively and distributing Green Lights *Light Briefs*.
- Fifteen LMC Allies advertised their participation in a Green Lights "Special Report" in the September Building Operating Management Magazine. IllumElex promoted the Green Lights program through its "Business Spotlights" in national newspapers. And O&A Electric Cooperative featured a special Green Lights section in their summer marketing publication "Along Our Highlines."



Green Lights in the News

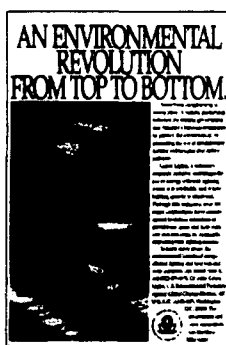


"The voluntary program will seek to persuade chief executives that investments in more efficient lighting in offices, stores and factories will return bigger profits than any other use of the money, while providing better working conditions and good public relations."

- **The New York Times,**
"EPA Urging Electricity Efficiency," Jan. 16, 1991

"3M's commitment to Green Lights is expected to reduce energy consumption by 40 million kilowatt hours and air pollution by more than 80 million pounds. 3M also expects to save \$2 million in operating costs as a result of installing new energy-efficient lighting at 3M facilities."

- **Stemwinder, a newspaper for Twin Cities area 3M employees,**
March 6, 1991



"Green Lights aims to make companies feel like heroes by making an investment that cuts their electricity use, lowers pollution and returns a quick, low-risk profit. . . . EPA expects to save more energy this way—perhaps as much as 10 percent of national electricity demand—than it could through regulation."

- **The Washington Post, "Green, Inc.,"**
by Jessica Mathews, March 15, 1991

By installing the modern lighting in about 70 million square feet of space, nearly all of the state's buildings, [Gov.] Wilson said that California will see its electrical energy requirements reduced by more than 3 billion kilowatt hours over the period of the agreement, enough to power 167,500 homes."

- **Los Angeles Times, "State Switches On to High-Efficiency Lighting Program," May 31, 1991**

"Energy-efficient lighting is the wave of the future, one of those rare instances where the "win-win" message of environmental economics shines so brightly that success is virtually guaranteed."

- **Green Market Alert, "EPA's Green Lights Program: Sometimes It Is Easy Being Green!" April 1991**

"The opportunity has been right in front of us all along, but this new, fine-tuned strategy to organize all of the members in a particular industry into an effective 'energy/environment task force' far outpaces anything yet attempted. With Green Lights, everyone is a winner."

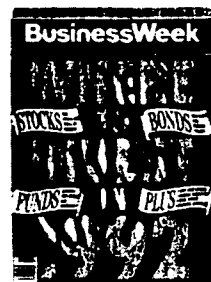
- **Strategic Planning for Energy and the Environment,**
Summer 1991

Green Lights is one of "a series of cooperative ventures based on the common-sense view that you can get further by seeking people's help than suing them....EPA's Green Lights program encourages the voluntary use of energy efficient lighting. Green Lights promotes energy conservation, which saves electricity and cuts down on pollution."

- **President Bush, in remarks at the Grand Canyon,**
Sept. 18, 1991

"In addition to the environmental benefits of Green Lights, the program has the side benefit of opening lines of communication between the government and corporate America. . . . This communication link gives companies the opportunity to discuss lighting efficiency as well as other environmental issues with EPA."

- **Building Operating Management Magazine, September 1991**



Green Lights 1991 Timeline



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- Program launched at week-long conference in Washington, DC. Features presentations by EPA Administrator William K. Reilly and other EPA officials, discussions on technical projects, and displays of lighting products and services.



- Manufacturer ally program, launched in conjunction with Partner program

January

- Green Lights featured at the 1991 LightFair International Lighting Exposition

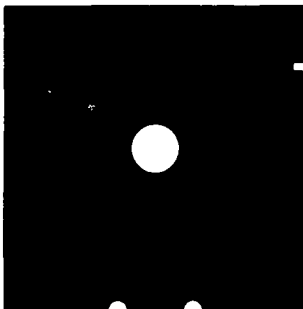
March

- Lighting Services Group established
- Green Lights workshop held in Portland, Ore., May 15, co-sponsored by EPA Region 10 and Portland General Electric Co.
- First two states—California and Maryland—join program; followed by two more in next two months (Oregon, June 28; Florida, July 15)

May

February

- Computerized Utility Rebate Registry released



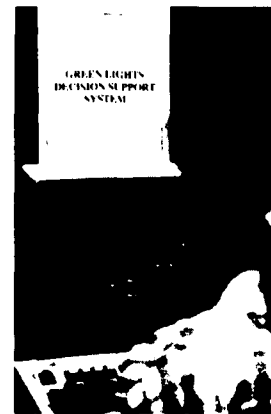
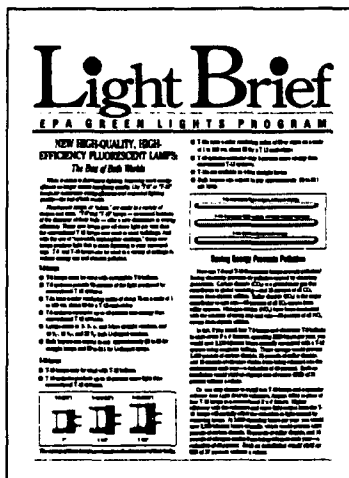
April

- Lighting Management Company and Electric Utility Ally programs launched
- Customer Services Department established

June

- NLEIP *Guide to Performance Evaluation of Efficient Lighting Products* released
- First Light Brief flyer (on occupancy sensors) released

Timeline of Major Milestones



- Green Lights workshop held in Atlanta, including an exhibition of lighting products and services

July

- *Survey & Forecast of Marketplace Supply and Demand for Energy Efficient Lighting Products* released

- Light Brief flyers on financing, rolling financing, and T-8/T-10 lamps released

September

- Decision Support System software launched Nov. 4 at Washington, DC, workshop. Training workshops begin across the country.
- Lighting Upgrade Manual released

November

August

- Lighting Services hotline established
- Second edition of Utility Rebate Registry released and non-utility financing source list added
- Light Brief flyers on electronic ballasts and reflectors released

October

- Nationwide direct marketing campaign begins
- Video released
- Naperville, Ill., joins as first city Partner

December

- Third edition of financing database (including utility and non-utility sources) released on diskette
- Namebrand-specific *Electronic Ballast Specifier Report* released
- Two Decision Support System workshop held

First Year Success Stories

Johnson & Johnson: Charter Member Upgrades 20 Facilities

Johnson & Johnson was one of the charter members of Green Lights. Under the leadership of Harry Kauffman, Johnson & Johnson's corporate energy manager, the company has comprehensively surveyed more than 1.9 million square feet of corporate space located in New Jersey, Georgia, Massachusetts, California, Pennsylvania, Ohio, and Connecticut. The facilities run the gamut of use: office and administration buildings, manufacturing facilities, warehouses, and research laboratories. Even a parking lot was included.

Johnson & Johnson

Lighting upgrades are underway or complete at 20 facilities. These upgrades are responsible for more than \$338,000 in annual savings, and internal rates of return (IRRs) range between a low of 17 percent and a high of 120 percent. Just as important is the pollution prevented. The upgrades at these 20 facilities have meant that more than 4.6 million kilowatt-hours per year of electricity use were avoided.

This is good news for the environment, for it translates into important pollution prevention. Saving more than 4.6 million kilowatt-hours per year means that 7.3 million pounds of carbon dioxide, more than 55,000 pounds of sulfur dioxide; and more than 27,000 pounds of nitrogen oxides are not released into the air. The greenhouse effect, acid rain, smog—these are the problems directly alleviated by serious energy efficiency efforts such as those of Johnson & Johnson.

Johnson & Johnson has been involved in the installation of energy-efficient designs and technologies since the early 1980s. Their efforts over the last year have included installing the latest in lighting technology: occupancy sensors, T8 fluorescent lamps, electronic ballasts, compact fluorescent lamps, dimming devices, and high pressure sodium lamps.

Amoco Corporation: 6000 Sensors Save \$316,413 per Year



The Amoco Corporation, a Green Lights charter partner, recently replaced 6,000 light switches with 6,000 occupancy sensors in its Naperville, Illinois, office and laboratory buildings. Comprising more than 1.2 million square feet, the buildings were upgraded with the sensors early this year, effecting \$316,413 in savings annually and avoiding almost 4.5 million kilowatt-hours per year.

Preston Trucking: Partner Receives Maryland Energy Award



Preston Trucking received the State of Maryland's first Energy Achievement Award from Governor William Donald Schaefer on October 29, 1991. Preston's successful energy conservation program, led by Construction Manager Steve Gay, reduces energy use, establishes an energy education program for company associates, and contributes to an improved environment. The new lighting system at Preston uses 40 percent less energy and will save the company more than \$20,000 per year.

Preston changed more than 2,500 40-watt lamps to 32-watt T8 lamps; upgraded 950 fixtures with electronic ballasts; and converted the loading dock's mercury vapor lighting system to high pressure sodium. The company saves approximately 300,000 kilowatt-hours annually.

Elkhart General Hospital: Upgrade Saves More Than \$100,000

Elkhart General Hospital in Elkhart, Indiana, became a Green Lights Partner in June 1991. A relatively small institution, yet with all of the high electricity use associated with hospitals, Elkhart had completed about a third of their upgrade work by the end of August 1991 and were projecting more than \$100,000 in annual energy savings. The upgrade included the installation of T8 lamps, compact fluorescents, electronic ballasts, occupancy sensors and timed switches, and reduced light levels where appropriate. Additionally, the reduced heat load has solved some air conditioning problems and there has been a dramatic drop in maintenance costs—annual maintenance savings of \$20,000 are projected.

**ELKHART
GENERAL**
HOSPITAL

The Boeing Company: Energy Use in Upgraded Buildings Drops 50%

Boeing has upgraded an incredible 4 million square feet since becoming a Green Lights Charter Partner in January 1991. Led by Larry Friedman, energy conservation manager for Boeing Support Services, the company has saved 14 million kilowatt-hours and almost \$500,000 already. The energy savings translate into reductions in power plant emissions of 26 million pounds of carbon dioxide, 110,000 pounds of sulfur dioxide, and 70,000 pounds of nitrogen oxides. That's a lot of pollution taken out of our air—and Boeing is just getting started. They have 64 million square feet to go, and they're working on it.

BOEING

Charter Partners Report Progress

A large number of Green Lights partners who have been in the program for a year are just completing the survey phase of their effort. A combined total of more than 16 million square feet has been surveyed by Browning-Ferris Industries, Yellow Freight Corporation, Whirlpool Corporation, Union Camp Corporation, Joseph E. Seagram & Sons, Texaco, Hasbro, Inc., Gerber Products, and American Standard, Inc.

Other companies are further along. The Oliver Carr Company in Washington, DC, has upgraded more than 1.3 million square feet through delamping, rebalasting, and reflector installation, for an estimated annual savings of \$480,000. The Lone Star Steel Company in Texas has upgraded more than 400,000 square feet by replacing mercury vapor lamps with high pressure sodium lamps and through general delamping. Officials plan to install occupancy sensors and to reduce daily lighting hours in remote facilities from 24 to 3. Wolverine World Wide, Inc., in Michigan has upgraded its exit signs by replacing incandescent lamps with fluorescent. Workers also are installing reflectors in many fixtures.

Warner-Lambert in Morris Plains, New Jersey, has installed almost 3,500 T8 fluorescent lamps, which will yield an annual savings of \$190,000. Phillips Petroleum has replaced approximately 16,000 40-watt lamps with 34-watt lamps, for an annual savings of \$17,000; almost 500 incandescent lamps have been replaced with compact fluorescent lamps, yielding annual savings of \$7,000. Additionally, lighting management systems were installed at 38 locations. American Express in New York has completed 85 percent of a 1.6 million square-foot installation. Annual savings of almost \$285,000 will be realized through the use of T8 lamps, reduction in lighting hours, and occupancy sensors.

The Polaroid Corporation in Waltham, Massachusetts has surveyed almost 1.3 million of its square feet and begun upgrades. Generally, T8 fluorescent lamps are being installed with electronic ballasts; compact fluorescents are replacing incandescents; mercury vapor lamps are giving way to high pressure sodium lamps; and some occupancy sensors are being installed.

The Future of Green Lights

The first year of Green Lights has validated the basic principles of the voluntary corporate leadership approach to energy efficiency. And, not surprisingly, it has raised tantalizing prospects for the year to come. The program has five goals for the coming years:

- **Increase participation:** The program's goal for 1992 is the recruitment of another 3 to 5 percent of the nation's square footage.
- **Support implementation:** Green Lights participants have taken on a serious responsibility, and the program office is committed to making their implementation as profitable and quality-enhancing as possible. Our goal is to have every Green Lights participant complete one major lighting upgrade in 1992.
- **Broaden program participation:** Commercial, industrial, and institutional users account for 75 percent of the nation's lighting electricity use; they were the natural first audience for the Green Lights Program. However, in the coming year, the program will begin outreach to the residential sector, to broaden awareness of the pollution prevention benefits of energy efficiency.
- **Accelerate market transformation:** Green Lights will claim success when the program isn't needed anymore; on that day, lighting will be done "smart" without any extra effort or thought on the part of the customer, vendor or lighting consultant, and a dynamic of continual improvement in the lighting marketplace will be set into motion.
- **Explore replication of the program in other technology areas:** Green Lights will not be the last voluntary energy-efficiency program; it is the prototype for many others. By the end of 1992, EPA hopes to offer a Green Buildings program and/or a Green Energy Corporation program to further the nation's goal of preventing pollution.

Bulletin Board Available in March

Green Lights has established an electronic bulletin board, available free of charge to the general public, which is to include current program information, news, participant lists, and technical information about energy-efficient lighting. Designed to provide easy access to program information, the bulletin board will be accessible by modem beginning in March.

To use the bulletin board:

- Set up a 2400 or 9600 baud modem and modem software on your PC (9600 baud capacity available end of March);
- Set the parameters on your communications software to
data bits: 8
parity: N
stop bits: 1
- Dial (202) 775-6671;
- Answer the questions (e.g., name, city, type of monitor) to log on;
- When prompted, choose "register" and answer the questions;
- Once you reach the Main Menu, explore the "Bulletins" and "Program Information" sections for information on Green Lights.

Questions? Fax (202) 775-6680.

Selected Green Lights Materials

Green Lights produces several information and promotional products.

Video: A general overview of the program as well as a section on the program's more technical aspects.

Brochure: A general overview of the program.

Light Briefs: Technical product description flyers for the layperson; they cover such topics as electronic ballasts, energy-efficient lamps, occupancy sensors, reflectors, disposal of lighting products, and financing options.

***Financing Database:** Diskette containing a database of funding sources from utilities, energy-service companies, and government sources.

***Update newsletters:** Monthly newsletters distributed to all program participants, designed to provide the latest information on all aspects of the program.

Slide Show: A 46-slide presentation with annotations; describes the Green Lights program in detail.

***Camera-ready logos:** Color and black and white versions of the Green Lights logo, distributed for participants' use in their own printed materials.

***Buttons:** Imprinted with the color Green Lights logo.

***Window Decals:** Stickers imprinted with the color logo.

* Available only to program participants



Green Lights
A Bright Investment
in the Environment
Partner
Environmental Protection Agency

**For more
information:
EPA Green Lights
(ANR-445)
Washington, DC
20460**

**Customer
Service Center
(202) 775-6650
(202) 775-6680 fax**

**(202) 775-6671
bulletin board**

Partners Talk About Green Lights



"Green Lights sets a savings goal attainable by any institution committed to energy savings. By providing independent verification of the value of lighting efficiency methods, Green Lights removes barriers normally faced by non-profit institutions leery of many claims. We have found that adhering to the Green Lights standard can successfully reduce lighting wattage by over 65 percent with no sacrifice in lighting quality."

- Lindsey Audin
Manager of Energy Conservation
Columbia University



"We signed up because of the mathematics of the situation. I saw an opportunity to benefit the company in the short-term, and the environment and the company in the long-term."

"I could see that if we lit our properties better and saved money and energy, the environment would be better and long-term consumption rates would be lower. It's an opportunity for government, industry, and power generation companies to all benefit."

- Sidney Kirschna
President
National Service Industries, Inc.



"For Xerox, Green Lights is a major energy conservation program. Participation in Green Lights allows us to more clearly focus on not only the impact that lighting has on the environment, but also the impact that lighting has on our bottom line."

- B. Lum Lee
Manager, Energy and Recycling Programs
Xerox Corporation



"Clean air and energy conservation are compatible goals. By encouraging efficient use of lighting and reducing demand for electricity, the Green Lights program demonstrates how American creativity can lead to cost-effective and practical solutions to our complex environmental problems."

- Lodwrick M. Cook
Chairman, Chief Executive Officer
ARCO

Allies Talk About Green Lights

"We're pleased to participate in the Green Lights program. It's gone a long way in just a few months to give lighting upgrading the credibility it deserves. And giving energy efficiency the awareness it needs. Green Lights is great for the environment and great for business. We've already recruited two Partners and we're excited about helping Green Lights expand its reach."

- Cary Mendelsohn, president, Imperial Lighting Maintenance Company, in Mainlighter, November 1991.



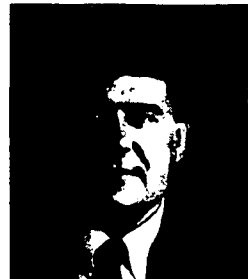
"We're very optimistic that Green Lights will be a successful program. The 1990s and beyond will be dominated by energy and environmental issues. We expect to do our part to help the environment and we expect that our customers will do their part."

- Paul Von Paumgarten, manager of lighting services, Johnson Controls, Inc., in The Construction Specifier, October 1991.



"The educational aspects of the program are particularly important."

- Peter Caldwell, vice president of marketing, Electronic Ballast Technology, Inc., in Energy User News, January 1992.



(as of March 2, 1992)

A collage of various corporate logos including Bell Atlantic, BF1, Bechtel, Citicorp, Citibank, Amoco, Gerber, Nike, Philips 66, Polaroid, Whirlpool, Warner Lambert, and others.

[illegible]



EPA, as a matter of policy, does not endorse the institutions listed above or their products or services.

Green Lights Partners

(as of March 2, 1992)



GOVERNMENT PARTNERS:

The State of California The State of Florida The State of Idaho The State of Maryland
 The State of Missouri  Naperville The State of Oregon Broward County, Florida
 The State of South Dakota  The City of Houston, Texas U.S. Virgin Islands

GREEN LIGHTS ENDORSERS:



Association of Professional Energy Managers
 Consulting Engineers Council of Metropolitan Washington
 Illuminating Engineering Society of North America
 InterNational Association of Lighting Management Companies

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Green Lights Allies

(as of March 2, 1992)

Lighting Management Company Allies

A-1 Lighting Service Company
ABD Lighting Management Company
Aetna Corporation
Allied Lighting Services, Inc.
American Lighting Inc.
Amtach Lighting Services
Approved Lighting Corporation
Barney Roth Company
Broadway Maintenance Company (NJ)
Cherry City Electric
Chicago-Edison Corporation
Colorado Lighting
Conserve Electric Company, Inc.
Continental Lighting Services, Inc.
Creative Lighting Maintenance
Efficient Lighting and Maintenance, Inc.
Energy Controls & Concepts
Eveready Electric Company
Fluorescent Maintenance Company (CO)
Fluorescent Maintenance Service, Inc.(FL)
Fluorescent Maintenance Service, Inc. (MS)
Fluorescent Maintenance Sign Co. (AL)
General Lighting and Sign Service, Inc.
IllumElex Corporation
Imperial Lighting Maintenance Company
Lighten Up, Inc.
Lighting Maintenance, Inc. (IL)
Lighting Maintenance and Service, Inc.
Lighting Management Corporation
Lighting Systems Too!
Luminaire Service, Inc.
Master Lighting Service
Mira Lighting and Electric Service, Inc.
Murphy Electric Maintenance Company
New Mexico Energy Consultants
Planned Lighting, Inc.
Primo Lighting Management
ProLike Lighting and Sign Maintenance
Puget Energy Management Systems
SICA Electrical & Maintenance
Stay-Lite Lighting Service
Suburban Lighting, Inc.
Superior Light and Sign Maintenance Co.
Sylvania Lighting Services
United Electrical Maintenance Corporation
Universal Lighting Services
USA Energy Corporation
Vista Universal, Inc.

Electric Utility Allies

Arizona Public Service Company
Atlantic Energy
Boston Edison Company
Central Maine Power
City of Georgetown, Texas
City Utilities of Springfield
Consolidated Edison of New York, Inc.
Duke Power Company
Energy Resource Center
Grant County Public Utility District
Jersey Central Power & Light Company
Kansas City Power & Light
Los Angeles Department of Water and Power
New York Power Authority
O & A Electric Cooperative
Pacific Gas & Electric Company
Port Angeles Light Department
Portland General Electric Company
PSI Energy, Inc.
P.U.D. #1 of Grays Harbor County
Public Service Electric and Gas Company
Puget Sound Power & Light Company
Rockland Electric
Sacramento Municipal Utility District
Salt River Project
South Carolina Electric & Gas Company
South Carolina Public Service Authority
Southern California Edison Company
Springfield Utility Board
Tampa Electric
Taunton Municipal Lighting Plant
The UNITIL System of Companies
Wisconsin Electric Power Company

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Green Lights Allies

(as of March 2, 1992)

Manufacturer Allies

A.L.P. Lighting + Ceiling Products

Advance Control Technologies, Inc.

Advanced Transformer Company

Amalco Metals, Inc.

American Electric

American Energy Management

American Lighting Corporation

American Lighting Systems

American Illuminetics, Inc.

American Systems and Services

Appliance Control Technology, Inc.

Art Directions Inc.

Badger USA, Inc.

Brayer Lighting, Inc.

Bright Side Lighting

Browlee Lighting

Bryant Electric

Canterra Electronics International

Cooper Lighting

C.E.W. Lighting, Inc.

CMB Associates, Inc.

CSL Lighting Mfg., Inc.

Dark To Light Inc.

Davis Controls Corporation

Dazor Manufacturing Corporation

Duralux Industries

Duray Fluorescent Manufacturing

Duro-Test Corporation

Dynamic Energy Products, Inc.

Edison Price Lighting

Elba USA, Inc.

Electronic Ballast Technology, Inc.

Emergency Safety Products, Inc.

Energy Design Corporation

Enersave Company

Enertron Technologies, Inc.

Enterprise Lighting, Inc.

Environmental Energy Group

ESCO International

Etta Industries

Exitronix Division of Barron Manufacturing Corporation

Flexiwatt Corporation

Flexlite Inc.

FTI

FulCircle Ballast Recyclers

GE Lighting

Geissenger Manufacturing

The Genlyte Group

Guardian Lighting Controls, Inc.

Harris Manufacturing, Inc.

Heath Company

Hetherington Industries

Holophane Company, Inc.

Honeywell Inc.

House O' Lite

Hubbell Incorporated, Lighting Division

Illumination Control Systems

International Conservation Equipment, Inc.

International Energy Conservation Systems

Janmer Lighting

Jedcor Energy Management Company, Inc.

Johnson Controls, Inc.

K-Lite Division of ICI Acrylics/K-S-H Inc.

Kenall

Kilowatt Saver, Inc.

The Kirlin Company

Lamar Lighting Company, Inc.

LuxaLite International

Light Energy Corporation

Lighting Resources, Inc.

LightMedia Corporation

Lighttron of Cornwall, Inc.

Litronics International

Lightway Industries

Litecontrol

Lithonia Lighting

Lorin Industries

Lumatech Corporation

Lumax Industries, Inc.

Magnaray International

MagneTek, Inc.

Megalite Corporation, Inc.

Mercury Recovery Services

MetalOptics, Inc.

3M

MirrorLight, Inc.

ML Systems

Mor-Lite

Motorola Lighting, Inc.

Mule Emergency Lighting, Inc.

MyTech Corporation

NOVA Conservation and Load Management

Novitas, Inc.

NRG Lighting Inc.

Omega Energy Inc.

Optical Coating Laboratory Inc.

Optilight, Inc.

OrEqual, Inc.

OSRAM Corporation

Paramount Industries

Parke Industries, Inc.

Parrish Lighting and Engineering, Inc.

Peerless Lighting Corporation

Peschel Energy, Inc.

Phillips Lighting Company

Powerline Communications, Inc.

Pro Finish Metals, Inc.

Prime Ballast

Pritchett Wilson Group, Inc.

Prolight

RAB Electric Manufacturing Company

Reflect-A-Light

Reflective Light Technologies

Remtec Systems

Roth Bros., Inc.

Raud Lighting, Inc.

Salesco Systems USA

Scientific Component Systems

Shalin-Lite

Silverlight Corporation

Slunkar Lighting Fixture Company, Inc.

Solar Kinetics, Inc.

Southco Metal Services, Inc.

SPI Lighting Inc.

Sterling, RMC

Sylvania Lighting Division

Tamarack Corporation

Teron Lighting

Terralux, Inc.

Thomas Industries, Inc.

Topaz Energy Systems, Inc.

Toshiba America Consumer Products, Inc.

Triad Technologies

TrimbleHouse Corporation

U.S. Light Bulb, Inc.

Ulster Precision, Inc.

UNENCO

United Energy, Inc.

United Energy South

Valmont Electric

Venture Lighting International

Waldmann Lighting Company

Warner Technologies

The Watt Stopper, Inc.

Wellmade Metal Products Company

H.E. Williams, Inc.

Wisnareq Light Company, Inc.

Xtra Light

X-Tra Light Systems, Inc.

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