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POLLUTION PREVENTION OPPORTUNITY ASSESSMENT UNITED STATES POSTAL SERVICE BULK MAIL CENTER DALLAS, TX

by

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FOREWORD

The U.S. Environmental Protection Agency is charged by Congress with protecting the Nation's land, air, and water resources. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. To meet this mandate, EPA's research program is providing data and technical support for solving environmental problems today and building a science knowledge base necessary to manage our ecological resources wisely, understand how pollutants affect our health, and prevent or reduce environmental risks in the future.

The National Risk Management Research Laboratory is the Agency's center for investigation of technological and management approaches for reducing risks from threats to human health and the environment. The focus of the Laboratory's research program is on methods for the prevention and control of pollution to air, land, water, and subsurface resources; protection of water quality in public water systems; remediation of contaminated sites and ground water; and prevention and control of indoor air pollution. The goal of this research effort is to catalyze development and implementation of innovative, cost-effective environmental technologies; develop scientific and engineering information needed by EPA to support regulatory and policy decisions; and provide technical support and information transfer to ensure effective implementation of environmental regulations and strategies.

This publication has been produced as part of the Laboratory's strategic long-term research plan. It is published and made available by EPA's Office of Research and Development to assist the user community and to link researchers with their clients.

E. Timothy Oppelt, Director
National Risk Management Research Laboratory

ABSTRACT

The United States Postal Service (USPS) in cooperation with EPA's National Risk Management Research Laboratory (NRMRL) is engaged in an effort to integrate waste prevention and recycling activities into the waste management programs at Postal facilities. This report describes the findings of the Pollution Prevention Opportunity Assessment of the United States Postal Service, Bulk Mail Center located in Dallas, TX. This assessment was conducted during the week of May 15, 1995.

The report describes the mission of each of the functional areas of the BMC including operations performed, processes and materials employed and the wastes and emissions generated. Then, the Assessment Team makes recommendations concerning the procurement of office supplies, maintenance supplies and hazardous materials; management of hazardous materials and wastes; purchase of chemicals on USEPA's 33/50 list; improvement of source separation and recycling of paper and paper products, metals and plastics; management of unwanted equipment; and other recommendations that can lead to the elimination, reduction or improved management of the facility's solid and hazardous waste streams and emissions to air and water.

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ACKNOWLEDGMENTS

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SECTION 1.0

INTRODUCTION

The United States Environmental Protection Agency (EPA) is actively supporting the development of pollution prevention program plans for Federal facilities. Since 1988, the EPA has managed a technical support effort known as the Waste Reduction Evaluations at Federal Sites (WREAFS) Program. WREAFS was established to provide pollution prevention solutions to environmental issues through research, development and demonstration of pollution prevention techniques and technologies, and transferring lessons learned within the Federal community and related private sector support industries. WREAFS has conducted more than 37 separate RD&D efforts under funding from both EPA and nine other Federal departments and agencies via interagency agreements.

The United States Postal Service (USPS), in cooperation with EPA's National Risk Management Research Laboratory (NRMRL), is engaged in an effort to integrate pollution prevention and recycling activities into the waste management programs at postal facilities. The purpose of this project is to perform pollution prevention opportunity assessments (PPOAs) at several types of Postal Service facilities, representing a cross-section of the USPS inventory; to identify the pollution prevention opportunities for these facilities; to recommend implementation strategies; and to develop facility guidance that can be incorporated into a revision of the USPS Waste Reduction Guide.

This report describes the findings of the PPOA conducted for the United States Postal Service Bulk Mail Center (BMC) located in Dallas, TX. The site assessment was conducted during the week of May 15, 1995.

The Assessment Team performed a multi-media assessment. Issues of concern included: hazardous material acquisition, use and storage; hazardous waste storage and disposal; procurement and solid waste management, including recycling. The report begins with a brief description of the facility. This is followed by descriptions of specific operations and the wastes and emissions generated. The report makes both site-wide and operation-specific recommendations that may lead to the elimination, reduction, or improved management of the facility's waste streams. While energy was not part of the multi-media assessment, the Assessment Team makes energy-related recommendations where appropriate. Mention of trade names, commercial products, or vendors does not constitute endorsement or recommendation for use.

1.1 SITE DESCRIPTION

The BMC is located in Dallas, TX, at 2400 Dallas-Fort Worth Turnpike. The facility occupies 75 acres along the I-35 corridor west of downtown Dallas. The surrounding area is devoted to mixed commercial/industrial and residential uses. The site is bordered on the north by Route 35 and an industrial park, on the south by a residential area, on the east by Hampton Road and a commercial area and on the west by an additional commercial area. The USPS operations include one major building and several smaller buildings that house maintenance, groundskeeping and traffic control operations.

SECTION 2.0

BULK MAIL CENTER (BMC)

This section addresses the operations performed within the BMC and associated facilities and the wastes and emissions generated by those operations. The section includes a description of current waste management practices.

2.1 BULK MAIL CENTER

The national bulk mail system is a network of mechanized bulk mail centers that process 3rd and 4th class mail. The USPS operates two large BMCs, five medium BMCs and 14 small BMCs. Classification is based on facility size, rather than mail throughput. The Dallas BMC with approximately 450,000 square feet is considered a medium-sized BMC and processes between 500,000 and 800,000 parcels per day.

The BMC facility in Dallas, TX performs the sorting and routing of packages and bulk business mail for TX, Oklahoma and parts of Kansas, Arkansas, and Louisiana. In addition, mail is routed to the twenty other regional BMCs. The facility employs approximately 1,600 individuals, of which approximately 150 are supervisors and clerical workers. The facility operates three eight-hour shifts per day, six days per week and two shifts on Sunday. An additional 300 workers are hired during the Christmas holiday season.

2.1.1 Physical Description of Facility

The BMC facility occupies 75 acres. The main building contains approximately 452,000 square feet of space which houses administration, workroom floor, facility electrical utilities, air handlers and air chillers. The space is divided as follows:

Penthouse (air chillers, air handlers, electrical service)	30,064 sq. ft.
3rd Floor (Administrative/Conference Rooms)	16,128 sq. ft.
2nd floor (Administrative)	16,128 sq. ft.
1st floor (Administrative)	16,128 sq. ft.
Workroom floor	374,000 sq. ft.

In addition, the facility houses a 2,000 sq. ft. lubrication storage area (lube room) that contains supplies of petroleum products used in the BMC, a used oil storage tank, a staging area for cardboard recycling and a staging area for oil, rags, and filter disposal.

At the east end of the site is a 2,048 sq. ft. former vehicle repair shop that is now used to repair aluminum mail transport equipment known as over the road containers (OTRs). This shop also serves as a fuel and oil dispensing area for postal vehicles. On the west end of the site is a 1,000 sq. ft. "tin shed" that houses groundskeeping equipment and miscellaneous machinery.

The BMC also has two remote sites: a USPS-owned warehouse at 1982 Fort Worth Ave. which is shared with the Dallas General Mail Facility (GMF), and a leased facility of 59,000 sq. ft. located at 3706 La Reunion Parkway that houses the Crossdock Pallet Facility (CPF).

2.1.2 Mail Handling

Mail enters the main facility via trucks through loading docks on one of 42 inbound docks, on the east and west side of the facility. Mail is processed and sorted and leaves the facility via 78 outbound docks on the south of the building. Mail is handled through the facility according to its physical characteristics and destination. Mail comes in four basic forms: sacks, parcels, nonmachinable outsides (i.e., those pieces that can not be machine sorted), and bulk business mail.

Sacks enter from the inbound docks on extendible conveyors. The conveyor transports the sacks to slides which feed keying stations. The keyer locates the sack label, positions the sack in a cradle and keys in the zip code on the label. The cradle tips the sack onto a moving tray sorter that travels at 70 trays per minute. Sacks placed on a tray travel to the destination chute where the tray tips and the sack slides into the chute. The chute leads to an extendable conveyor on the outbound docks where the sacks are bedloaded (stacked on the bed of the vehicle rather than containerized) onto the outgoing trucks.

Parcels arrive at the facility in mail transport equipment (heavy-duty aluminum OTRs, cardboard gaylords, or wire cages), sacks or bedloaded individually. Containers are rolled off the trucks at the inbound docks and placed onto the Fixed Mechanization Automated Container System (FMACS or tow line) and brought to the container unloaders. The unloader dumps the parcels on to a conveyor which moves them to the parcel keying stations on the primary sorters. Parcels in sacks are sent through the sack sorter (see above) and then sorted to the sack shakeout operation where the sacks are opened and the parcels removed and placed on conveyors leading to the primary parcel sorter. Bedloaded parcels are unloaded directly onto conveyors which bring them to the keying stations on the parcel sorters. Once sorted, packages slide onto a tray sorter that dumps them to chutes according to destination. Parcels are loaded into OTRs, wire cages or gaylords, depending on destination, and moved onto outgoing trucks.

Bulk business mail enters the BMC on pallets and in mailer-prepared sacks which are distributed by the sack system to the east wing annex. Sacks are opened and dumped onto a belt where individual bundles are sorted to mail transport equipment and sacks.

2.2 BMC WASTE GENERATING OPERATIONS

Wastes generated by BMC operations include excess and obsolete equipment and supplies; corrugated cardboard; computer paper; white paper; mixed office paper, including forms and envelopes; magazines and newsprint; employee wastes including cans, bottles, wrappers and food; pallets; shrink and stretch wrap; aluminum and other metals; wood; fluorescent tubes and lighting ballasts; batteries; plastic and metal strapping; rags; and oil filters and waste oil.

2.2.1 Solid Waste Management

The main building at the BMC has a 40 cubic yard compactor provided by Southwest Paper Stock. Prior to the segregation of cardboard gaylords for recycling, the compactor was pulled 30 times per month. Currently, the compactor is pulled approximately 12 times per month. The BMC is charged $147.50 per pull which includes compactor rental. The waste collected by Southwest Paper is sent to a materials recovery facility for separation prior to disposal in a landfill. The BMC recycles aluminum and other metals, cardboard gaylords, high grade white office paper, and some scrap wood. In addition, there is a six cubic yard container at the Crossdock Pallet Facility (CPF) that is pulled 26 times per month for a cost of $3,774 per year. There is no recycling occurring at the CPF. The BMC spends approximately $27,000 per year on waste disposal.

2.2.2 Sorting Floor

As noted above, all bulk mail entering the facility is sorted and routed on the sorting floor. The sorting floor generates large amounts of cardboard, metal from equipment repair, oils, grease, and paper. Cardboard gaylords used for the movement of packages are the largest single source of old corrugated cardboard (OCC). After packages that enter the facility in gaylords are dumped for sorting, the gaylords are broken down and placed in an OTR. The OTR is attached to the tow line and sent to the lube room where the gaylords are processed for recycling. Staff stated that the lack of storage space and the inability of staff to segregate reusable from damaged gaylords prevents the wide reuse of gaylords. Reuse of gaylords is limited to times when no new gaylords are available. The BMC currently recycles only cardboard gaylords; other OCC is put into the compactor.

Weyerhauser places a trailer at the dock in the lube room. The gaylords are placed on pallets in the lube room. Strapping, shrinkwrap and other contaminants are removed, and the OCC is placed in the trailer. The BMC staff believe that they recycle approximately 70 to 80 percent of the OCC. The BMC plans to consolidate the recycling in a separate area, purchase a horizontal auto-tie baler and become the USPS regional collection point for OCC recycling. The BMC recycles approximately 60 tons of gaylords per month and receives $140 per ton, representing revenue of approximately $8,400 per month.

The sorting floor also generates significant quantities of undeliverable bulk business mail (UBBM) and loose-in-mails (LIMs), the USPS term for loose or damaged bulk mail. UBBM is currently discarded into the compactor. There are nine LIMs chutes that generate approximately five to six wire cages of LIMs per day. The LIMs are sorted to verify that no deliverable mail is present and the remains are discarded into the compactor.

The Rewrap Section processes mail that has been damaged or is otherwise undeliverable. Broken, leaking or questionable packages are sent to the Rewrap Section where they are opened, examined and, if possible, repackaged using new cardboard boxes and returned to the mail processing system. This section generates a substantial amount of mixed paper and corrugated cardboard that is currently discarded into the compactor.

2.2.3 Lube Room

The lube room is located in the southeast corner of the main building and contains an oil storage rack, a used oil storage tank, a parts washer, a tow line grease storage container and two flammable materials cabinets. The flammable materials cabinets were completely filled with paints, oils, cleaners, and degreasers. Several products contained ozone depleting substances (ODS) and constituents included on the EPA 33/50 list of chemicals targeted for reduction. See the appendices for further discussion of ozone depleting substances and EPA 33/50 chemicals. The lube room had an open drain that leads to the sanitary sewer. The lube room also serves as the staging area for loading of cardboard for recycling.

2.2.4 Tow Lines

During routine maintenance, the tow lines are cleaned out quarterly, generating a thick heavy grease. The BMC generates approximately four 55-gallon drums of tow line sludge per quarter. The sludge is placed in a closed basin in the lube room. The sludge is then biotreated using microbes to reduce the viscosity of the grease so it is pumpable. Following treatment the grease is filtered and pumped to the used oil tank in the lube room. See Section 2.3.2 for a discussion of used oil management.

2.2.5 Cafeteria

The cafeteria/lunch room serves food via vending machines. Wastes from the cafeteria include wastes disposed by employees such as paper and plastic bags, aluminum foil and other containers, such as yogurt or soup, brought in from home. Food waste is mixed with these materials. Beverages are sold in aluminum cans and glass and plastic bottles. An aluminum can collection box was present in the cafeteria. Deliveries of food products generate corrugated boxes and packaging which are sent to the compactor.

2.2.6 OTR Repair, Vehicle Fueling/Maintenance

The BMC has a 2,000 sq. ft. repair facility that consists of two buildings at the east end of the site. One building is used for the mechanical repair of OTRs, wire cages and other equipment. This building houses welding equipment as well as other machine shop equipment. Repairs performed include structural repairs as well as replacement of tow pins, wheels, or other parts. The shop is typically staffed with five to six employees. The OTR shop repairs between 10 and 18 OTRs per person per day. The repair area had at least 300 OTRs and wire cages stockpiled awaiting repair. Numerous additional pieces of mail transport equipment requiring repair arrive each day from all parts of the country.

The second building is a maintenance shop for painting and prep of OTRs and other maintenance. This building is adjacent to the fueling area so no "hot" work occurs in this building. In addition, this facility readies new OTRs for use by painting on the marking area and adding a Dallas identification number.

Each building has a flammable materials cabinet that contains numerous containers of paints, oils, and degreasers. Several partially used containers of insecticide were also found in the two buildings. Adjacent to the fueling area is a flammable materials cabinet that contains drums of motor oil for vehicles. An inspection of the flammable materials cabinet in the OTR repair shop revealed the bottom filled with several inches of oil.

2.2.7 Purchasing and Stock Room

The stock room at the BMC stores parts and materials used by the BMC staff and is the central ordering area for equipment. All parts and supplies are ordered through the stock room. The stock room staff uses a computerized ordering system to acquire materials from GSA or the Materials Distribution Center in Topeka, KS. The staff also orders from local suppliers. Approximately 25 people have access to the stock room. Nine individuals have the authority to order parts and materials. These orders are approved by one of three maintenance supervisors, the maintenance manager and the purchasing officer. Parts requests from staff are entered via a computer terminal on a shelf outside of the stock room. The stock room staff retrieves the part if it is in stock or orders the part if necessary.

2.2.8 Maintenance Shops

The maintenance department performs repairs on sorting equipment as well as building maintenance and upkeep. The maintenance shop contains two degreasers that use "Powersolv" solvent, an aqueous-based cleaner degreaser. Rags used by the maintenance staff tend to be very oily and the staff has found that they cannot be cleaned and reused. The facility was using a rag service, but found that they were continually purchasing new rags because the service could not clean the rags. All rags are now purchased either locally or through GSA and disposed via incineration. The BMC purchased 6,250 pounds of rags in 1994 for $2,375 and in 1995 through

April have purchased 3,750 pounds for $555. The facility generates three to four 55-gallon drums of rags per month which are incinerated for approximately $400 per drum ($1200 to $1600 per month).

All flammable materials storage cabinets contained products with chemical constituents listed on the EPA 33/50 list. The BMC staff has discontinued ordering products containing these chemicals, found suitable replacements and is in the process of depleting stocks.

2.2.9 Battery Charging Room

The battery room, located on the main floor of the BMC, is used for recharging and storage of batteries used in BMC vehicles, approximately 37 forklifts and 20 jitneys. Each vehicle has three batteries: one in use, one charged and ready, and one charging. The facility estimates there are 150 batteries on-site. The room has an open floor drain with no diking to prevent spills from entering the sanitary sewer. The BMC is presently in the process of upgrading the battery charging room to increase storage capacity, install better ventilation and lighting and provide a limestone tank for the neutralization of any acids released in the battery room. In 1994, the BMC recycled 30 batteries to Exide Corporation, a battery manufacturer.

2.2.10 Administrative Offices

The BMC contains three floors occupied by offices and conference rooms (approximately 48,000 sq. ft.). The significant wastes include computer printouts, white paper, mixed office paper, toner cartridges and employee wastes. The BMC has initiated a white paper recycling program. While some employees were participating in the recycling program, most were not, as evidenced by white paper in nearly all trash containers. Lighting in all offices, conference rooms and restrooms is motion sensitive. The BMC plans to install new carpeting manufactured from recycled polyethylene.

2.2.11 Facility Perimeter

During a walk around the facility perimeter, the Assessment Team noted the presence of a "tin shed", several roll-off containers and several miscellaneous material storage areas. The tin shed houses groundskeeping equipment and a variety of excess equipment and materials including tires and other parts. Near the tin shed is a 30 cubic yard container dedicated to the collection of wood wastes. According to the BMC staff, this container is pulled for recycling by Southwest Paper on an "on-call" basis. The contents of the container were contaminated with plastic and cardboard boxes. There is also a 30 cubic yard container for metals recycling. The BMC generates 10 to 12 tons of scrap metal per month. The container is typically pulled twice per month by Atlas Scrap and the USPS receives approximately $70 per ton, generating revenue of approximately $800 per month. The facility also generates 15 to 20 tires per year. These tires are either removed by the tire company performing the replacement or are sent to the VMF in Dallas for management. Scrap equipment piles were located all around the west and northwest

perimeter awaiting use or disposition. Bulk aluminum is typically sold at auction in 20,000 pound lots; however, in fiscal year 1995 there has been one sale of approximately 97,000 pounds of aluminum for which the USPS received approximately $7,929.

2.2.12 Crossdock Pallet Facility

The Crossdock Pallet Facility (CPF) is a 59,000 sq. ft. leased facility located at 3706 La Reunion Parkway in an industrial park approximately one mile from the BMC. The CPF redistributes palletized materials from bulk mailers. Palletized materials arrive on trucks from bulk mailers. The CPF personnel unload the trucks and determine if the materials on each pallet are already sorted by BMC or are mixed. Those pallets that are correctly separated for other BMCs are put directly onto trucks. Pallets that contain mixed loads are broken down, sorted, re-palletized, shrinkwrapped and put on the correct truck for shipment. If the pallets are for the Dallas region, the packages are sent to the BMC for sorting and routing.

The CPF is also the accumulation point for all sacks for the Dallas BMC region. Sacks arrive from all over the Dallas region loose, bagged, or in OTRs and wire cages. The sacks are sorted by type, checked for mail, removed from service if damaged, repackaged, and sent to the annex. Sacks are shipped to local Post Offices or bulk mailers, as required.

All waste generated at the CPF is disposed in a six cubic-yard container that is emptied daily for a cost of $3,774 per year. No recycling is performed at this facility. Wastes generated include pallets, shrinkwrap, cardboard, damaged sacks, and strapping. USPS plastic and pressboard pallets are shipped to the Arlington TX pallet distribution center. Wood pallets are disposed. The facility also has a fork truck battery charging operation with no safety or spill prevention equipment present.

2.2.13 Warehouse

The warehouse, located at 1982 Fort Worth Ave., is a facility shared by the BMC and the GMF. The facility is approximately one mile from the BMC. The BMC uses this space primarily for the storage of cardboard gaylords for use in the BMC and some excess equipment. It was unclear which material belonged to the BMC and which to the GMF. The warehouse also had a fork lift battery charging station in operation with no safety or spill prevention equipment present. One area in the facility is used for records storage. There is no trash service at this facility. All wastes generated here are discarded of at the BMC or GMF facilities.

2.3 ADDITIONAL WASTE STREAMS

2.3.1 Hazardous Waste

The BMC does not generate large amounts of hazardous waste on a regular basis. The BMC has begun to take all aerosol cans to a central depository. The aerosol cans are punctured

and drained into one of two drums. One drum is designated for paints, the other for oils. Once emptied, the cans are recycled with the metal scrap. The BMC has not yet generated a full drum for disposal.

The BMC generated one 55 gallon drum of hazardous waste in 1994, which was waste paint classified F003 and F005.

2.3.2 Used Oil

Used oil from sorting machines and motors is typically filtered and reused on the tow line. The BMC uses a portable filtering unit that can be used for motor oils and cooling oils. After final use the oils are sent to the used oil collection tank. Used oil is collected by Worldwide Reclamation who sends it to CSC Disposal for rerefining. In 1994, the BMC generated approximately 11,500 pounds (1,500 gallons) of waste oil. The facility generates 10 to 20 oil filters per year from the compressors and other equipment. The oil filters are collected by Worldwide Reclamation and sent off-site for incineration.

2.3.3 Pest Control

The facility has discontinued the application of pesticides by its employees and contracts all pest control to licensed applicators. The staff has attempted on more than one occasion to remove all aerosol pesticides from the facility, but several containers were found during the assessment.

2.3.4 Lighting

The BMC primary lighting is provided by fluorescent fixtures. The facility is in the process of changing over to halogen lighting; however, capital improvements funding for the lighting systems were recently denied by the regional environmental office. The BMC staff stated that it is their goal to eliminate all fluorescent lights from the facility because of the environmental impacts of the disposal of fluorescent tubes. The BMC discards 21 fluorescent tubes per day, five days per week into the compactor. The staff collects lighting ballasts and batteries for recycling. The staff is currently investigating the use of new sulfur-based lighting systems under development by Fusion Lighting and the Department of Energy. Motion sensitive lights were in use in the office spaces, but nowhere else.

SECTION 3.0

BULK MAIL FACILITY POLLUTION PREVENTION OPPORTUNITIES

This section describes pollution prevention opportunities specific to the operations of the Bulk Mail Facility. Exhibit 3.1 presents a summary of the BMC waste generation, current management and potential pollution prevention opportunities.

EXHIBIT 3.1 BMC SOLID WASTE GENERATION

Waste	Current Management	Opportunities
Obsolete, damaged or defective equipment	Disposed or sold as scrap	Repair at USPS Computer Repair Facility (CRF) in Topeka, KS, Reuse
Corrugated cardboard	Some reused, gaylords recycled, other cardboard disposed	Reduce use of gaylords;Increase use of OTRs; Reduce incoming boxes; reuse boxes; Improve diversion for recycling
Computer print-out	Discarded as waste	Reduce generation, divert for recycling
White paper	Some recycled	Reduce generation, improve diversion for recycling
Mixed paper	Discarded as waste	Reduce generation, divert for recycling
Magazines	Discarded as waste	Reduce generation, divert for recycling
Toner cartridges	Returned for recycling	Continue recycling
Pallets	USPS pallets sent to Arlington facility for redistribution. Pine pallets sold as scrap for mulch	Reduce variety, reuse pine pallets, establish recycling options for pine pallets
Plastic stretch wrap	Discarded as waste	Reduce generation, divert for recycling
Rags	Discarded as waste	Investigate rag service feasibility
Fluorescent tubes	Discarded as waste	Improve ambient light, install motion sensitive lighting, divert for recycling
Strapping	Discarded as waste	Divert for recycling
Oil	Rerefined	Purchase rerefined oil
Alkaline Batteries	Recycled	Use rechargeable batteries
Lighting Ballasts	PCB ballasts managed as hazardous, non PCB ballasts recycled	Improve ambient light, install motion sensitive lighting, turn lights off

3.1 ENVIRONMENTAL OVERSIGHT

Current Conditions

The Dallas BMC does not have an environmental coordinator who is responsible for environmental activities at the facility. Instead, environmental activities are addressed on an as-needed basis by either the facility maintenance supervisors or other staff members. More importantly, no one is designated to monitor environmental compliance and issues at the site. Ultimately, the highest ranking USPS employee on site is responsible and liable for all environmental activities. BMC personnel attend meetings sponsored by the area environmental compliance coordinator to share ideas on reducing the environmental impacts of USPS operations.

Pollution Prevention Opportunities

1. Appoint an Environmental Coordinator

The Dallas BMC should appoint at least one environmental coordinator for the facility. This individual should monitor environmental issues and implement opportunities to reduce waste disposal and emissions at the facility.

3.2 REDUCE PAPER USE

Current Conditions

Office personnel interviewed by the Assessment Team, while aware of the double-sided copying capabilities of duplicating equipment, do not consistently use those options. Staff is not aware of any efforts to encourage reduction in the quantity of paper used and disposed. The Assessment Team observed a significant amount of white paper and computer print-out in the waste containers. White paper is recycled by some personnel, but mixed office papers and magazines are not recycled. Some older copy machines do not have double-sided copying capabilities.

Pollution Prevention Opportunities

1. Adopt paper waste reduction techniques

Before initiating an enhanced recycling program, facility managers and staff should adopt and promote a variety of techniques to prevent or reduce the quantity of paper generated for disposal.

- Establish a duplex copying policy for all multi-page documents and provide staff training in the use of the double-sided function on copying equipment. As equipment is replaced, specify easy to use, rapid, duplex capability.

- Expand and encourage the use of electronic mail rather than paper memos and distribution copies.

- Limit distribution lists. If paper copies are necessary, circulate one memo or report with a cover sheet indicating distribution.

- Identify opportunities to reuse paper and paper products. Corrugated cardboard boxes, jiffy bags, manila envelopes and other packaging materials are reusable for their original function; paper can be turned over and used as scratch paper or made into message pads.

- Encourage staff to proofread on screen and save information on disks rather than as paper file copies.

3.3 REUSE AND RECYCLING

Current Conditions

Currently, the BMC separates cardboard gaylords, aluminum cans, other aluminum and metals, used lubricating oil and some paper for recycling. Staff flatten the gaylord boxes after one use and place them in an OTR on the tow line for staging for recycling. All other OCC is placed in the trash compactor. The BMC staff predict that they will spend more than $1,000,000 in fiscal year 1995 to purchase gaylord boxes, each of which will be used only once. USPS plastic and pressboard pallets are sent to the Arlington, TX pallet distribution center. Wooden pine pallets are recycled as wood scrap. The recycling program for paper is limited to collection of high grade white paper. The office staff has not been trained to participate in recycling; some offices had recycling containers, many did not. Many desks had small recycled paper holders which typically are inadequate to hold a sufficient quantity of recycled paper and often are not used. No other paper is being recycled. UBBM and LIMs are currently discarded into the compactor. All waste generated at the Crossdock Pallet Facility is discarded; no recycling is occurring at this facility.

Pollution Prevention Opportunities

1. Use OTRs instead of cardboard gaylords

The use of gaylords for moving packages has increased significantly in the last several years. BMC staff stated that this is caused by the inability to obtain adequate supplies of mail transport equipment, especially BMC OTRs. As a result, OTRs are used only to transport packages within the Dallas region. Packages that leave the Dallas region are packed in gaylords

or are bedloaded. OTRs are hoarded by all USPS facilities to cope with seasonal mail volume increases. According to USPS Headquarters Mail Transport Equipment Office, aluminum OTRs cost $1,138 and have an expected life of 10 years. Gaylords are used for a single trip at the Dallas BMC and cost approximately $6.00 each, depending on the size. The Dallas BMC predicts that it will purchase in fiscal year 1995 approximately 28,425 30- inch gaylords for a cost of $147,969 and 143,000 54-inch gaylords for $875,000. The BMC will spend more than $1,000,000 to purchase new gaylord boxes in fiscal year 1995. Exhibit 3.2 provides a simple cost/benefit analysis of OTR versus gaylord use. This analysis shows that an OTR could be used as few as 39 times per year and be more cost effective than the use of gaylords. As a result, the USPS should increase the number of OTRs in the system and increase the repair staff to keep OTRs in service to reduce the reliance on gaylords.

EXHIBIT 3.2 COST/BENEFIT ANALYSIS FOR OTRS VERSUS GAYLORD USE*

Cost/Activity	Aluminum OTR	Double-Walled Cardboard Gaylord
a. Initial Cost	$1,138.00	$6.00
b. Number of Trips	1500 (150/year for 10 years)	1
c. Maintenance Cost	$1000 ($100/year for 10 years)	None
d. Scrap Value	$30	$0.70
e. Total Cost	$2,108	$5.41
f. Cost Per Trip	$1.40	$5.41

* Assumptions:

1. An OTR is used for three trips per week, 50 weeks per year for a total of 150 trips per year.
2. An OTR is in repair two weeks per year; for an annual cost of $100.00.
3. Life expectancy of an OTR is 10 years.
4. An OTR weighs 385 pounds. Scrap aluminum value is $0.08 per pound based on recent auction price for aluminum scrap.
5. A gaylord is used for one trip (based on Dallas BMC usage).
6. A gaylord weighs 10 pounds and scrap value is $0.07 per pound ($140 per ton).

2. Cancel the Integrated Mail Handling System

USPS has an existing inventory of mail transport containers, including both aluminum and steel BMC OTRs, originally intended for use in the immediate service area of each Bulk Mail Center. Although OTRs were not intended to be used to move mail between BMCs or PDCs and BMCs, workers found it too time consuming to unload bedloaded trucks. Now, postal employees use OTRs to move mail between facilities. BMCs and PDCs hoard OTRs for the

holiday season, and bulk mail customers take OTRs and do not return them. The BMCs have no control over the OTR inventory, thus OTRs are not readily available to move the mail.

To solve the problem of access to mail transport equipment, the USPS has designed the Integrated Mail Handling System (IMHS). The planned IMHS would substitute disposable, corrugated cardboard gaylord boxes for the permanent, reusable OTR containers. In addition, because gaylord boxes of adequate volume are too tall, existing BMC mail handling equipment, designed to accommodate OTRs, will require modification.

Rather than invest in costly equipment and program modifications that will increase solid waste quantity and handling costs, the USPS should purchase enough additional OTRs or other permanent mail transport equipment for the nationwide movement of non-peak period mail volume and design and implement a nationwide bar-code labeling and tracking system for the OTRs. By utilizing Regional Equipment Processing Centers to track and distribute OTRs in a timely fashion, the need for the cardboard gaylords will be eliminated. The gaylords currently stocked for the IMHS can be used only during the Christmas season.

2. Reuse cardboard gaylords that enter facility

As noted above, gaylords that enter the BMC are sent to the lube room for recycling. Gaylords are only reused when no new gaylords are available. USPS employees believe that it is too difficult to determine the structural integrity of a used gaylord and that it is too time consuming to flatten the used gaylord and return it to the storage area for reuse. The BMC should establish a procedure to evaluate each gaylord entering the facility. Reusable gaylords should be broken down and staged for reuse. Damaged gaylords should continue to be managed by recycling. One reuse of each gaylord will reduce the costs for gaylords in half, saving the BMC $500,000 in purchasing expenses.

3. Reuse cardboard boxes in other processing operations

All corrugated cardboard, with the exception of gaylords, is sent to the trash compactor. Boxes of the appropriate size in good condition should be reused in other operations. For example, the Rewrap Section uses all new boxes for repackaging parcels. The BMC should segregate the appropriate sized boxes for use in Rewrap and only use new boxes when reusable boxes are not available.

4. Segregate for recycling the OCC that cannot be reused

The BMC believes that it is recycling 70 to 80 percent of its cardboard by recycling the gaylords and that only 20 to 30 percent is sent to disposal. The Assessment Team believes these figures are accurate. The BMC recycles approximately 60 tons of OCC each month and receives $140 per ton. In fiscal year 1995, to date, the BMC has received revenues totaling approximately $39,000. Collecting the additional 20 to 30 percent of OCC would reduce disposal costs and

could yield additional revenues. To increase the recycling rate, however, would require additional labor to evaluate and separate the OCC for reuse or recycling. This will be economically justifiable when the proposed recycling center is built and the baler utilized.

5. Improve office paper recycling system

Given the current market value of all grades of office paper, the BMC should improve the separation of paper for recycling. The BMC should provide more individual and area collection containers for recyclable paper. These container should be clearly labeled and/or a distinct color to distinguish them from the waste containers. A collection container for paper recycling should be located next to each printer and copying machine. Employees should be encouraged to empty their desk collection boxes into centralized consolidation containers. The recyclable paper should be regarded as a valuable commodity, not a waste. Employees need information concerning the kinds of paper that can and should be recycled. Employees should be involved in the planning and implementation of the recycling program so that they will value participating in it. Exhibit 3.3 provides information on some local companies interested in discussing paper recycling opportunities and the materials and prices currently quoted. USPS Environmental Management Policy Office is developing a draft recycling contract and guidance to assist postal facilities in selecting a recycler.

EXHIBIT 3.3 RECYCLERS IN THE DALLAS/FORT WORTH AREA

Recycler	Material Accepted	Material Price (September, 1995)	
Recycle America Of Dallas (Waste Management) 12260 Garland Rd Dallas, TX	Paper Mixed Paper Cardboard	OCC Mixed Office White Paper Computer	$169 per ton $60-70 per ton Varies depending on grade Varies depending on grade
Daltex Recycling Company 408 Singleton Blvd. Dallas, TX 75212	Paper OCC	OCC CPO Mixed White	$205-215 per ton baled $80 per ton on skids $150 per ton $30 per ton $90 per ton
Rock Tenn 9233 Denton Drive Dallas, TX 75235	OCC Mixed office Paper Computer Paper White Ledger	OCC Mixed office Computer White Ledger	$190 per ton baled $150-170 per ton loose $30 per ton $400 per ton $300 per ton

6. Reduce quantity of UBBM and LIMs

USPS bulk mail policies and support services to bulk mailers contribute to the quantity of undeliverable bulk business mail (UBBM), including magazines and newsprint, in the USPS

waste stream. Current USPS policy promotes recycling of UBBM; a policy promoting UBBM reduction is not under consideration. UBBM and LIMs constitute a substantial input into the BMC wastestream and the USPS incurs significant costs to process, transport, deliver and dispose of UBBM.

To determine whether reduction or recycling is the most cost effective management practice for UBBM, the USPS should perform a cost analysis to compare the combined revenues from bulk mailing and recycling of UBBM to the costs associated with sorting, handling, transporting and processing undeliverable mail and associated packaging.

To reduce the quantity of UBBM managed by postal facilities, the USPS could expand its mailing list maintenance service. Annual mailing list updates, particularly for third and fourth class mail, could be integrated into the bulk mail permitting process.

7. Begin UBBM and LIMs recycling

At a minimum, the Dallas BMC should begin to recycle UBBM and LIMs to avoid the disposal costs and potentially earn revenues. There would be a minimal additional handling costs because the UBBM and LIMs are already hand-verified prior to disposal and would only need to be segregated for recycling. Many areas have initiated hauling of UBBM, magazines and newsprint to a central location by integrating hauling of UBBM into the existing mail transportation system. A separate transportation system to move UBBM to an accumulation point will increase costs and environmental impacts.

8. Set up additional recycling bins in cafeteria

Metal, glass and plastic food and beverage containers should be separated for recycling. Metal containers can be accommodated in the existing metals recycling containers. A new recycling program should be established for glass and plastic food and beverage containers.

3.4 PALLETS

Current Conditions

The BMC receives a variety of pallets including pine, HDPE plastic, and pressboard pallets. The BMC currently does an excellent job of collecting and sending the plastic and pressboard pallets to the Pallet Distribution Center in Arlington, TX facility. Purchasing staff believe that pine pallets also are sent to the Arlington facility. The wood container on the north side of the facility, however, contained numerous pallets which were being sold as wood scrap. In addition, pine pallets at the CPF are discarded into the waste container.

Pollution Prevention Opportunities

1. Establish a recycling program for pine pallets

Establish a formal recycling system for pine pallets. Recyclers will repair or rebuild pallets for resale. Exhibit 3.4 provides a summary of some pallet recycling services available in the Dallas area.

EXHIBIT 3.4 EXAMPLES OF PALLET RECYCLERS IN THE DALLAS AREA

Company	Size Collected and Price
American Pallet Rebuilders Phone: (214) 744-4840	The company will only purchase 48"x 48" pallets and will pay up to $2.50 per pallet, depending on condition. Will collect, at no charge, a minimum of 400 to 500 pallets.
AAA Pallets Phone: (214) 445-0036	AAA Pallets will pay 50 to 75 cents per pallet, depending on condition. Accept all sizes of pallets for recycling. For once-a-week pickup, AAA will leave a van onsite; for once-per-month pickup, AAA will send a van. AAA recycles and repairs pallets. Nothing goes to the landfill.
All Size Pallet Supply Phone: (800) 281-8150	All Size Pallet Supply will pay $1.00 for 48" x 48" pallets. All other sizes will be collected at no cost, but the company will not pay for them. Pallets are torn down and rebuilt into needed sizes or repaired and sold to customers.
Summers Pallet Service Phone: (800) 992-2052	Summers will collect all pallet sizes but only pays for certain sizes. Prices range from 50 cents to $3.00. For a 48" x 48" pine pallet, they quoted $2.00. Would provide drop trailers if volume is considerable. Summers recycles pallets, disassembles odd sizes and remakes them, and grinds rotten pallets for compost.

3.5 LIGHTING AND ENERGY

Current Conditions

The Federal government is a major consumer of energy, using more than two percent of all energy consumed in the United States. The Energy Policy Act of 1992 requires Federal agencies to reduce energy consumption per gross square foot 20 percent by the year 2000 and Executive Order 12902 requires Federal agencies to reduce energy consumption 30 percent by the year 2005. Although the USPS is not an Executive Branch Agency, it is Postal Service policy to adhere to Executive Orders whenever feasible. Both reductions are from a 1985 baseline. In addition, Federal agencies must conduct comprehensive energy audits and install cost-effective energy conservation measures; agencies are encouraged to audit 10 percent of their facilities each year, using "no-cost" audits where practicable. These requirements are summarized in Exhibit 3.5.

The BMC is in the process of upgrading the lighting on the floors with high intensity lighting and hopes, over time, to eliminate the use of fluorescent lights completely. The BMC is a 22 year old building and is in need of significant lighting upgrades. One potential improvement is to switch all the fluorescent lights to sulfur lighting tubes. The Dallas BMC has volunteered to be a "model facility" for sulfur lighting. The USPS regional environmental coordinator will purchase the lights, and the Department of Energy will install the lighting system in the facility. The BMC is willing to consider other methods to improve the floor lighting as well as the lighting efficiency.

EXHIBIT 3.5 FEDERAL ENERGY POLICIES

Energy Policy Act of 1992	Executive Order 12902
Reduce energy consumption per gross square foot 10 percent by 1995 (1985 baseline)	Reduce energy consumption per gross square foot 30 percent by 2005 (1985 baseline)
Reduce energy consumption per gross square foot 20 percent by 2000 (1985 baseline)	Reduce energy consumption per gross square foot 20 percent in industrial facilities by 2005 (1990 baseline)
Conduct comprehensive facility audits and install cost-effective energy conservation measures	Conduct surveys and comprehensive audits
In Federally owned buildings, install all energy and water conservation measures that have payback periods of less than 10 years	Implement recommendations for energy efficiency, water conservation and renewable energy that have payback periods of less than 10 years

In a separate, but related issue, the roof at the BMC is also in need of repairs. In several locations throughout the building, leaks have developed in the roof. There has been some discussion about replacing the roof and, as a result, ambient lighting projects may be considered.

Pollution Prevention Opportunities

1. Increase the Use of Motion Sensitive Lighting

While motion sensitive lighting was used in office areas it was not apparent in other parts of the facility. The BMC staff should review the lighting plans and install motion sensitive lighting in infrequently used areas.

2. Establish a "lights out" policy

Establish a policy of turning off lights and equipment when leaving an area. Where machine design permits, turn photocopiers to low power when not in use. Each kilowatt hour saved prevents the formation of air pollutants, including 0.68 kg of carbon dioxide, 5.8 g of sulfur dioxide and 2.5 g of nitrogen oxides.

3. Investigate Increasing the Use of Ambient Lighting

The Dallas BMC should study the possibility of installing daylighting systems (i.e., skylights) to allow more energy efficient lighting into the building. An estimated 30 to 50 percent of the energy used in a commercial building is spent illuminating the interior. Daylight can significantly reduce energy consumption and peak energy use in commercial buildings.

There are two basic systems for daylighting, active and passive. Active daylighting systems employ a system of stacked reflective mirrors and a robotics unit with an infrared, light-sensitive photo diode that tracks the sun as it travels through the sky. The units are set for the specific latitude of the building. During the day, the units turn to catch the sun at its maximum angle, then reflect the light down through the skylight. With passive daylighting systems, the sunlight penetrates the external dome and directs the light into the building. Exhibit 3.6 presents the approximate square feet of coverage per daylighting unit.

EXHIBIT 3.6 SQUARE FEET OF COVERAGE PER DAYLIGHTING UNIT

Ceiling Height (feet)	Low Levels of Light (30-50 foot candles)	High Levels of Light (50-100 foot candles)
8 to 9	400 sq ft	300 sq ft
10 to 15	700 sq ft	500 sq ft
16 to 19	900 sq ft	700 sq ft
20 to 40	1000 sq ft	800 sq ft

There a several companies that produce and install daylighting systems. Two companies provided information for this report: So-Luminaire Daylighting Systems Corporation and The Natural Lighting Company. The So-Luminaire system is an active daylighting system that is installed in 4' x 4' casings on the roof of a building and reflects natural sunlight through a skylight into the interior of a building. A cluster of diffusion lenses spreads the daylight inside the building. So-Luminaire's two diffusion lenses create dead air spaces which act as thermal barriers to reduce conductive heat gain/heat loss by approximately 50 percent. So-Luminaire estimates that each unit eliminates the use of over two million watts of fluorescent lighting per year, and only consumes one cent in energy costs per year.

The Natural Lighting Company manufactures both active and passive daylighting systems. The active daylighting system uses sun-tracking mirrors to redirect sunlight into a reflective light well and diffusing lens. The passive daylighting system uses an innovative prismatic dome, reflective light well and diffusing system to light interior spaces. The Natural Lighting Company also produces the So-Dark motorized shade screen which is built into the skylight frame allowing a skylight to be partially or completely darkened at the flip of a switch. This product can be used with either the active or passive daylighting systems.

There are several benefits to daylighting and improved facility lighting. The most important is that energy-efficient building design can significantly increase worker productivity. A recent study by the Rocky Mountain Institute found that efficient lighting (as well as heating and cooling) measurably increased worker productivity, decreased absenteeism, and/or improved the quality of work performed. An increase of 1 percent in productivity can provide savings to a company that exceed its entire energy bill. The study presents eight case studies of improved productivity resulting from increased lighting efficiency. One case study included the main post office in Reno, Nevada which found that a lighting retrofit with a six-year payback led to a six percent gain in productivity -- worth more than the cost of the retrofit.

Other benefits of daylighting include:

- reducing electric lighting utility costs
- reducing electric lighting maintenance costs
- reducing electric lighting heat loads on air conditioning systems

4. Investigate Technical Assistance from Green Lights Program

The staff at the BMC expressed interest in technical assistance to modify the lighting at the facility. USEPA operates Green Lights, a voluntary, non-regulatory program promoting pollution prevention through the installation of energy efficient lighting. Federal partners agree to upgrade lighting to maximize energy savings wherever it is profitable. The Green Lights program benefits participants by lowering electricity bills, improving lighting quality, and increasing worker productivity. Energy efficiency also reduces the quantity of pollutants released in the generation of electricity. For example, EPA estimates that if Green Lights were fully implemented, where profitable, in the United States, it would save over 65 million kilowatts of electricity annually, reducing the national electric bill by $16 billion per year. The program would also result in reductions of carbon dioxide, sulfur dioxide, and nitrogen oxides equivalent to 12 percent of U.S. utility emissions, curbing acid rain and smog and helping to slow the greenhouse effect.

See the appendices for additional information on Green Lights and the Federal Energy Management Program.

5. Procure computers that meet Energy Star requirements

Future computer equipment purchases should specify equipment that is energy efficient. Executive Order 12845 requires Federal agencies to purchase computer equipment that meets EPA Energy Star requirements for energy efficiency. The EPA Energy Star Program is a voluntary partnership with the computer industry to promote energy-efficient personal computers, monitors and printers. Participating companies have committed to develop computer equipment that powers down when not in use. The "sleep" feature cuts energy use by 50-75%.

Energy Star also includes a category for controlling devices, external retrofit products that reduce the energy consumption of existing computer equipment by automatically turning them off when not in use. The Federal Supply Service offers a product called the Intelligent Energy Saver, a PC add-on device that controls electrical power to the PC and its peripherals. The complete PC system can be powered on and off at user-defined dates and times. See the appendices for additional information on the Energy Star Program.

3.6 FLUORESCENT LIGHTING

Current Conditions

The BMC offices, warehouses and work areas are lighted with approximately 1,500 fluorescent tubes. The BMC discards at least 21 fluorescent tubes per day, five days per week into the trash compactor. Staff believe that if they limit their disposal to 24 tubes per day, they do not need to dispose of them as a hazardous waste. According to the TX Natural Resources Conservation Commission, Industrial and Hazardous Waste Division, fluorescent lights are not automatically hazardous. A determination must be made using TCLP or by simply declaring them as hazardous. The determination on whether they must be managed as a hazardous waste is dependent on the RCRA status of the facility.

Fluorescent lights are one of the most energy efficient lighting sources available. However, fluorescent lighting tubes contain mercury, which is used as an element to conduct the flow of the electric current. Historically, fluorescent lighting tubes were discarded into landfills. When the tubes broke, mercury was released to the environment. This potential hazard caused many states to classify fluorescent lighting tubes as hazardous waste and require that they be managed in accordance with applicable hazardous waste laws and regulations.

Recycling spent fluorescent lighting tubes offers an environmentally sound alternative to expensive hazardous waste disposal. Additionally, recycling may relieve the generator of future liability concerns associated with tube disposal. Several companies provide recycling services for spent fluorescent lighting tubes and some of these companies also accept ballasts, a component of the light fixture. Ballasts manufactured prior to 1980 contain polychlorinated biphenyls (PCBs), which also present disposal problems. However, ballasts produced after 1980 do not contain PCBs. According to Ron Newman of A-TEC Recycling, the useful life of ballasts is approximately 15 years. Since ballasts manufactured after 1980 do not contain PCBs, ballasts containing PCBs should not present significant disposal problems beyond the near term.

Some states allow ballasts that do not contain PCBs to be disposed of in sanitary landfills. However, according to Stephanie Small of DYNEX Environmental, Inc., non-PCB ballasts contain diethylhexylphthalate (DEHP). Evidence indicates that DEHP is a human carcinogen. Due to either the PCBs or DEHP content, Ms. Small recommends that customers manage all ballasts as hazardous.

USPS Memorandum for Managers, Operations Support dated December 16, 1994 states that "Under no circumstances should these lamps be mechanically crushed or ground into smaller pieces. This method of disposal increases the exposure of hazardous materials to both employees and the environment. Lamps should be boxed prior to disposal."

Pollution Prevention Opportunities

1. Establish Fluorescent Tube Recycling Program

Store expired bulbs in boxes in a safe area. USPS facilities should ship expired bulbs to an approved facility for recycling of glass, metals, and mercury.

Exhibit 3.7 provides information on the specific services offered by companies that provide fluorescent tube recycling services, the cost of the services and the geographic area serviced by each company.

EXHIBIT 3.7 FLUORESCENT LIGHTING TUBE RECYCLERS

Company/Address/Contact	Services Offered	Cost of Services (Spring, 1995)	Geographic Area Serviced
Envirosol 212 South Mesquite Suite 2A Arlington, TX 76010 (800) 488-7974	1. Lamp recycling: Customer to pack lamps in original box. 2. Pick-up service. 3. PCB and non-PCB Ballast disposal	• Per linear ft/lamp: $ 0.10-0.12 • HID $ 3.00 each • Ballasts $0.80-0.90/lb - Cost does not include shipping. - $300.00 minimum per shipment.	TX
DYNEX Environmental, Inc. 4751 Mustang Circle St. Paul, MN 55112 (612) 784-4040	1. Lamp recycling: Customer to pack lamps in original box. 2. Provides reusable boxes to customer for rental. 3. Pick-up service. 4. PCB and non-PCB Ballast disposal (3 methods)	• 4-ft lamp (min. of 100) $0.39 • Over 4 ft (min. of 100) $0.66 • Ballasts - Method 1: Landfill $1.19/lb at (1 drum minimum) $795/drum - Method 2: Decap $1.49/lb at (1 drum minimum) $1,100/drum - Method 3: Incinerate $2.59/lb at (1 drum minimum) $2,000/drum	Nationwide
Lighting Resources, Inc. 386 South Gordon Street Pomona, CA 91766 (800) 572-9253	1. Lamp recycling: Customer to pack lamps and prepare bill of lading. 2. Pick-up service 3. Ballast recycling	• Per lamp $0.07 to $0.10 • Per HID $0.75 to $2.75 • Ballasts $0.75/lb at $700 to $750/drum	Nationwide
Mercury Technologies International 1940 Westwood Blvd., No. 218 Los Angeles, CA 90025 (310) 475-4684	1. Lamp recycling 2. Pick-up service	• Per linear ft/lamp $0.07 to $0.10 • Per HID $3.00	Nationwide
Recyclights 2010 East Hennepin Avenue Minneapolis, MN 55413-2799 (800) 831-2852 or (612) 378-9568	1. Lamp recycling 2. Pick-up service	• 4-ft lamp $0.40 to $0.60 • over 4 ft/lamp $0.60 to $0.83 • Per HID $2.50 to $5.00	Nationwide

Company/Address/Contact	Services Offered	Cost of Services (Spring, 1995)	Geographic Area Serviced
Mercury Refining Company 1218 Central Avenue Albany, NY 12205 (518) 459-0820	1. Lamp recycling 2. Pick-up service	• Per linear ft/lamp $0.08 • Crushed lamps - per 55 gallon drum $650 • HID/gal. with 1.5" diameter $15 • HID/gal. with less than 1.5" $20	Nationwide
Bethlehem Apparatus Company, Inc. 890 Front Street P.O. Box Y Hellerton, PA 18055 (610) 838-7034	1. Lamp recycling: customer to ship whole tubes in original box or crushed lamps in 55 gallon drums.	• 4-ft lamp whole - (1-3000) $3.00 - (3000-6000) $2.25 - (over 6000) $1.50 • 8-ft lamp whole - (1-3000) $4.50 - (3000-6000) $3.50 - (over 6000) $2.25 • 1 to 5 Drums $1,235/each • 6 to 10 Drums $930/each • over 10 Drums $650/each	Nationwide
USA Lights Environmental Inc. 2007 Country Road C-2 Roseville, MN 55113 (612) 628-9370	1. Lamp recycling: Customer to pack lamps in original boxes, secure box with tape, and record number of lamps on the box. 2. Pick-up service. 3. Pollution Liability Insurance coverage	• 4-ft lamp $0.44 • 8-ft lamp $0.62 • Per HID $2.29	Nationwide

3.7 RECHARGEABLE BATTERIES

Current Conditions

The Dallas facility uses numerous alkaline batteries for various functions. The batteries are used predominantly in flash lights utilized during machine repairs and maintenance activities. The BMC uses numerous AA, C, D, and 9v batteries. The stock room maintains a barrel to collect the batteries for recycling. The Dallas facility generates one 55-gallon drum of used alkaline batteries every three months; these are recycled with other metals.

Pollution Prevention Opportunity

1. Purchase Rechargeable Batteries

The Dallas BMC should purchase rechargeable batteries and a charging unit to recharge the batteries. By using rechargeable batteries, the BMC would reduce the purchase cost of batteries. Rechargeable batteries, however, do not provide power for as long as alkaline batteries before recharging is necessary.

GSA has Rayovac rechargeable alkaline batteries which are now available through Muffin or FWW-19. Rayovac's patented *Renewal* batteries offer the high performance attributes of regular alkaline batteries along with the cost and environmental benefits of a reusable system. *Renewal* batteries are available in battery sizes AAA, AA, C, and D. The power stations for recharging batteries also are available from GSA. Stock numbers and prices are listed below. For additional information, call Ms. Genni Brown 817-334-8377.

Rayovac Rechargeable batteries

Size D	Model 713	6140-01-413-3925	Box (20 per box)	$32.80
Size C	Model 714-2	6140-01-413-3923	Box (20 per box)	$32.80
Size AA	Model 715-4	6140-01-413-3926	Box (40 per box)	$35.90
Size AAA	Model 724-4	6140-10-413-3928	Box (40 per box)	$35.90
Charger (All Sizes)	Model PS2	6140-01-413-3929	Box (4 per box)	$90.08

3.8 AFFIRMATIVE PROCUREMENT

Current Conditions

The BMC does not make it a standard practice to purchase items with recycled content, such as paper. Instead, most items purchased are made of virgin material. It appears that the purchasing officials at the BMC are unaware of USPS policy and federal legislation requiring the

purchase of materials with recovered content. The United States Postal Service Waste Reduction Guide (AS552, February, 1992) directs Requiring offices to "review purchase specifications to eliminate prohibitions or limitations on use of recovered materials" and to modify specifications to encourage use of recycled products.

Section 6002 of the Resource Conservation and Recovery Act (RCRA) directs Federal agencies to purchase "items composed of the highest percentage of recovered materials practicable." In 1995, EPA published the Comprehensive Guideline for Procurement of Products Containing Recovered Material (60 FR 21370, May 1, 1995) providing requirements for procurement of seven categories of products including paper and paper products, vehicular products, construction products, transportation products, park and recreation products, landscaping products and non-paper office products. Items of particular interest to the USPS include printing and writing paper, re-refined oils, engine coolant, trash bags, toner cartridges, binders and desktop accessories. These guidelines provide information about the recommended percentage of recovered material, product availability and performance, and specification language.

In Executive Order 12873, October 22, 1993, President Clinton directs agencies to develop and implement affirmative procurement programs for all EPA guideline items and ensure that these programs require that 100 percent of their purchases of products meet or exceed the EPA guideline standards.

The BMC was not able to document successful implementation of USEPA procurement guidelines for products manufactured with recovered content. The BMC is, however, in the process of eliminating products containing the seventeen chemicals on USEPA's 33/50 list. Purchasing officials are not sure whether procurement specifications have been updated to include recycled content in paper products. Current supplies of printing, duplicating and computer paper do not contain any recovered content.

Pollution Prevention Opportunities

1. Purchase products with recycled content and train staff

The BMC should establish preference programs and adopt specifications for the purchase of products made with the percentages of recovered materials specified in USEPA Guidelines. The GSA catalog has special sections for environmentally sound products, such as paper with recycled content. These items are highlighted in green throughout the catalog. The BMC purchasing official should make it a standard practice to purchase items with the highest amount of recycled content. Changes in the procurement system will create staff training opportunities and staff will need training on Federal affirmative procurement requirements. Exhibit 3.8 presents products for which EPA has established minimum recovered content levels.

EXHIBIT 3.8 EPA ESTABLISHED MINIMUM RECOVERED CONTENT LEVELS

Category/Product	Percent Recycled Content
Paper	
High grade bleached printing and writing paper	20%
Mimeo and duplicator paper	20%
Computer paper	20%
Envelopes	20%
Tissue Products	
Toilet tissue	20-100%
Paper towels	40-100%
Paper napkins	30-100%
Facial tissue	10-100%
Unbleached packaging	
Corrugated boxes	25-50%
Vehicular Products	
Lubricating Oil (re-refined oil)	25%
Tires	retread tires
Construction Products	
Fiberglass (glass cullet)	20-25%
Cellulose loose-fill and spray-on (post-consumer paper)	75%
Structural fiberboards	80-100%
Laminated paperboards	100%
Cement and Concrete (coal fly ash)	0-40%
Cement and Concrete (ground granulated blast furnace slag)	25-50%
Polyester Carpet Face Fiber (PET resin)	25-100%
Patio blocks (rubber or rubber blends)	90-100%
Patio blocks (plastic or plastic blends)	90-100%
Floor tiles (rubber)	90-100%
Floor tiles (plastic)	90-100%
Transportation products	
Traffic cones (PVC, LDPE, Crumb Rubber)	50-100%
Traffic barricades (HDPE, LDPE, Pet Steel)	80-100%
Traffic barricades (Fiberglass)	100%
Park and Recreation Products	
Playground surfaces (rubber or plastic)	90-100%
Running tracks (rubber or plastic)	90-100%
Landscaping Products	
Paper-based hydraulic mulch (post-consumer recovered paper)	100%
Wood-based hydraulic mulch (recovered wood and/or paper)	100%
Non-paper Office Products	
Office recycling containers and waste receptacles (plastic)	20-100%
Office recycling containers and waste receptacles (steel)	25-100%
Plastic desktop accessories (polystyrene)	25-80%
Plastic-covered binders (plastic)	25-50%
Chipboard, paperboard, pressboard binders	80%
Plastic trash bags	10-100%

EPA has developed lists of manufacturers and vendors of the items designated in the Comprehensive Procurement Guidelines. These lists will be updated periodically as new sources are identified and EPA becomes aware of changes in product availability. To assist procuring agencies, the lists will be made available at no charge by calling EPA's RCRA Hotline at (800) 424-9346.

The U.S. General Services Administration (GSA) publishes an Environmental Products Guide, which lists items available through its Federal Supply Service. This guide, formerly the Recycled Products Guide, has been prepared to assist Federal civilian and military agencies to identify the environmentally oriented products and services available to them through the supply system of the General Services Administration's Federal Supply Service. The guide contains information about more than 2,900 such items from GSA's supply system. In the general category of recycled-content paper products alone, there are more than 900 entries. Some of these items contain 100% post-consumer recovered materials and all meet or exceed guideline requirements established by the Environmental Protection Agency. This publication is available to federal agencies at no cost from the GSA Centralized Mailing List Service in Fort Worth, TX 76115 or at (817) 334-5215.

In addition to the information provided by EPA and GSA, there are other publicly-available sources of information about products containing recovered materials. For example, the Official Recycled Products Guide (RPG) was established in March 1989 to provide a broad range of information on recycled content products. Listings include product, company name, address, contact, telephone, fax, type of company (manufacturer or distributor), and minimum recycled content. Price information is not included. The RPG is available on a subscription basis from American Recycling Market, Inc. at (800) 267-0707

The Defense General Supply Center in Richmond, VA also distributes the Environmentally Preferred Products Catalog which lists hundreds of environmentally preferable products in its supply system, ranging from aqueous degreasers to remanufactured laser printer toner cartridges. Environmentally preferable means products and services that have less or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance or disposal of the product or service. For more information about environmentally-preferable products, call or write:

Defense General Supply Center
Attn. Marketing Office
8000 Jefferson Davis Highway
Richmond, VA 23297-5762
1-800-848-4847

3.8 OVERSIGHT OF CHEMICAL STORAGE

Current Conditions

All shops and flammable materials cabinets in the BMC contained products with chemical constituents listed on the EPA 33/50 list. The BMC staff has discontinued ordering materials with EPA 33/50 chemicals, found suitable replacements and is in the process of depleting stocks. The BMC has established a system in which all material purchases are reviewed for ODS and EPA 33/50 constituents prior to purchase. Over time the BMC staff believes that this system will eliminate the use of ODS and

EPA 33/50 chemicals. The maintenance shop has a solvent sink that uses an aqueous degreaser. Flammable materials cabinets were filled with products, many apparently very old. One flammable materials cabinet in the OTR repair shop had several inches of oil in the bottom.

Pollution Prevention Opportunities

1. Evaluate the Contents of all Flammable Materials Cabinets

The BMC staff should perform an inventory on all flammable materials cabinets in order to determine if materials are old, expired, or no longer needed by an operation. Old or expired chemicals should be removed from the shops and disposed of properly. Products no longer needed should be inventoried and used as needed in other operations.

2. Perform periodic inspections of flammable materials cabinets

The BMC staff should perform periodic inspections of flammable materials cabinets to determine if contents are intact and that products brought in from sources other than procurement are eliminated. Periodic inspection and cleanout of cabinets will minimize the risk of spills and interaction of incompatible chemicals.

3.9 RAGS

Current Conditions

The maintenance staff currently use rags to wipe up and clean up during maintenance operations. These rags tend to be very oily. The facility was using a rag service in the past but found that they were continually purchasing new rags because the service could not clean the rags. All rags are now purchased either locally or through GSA and disposed via incineration. The BMC purchased 6,250 pounds of rags in 1994 for $2,375 and in 1995 through April have purchased 3,750 pounds for $555. The Facility expects to purchase approximately 6,900 pound of rags for an approximate cost of $1,000. The facility generates three to four 55-gallon drums of rags per month which are incinerated for approximately $400 per drum.

Pollution Prevention Opportunities

1. Test another rag laundering service

Several rag recyclers and linen services in the Dallas/Fort Worth area were contacted; only one would launder oily rags. National Uniform (a division of National Linen Service) (817) 429-5891 will pick up, launder and deliver rags from the Dallas BMC at a cost of $1.50 per pound. National stated that they will accept oily rags but not rags with chemicals, solvents, degreasers etc and that they would appreciate MSDS on oils used by the USPS. An analysis of the costs show that laundering rags may be

cheaper than purchasing new rags. Laundering rags may save between $400 and $1,100 per year. Exhibit 3.9 presents a simple cost/benefit analysis of laundering rags.

EXHIBIT 3.9 COST BENEFIT ANALYSIS OF LAUNDERING RAGS*

Cost/Activity	Laundering	New
Initial Rag Purchase Cost	$1,030	$1,030
Laundering Cost	$10,350 ($1.50 per pound)	none
Disposal Costs	$3,600 (25 percent of $14,400)	$14,400 based on three 55 gallon drums per month at $400 per drum.
Year 1 cost	$2.17 per pound	$2.23 per pound
Cost Savings	$414	
Year 2 rag replacement cost	$258	
Year 2 cost	$2.06 per pound	$2.23 per pound
Cost Savings	$1,173	

* Assumptions:
1. BMC uses 6,900 pound of rags per year.
2. Under reuse option BMC replaces 25 percent of the rags each year.
3. Disposal cost is $400 per drum and the BMC currently generates 3 drums per month.

3.10 BATTERY CHARGING

Current Conditions

The BMC uses numerous battery powered forklifts for the movement of materials. For the main facility the batteries are stored and charged in the battery room. Typically for each forklift there are three batteries; one in use, one charging and one ready for use. When needed, the batteries are filled with water and recharged. The Assessment Team noted that there was an open drain in the battery room that leads to the sanitary sewer. The battery room in the BMC is scheduled to be upgraded to increase the space, lighting, ventilation and add lime neutralization tanks. Forklift batteries are charged at several other BMC locations. For example, both the warehouse and the CPF facility had battery charging occurring with no supervision, no spill containment, and no safety equipment.

Pollution Prevention Opportunity

1. The drain in the battery room should be diked to prevent the accidental discharge of battery acid to the sanitary sewer. There are devices commercially available to dike drains. Once spills are contained, neutralize the battery acid with sodium bicarbonate (baking soda) and then wash the

neutralized acid down the drain with water. Neutralizing the acid will reduce the likelihood of corrosion of pipes.

2. Review procedures on the proper charging of batteries to prevent accidental acid overflows.

3. Remove battery charging operations from remote facilities if possible or provide the appropriate safety and containment equipment for these sites.

3.11 DEDICATED OIL CONTAINERS

Current Conditions

The Dallas BMC oil room has a bulk distribution system which stores several types of oil and a solvent called Pro-Power, which is an oil emulsifier. This distribution system stores materials in 55 gallon containers and has clear PVC tubes that connect to corresponding lockable, self closing faucets to distribute the materials. Several unmarked, open containers are stored under the bulk distribution system. These containers are used to distribute and transport the materials for use. After each use, staff must empty the remaining oil into the waste oil drum and then clean the container with solvent for reuse. This process generates unnecessary waste because excess oil is disposed, instead of being reused, and because the containers must be cleaned with solvent after each use.

Pollution Prevention Opportunities

The BMC should purchase and dedicate containers for specific materials. These containers should have tight-sealing lids and be clearly marked with the type of material for which the container is intended. There are many containers on the market that also have marks indicating the volume. This will ease distribution and help to reduce the amount of excess material dispensed from the bulk distribution system. Also, by having closed, clearly marked containers, the excess materials can be left in the container for reuse. This will eliminate the need to clean the containers with solvent after each use, thereby reducing solvent use.

3.12 POLLUTION PREVENTION INFORMATION SOURCES

Current Conditions

During the site visit, Dallas BMC staff indicated that they would like information on accessing pollution prevention information.

Pollution Prevention Opportunities

There are numerous sources of pollution prevention information nationwide.

There are several sources of pollution prevention information on the internet. Perhaps, the best source is Enviroene. This internet-based information source is funded by the Environmental Protection Agency and the Strategic Environmental Research and Development Program. Enviroene allows those implementing pollution prevention programs or developing research and development projects to benefit from the experience, progress, and knowledge of their peers. Enviroene includes a pollution prevention forum for all levels of government, researchers, industry, and public interest groups. Enviroene has been developed to host an expert architecture known as the Solvent Umbrella. The Solvent Umbrella will allow users to access solvent alternative information through a single, easy-to-use command structure. Enviroene is also modem accessible via Bulletin Board System (BBS). Through Netscape, Enviroene address is:

http://wastenot.inel.gov/envirosense.

The EPA also has a World Wide Web (WWW) Server, which is being run as a prototype system, to provide public access to EPA information. The EPA provides the comprehensive Access EPA document describing environmental information, as well as a number of other pointers to Information Locators that can be obtained from the EPA and related organizations. In addition to this document, the EPA's Public Information Center is available to provide assistance in accessing environmental information. An experimental EPA People Locator is also available. Through Netscape, EPA's WWW server can be accessed through http://www.epa.gov.

The EPA WWW server provides information on EPA Agency information and environmental data, including:

- Press Releases, Calendar, Announcements, Speeches,
- EPA Offices and Regions,
- Consumer Information,
- EPA Initiatives, Policy and Strategy Documents,
- Rules, Regulations and Legislation,
- EPA Standards,
- Science, Research and Technology,
- Information about Grants, Contracts (RFPs), and Job Vacancies,
- Newsletters and Journals, and
- Software and Databases.

See the appendices for additional information on pollution prevention information sources.

SECTION 4.0

CONCLUSIONS AND RECOMMENDATIONS

This Pollution Prevention Opportunity Assessment report documents the processes performed, wastes generated and current waste management practices at the USPS Bulk Mail Center in Dallas, TX. During the assessment process, the Assessment Team identified opportunities to reduce both the quantity and toxicity of the wastes generated by this facility and recommended techniques for implementation of those pollution prevention options. The opportunities described in the previous sections constitute the recommendations of the Assessment Team. Exhibit 3.1 presents a summary of the major recommendations.

Dissemination of this report will encourage application of the pollution prevention opportunities in USPS bulk mail facilities nationwide as well as in other Federal facilities with similar operations.

APPENDICES

EPA 33/50 PROGRAM

The 33/50 Program, one of EPA's Partners for the Environment Program, began in the late 1980s as a voluntary program to reduce toxic emissions of seventeen high priority chemicals reported on the Toxic Release Inventory (TRI). These high priority chemicals, chosen because of their relative toxicities, volumes of use, and potential for reduction through pollution prevention include:

- Benzene
- Cadmium and compounds
- Carbon tetrachloride
- Chloroform
- Cyanide compounds
- Dichloromethane
- Lead and compounds
- Mercury and compounds
- Methyl ethyl ketone (MEK)
- Methyl isobutyl ketone (MIBK)
- Nickel and compounds
- Tetrachloroethylene
- Toluene
- 1,1,1-trichloroethane
- Trichloroethylene
- Xylenes

The 33/50 Program gets its name from the original goals to reduce the 17 priority chemicals by 33% by 1992 and by 50% by 1995. U.S. EPA celebrated the early achievement of the 50% reduction goal in September 1996, when the 1994 Toxic Release Inventory data became available for public release. Between 1988 and 1994, 33/50 Program participants reduced environmental releases and off-site transfers of the 17 target chemicals by 757 million pounds. Companies and organizations participate in the 33/50 Program by submitting a letter to EPA stating their intention to participate and outlining their reduction targets and strategies. More than 1,300 parent companies operating about 6,000 facilities in the U.S. have participated in the 33/50 Program.

For more information about the participation in the EPA 33/50 Program, contact EPA's TSCA Assistance Hotline at (202) 554-1404. Or contact the 33/50 Program staff directly at:

33/50 Program (Mail Code 7408)
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency
401 M Street
Washington DC 20460
Phone: 202-260-7538
POC: Ms. Chris Tirpak
Email: tirpak.chris@epamail.epa.gov

Information on the 33/50 Program is also available on-line through the Enviroene web site: http://es.inel.gov/partners/3350/3350.html. This web site contains background information on the 33/50 program, including history and accomplishments. It includes a series of documents related to the 33/50 program that can be accessed directly from the web site.

OZONE DEPLETING SUBSTANCES

The ozone layer in the stratosphere protects life on earth from exposure to dangerous levels of ultraviolet light. When CFCs and other ozone-degrading chemicals are released into the atmosphere, they will eventually rise to the stratosphere where they destroy the protective ozone layer. This destruction is occurring at a more rapid rate than ozone can be created through natural processes. Destruction of the ozone layer leads to higher levels of ultraviolet radiation reaching Earth's surface. This can lead to higher incidences of skin cancer, cataracts, and weakened immune systems. It is also expected to reduce both crop yields and ocean productivity.

The U.S., in cooperation with over 140 other countries, is phasing out the production of ozone-depleting substances. In 1985, the Vienna Convention was adopted to formalize international cooperation in stratospheric ozone protection. Additional efforts resulted in the signing of the Montreal Protocol in 1987. In the United States, Title VI of the Clean Air Amendments of 1990 addresses the phase out of ozone-depleting substances.

There are two classes of ozone depleting substances. A Class I substance, as defined in section 602 of the Clean Air Act, is any chemical with an ozone-depleting potential of 0.2 or greater (based on CFC-11 having a ozone depleting potential of 1.0). Class I substances (CFCs, carbon tetrachloride, and methyl chloroform) were phased out of production by the end of 1995 and halons were phased out by the end of 1993. Class II substances, hydrochlorofluorocarbons (HCFCs), will be phased out of production and use by the year 2030. Accelerated phase outs of the most damaging Class II substances include HCFC-141b (by January 1, 2003), and CFC-142b and HCFC-22 (by January 1, 2010).

To address the availability of approved alternatives to ozone-depleting substances, the EPA's Office of Stratospheric Protection was mandated to establish the Significant New Alternatives Policy (SNAP) Program. The purpose of the SNAP Program is to identify alternatives to ozone-depleting substances and to publish lists of acceptable and unacceptable substitutes. Information on the SNAP Program is available through the Stratospheric Ozone Hotline at (800) 296-1996.

Executive Order 12843, *Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances*, signed in 1993, requires Federal agencies to comply with Title VI of the Clean Air Act Amendments dealing with stratospheric ozone protection, to maximize the use of safe alternatives to ozone-depleting substances, and to revise procurement practices to eliminate the requirement for ozone-depleting substances.

The best source of technical, policy, and substitute chemical information is the U.S. EPA's Stratospheric Ozone World Wide Web Home Page: http://www.epa.gov/ozone/index.html
This web site contains information on the science of ozone depletion, substitutes for ozone depleting substances, international policy, and links to other sources of information. It can be used as a "jumping off" point for a wide variety of information related to ozone depletion available on the World Wide Web.

The U.S. EPA Office of Stratospheric Protection also operates the Stratospheric Ozone Hotline at (800) 296-1996. It can be accessed between 10am and 4pm EST. They can field any technical or policy related questions on elimination of ozone depleting substances at U.S. Postal Service facilities.

The mailing address for the Office of Stratospheric Protection is:

Office of Stratospheric Protection
U.S. Environmental Protection Agency
Mail Code 6205J
401 M St., SW
Washington, DC 20460

Enviroene also has access to several material substitution databases. Their World Wide Web address is:

http://es.inel.gov
Select "Solvent Substitution Data Systems" for links to several material substitution databases including those that specialize in solvents with ozone depleting ingredients.

EPA GREEN LIGHTS PROGRAM & THE FEDERAL ENERGY MANAGEMENT PROGRAM (FEMP)

The Green Lights Program in a voluntary pollution prevention program that encourages the use of energy-efficient lighting. It is one of the several ENERGY STAR® Programs sponsored by the U.S. EPA's Atmospheric Pollution Prevention Division.

The purpose of the Green Lights Program is to encourage organizations to install energy-efficient lighting to prevent the creation of air pollution including greenhouse gases, acid rain emissions, air toxics, and tropospheric ozone, as well as prevent the generation of solid waste and minimize other environmental impacts of electricity generation.

Green Lights partners agree to install energy efficient lighting where it is profitable as long as lighting quality is maintained or improved. Participants realize average rates of return on their initial investment of 30 per cent or more. Most reduce their lighting electricity bill by more than half while maintaining and often improving lighting quality.

Federal regulations and directives require Federal agencies to reduce energy use. Section 543 of the National Energy Conservation Policy Act, as amended by the Energy Policy Act of 1992, requires each agency to achieve a 10 percent reduction in energy consumption in its Federal buildings by FY 1995, when measured against a FY 1985 baseline on a Btu per gross-square-foot basis and a 20 percent reduction in Btu per gross-square-foot by FY 2000. In 1994, the President signed Executive Order 12902, *Energy Efficiency and Water Conservation at Federal* Facilities, which requires Federal agencies to reduce energy consumption by 30 percent by the year 2005, based on the agency's 1985 energy use.

In response to these mandated requirements, the U.S. Department of Energy's Federal Energy Management Program was established to assist Federal agencies to reduce energy costs by advancing energy efficiency, water conservation, and the use of solar and other renewable energy. FEMP accomplishes its mission by creating partnerships, leveraging resources, transferring technology, and providing training and support. For information on the Federal Energy Management Program contact the FEMP Help Desk at (800) DOE-EREC or the FEMP Office at (202) 586-5772.

The Department of Energy's Federal Energy Management Program has teamed up with the EPA's Green Lights Program to assist Federal agencies to achieve the mandated energy reductions. A kick-off is planned in March 1997. The U.S. Postal Service is one of the first to sign up to this new collaborative effort as a pilot agency. For more information, contact Rob White, National Marketing Director for Green Lights and ENERGY STAR® Buildings, at (202) 233-9242.

EPA provides a range of Participant Support Programs to help Green Lights members obtain information on energy-efficient lighting technology, financing options, software analysis tools, and public recognition opportunities.

For more information about the Green Lights Program, contact:

Manager, Atmospheric Pollution Prevention Division
U.S. EPA
401 M Street SW (6202J)
Washington DC 20460
Tel: (202) 233-9190
Toll Free: (888) STAR-YES
Fax: (202) 233-9569
Fax-back system: (202) 233-9659.

The Green Lights World Wide Web Home Page is at:

Green Lights Home Page
http://www.epa.gov/greenlights.html
This web site includes general information about the Green Lights program, manuals and publications, software tools, and other technical information.

The Federal Energy Management Program Home Page is at:

Federal Energy Management Program Home Page
http://www.eren.doe.gov/femp/
This web site provides news, technical assistance, project financing information, and procurement information to assist Federal agencies achieve the mandated energy use reductions.

U.S. Postal Service participates as a member of the Federal Interagency Energy Management Task Force. Contact Mr. Bernie Denno, Environmental Programs Analyst, at (202) 268-6014 for specific information on U.S. Postal Service involvement in FEMP and Green Lights Programs.

EPA ENERGY STAR® PROGRAM

The ENERGY STAR® Program is a voluntary pollution prevention program aimed at reducing energy consumption to help to combat smog, acid rain, and climate change through decreased emissions from electricity generation. It includes programs aimed at homes, residential HVAC, office products, buildings, and lighting. Programs of interest to the U.S. Postal Service include:

- Office Products. The EPA ENERGY STAR® Office Equipment program is a partnership with the office equipment industry to promote energy-efficient personal computers, monitors, printers, fax machines, and copiers. In 1993, an Executive Order 12845 was issued requiring all U.S. Federal agencies to purchase ENERGY STAR® computers, monitors and printers.

- Buildings. EPA's ENERGY STAR® Buildings program is a voluntary energy-efficiency program for U.S. commercial buildings. Partners can expect to reduce total building energy consumption by 30% on average.

For more information about the ENERGY STAR® Program, contact:

ENERGY STAR® Programs
U.S. EPA Atmospheric Pollution Prevention Division
401 M Street SW (6202J)
Washington DC 20460
POC: Ms. Jeanne Birskin, Chief, ENERGY STAR® Programs
Tel: (202) 233-9190
Toll Free: (888) STAR-YES
Fax: (202) 233-9569
Fax-back system: (202) 233-9659.

The ENERGY STAR® World Wide Web Home Page is at:

ENERGY STAR® Home Page
http://www.epa.gov/energystar.html
This web page contains news and information on all of the ENERGY STAR® initiatives.

The Atmospheric Pollution Prevention Division also prepares a newsletter, *The Update,* which communicates events, highlights, and news affecting Green Lights and ENERGY STAR® program participants. It is available on-line through the ENERGY STAR® Home Page.

FLUORESCENT TUBE AND BALLAST RECYCLING

Fluorescent tubes and lighting ballasts contain hazardous constituents that can make their handling and disposal problematic. Fluorescent tubes contain mercury, which under Federal regulations, may be subject to hazardous waste regulations if deemed hazardous by the Toxicity Characteristic Leaching Procedure (TCLP) (40 CFR 261). Fluorescent lamp ballasts may contain polychlorinated biphenyls (PCBs). Ballasts manufactured before 1979 will contain PCBs, while those manufactured after 1979 should contain a label stating "NO PCBs." If there is no label, you should assume that it contains PCBs. PCB-containing ballasts that are intact and are not leaking can be disposed in a municipal solid waste landfill in properly packed and sealed 55-gallon drums (40 CFR 761). Again, municipal disposal of PCB-contaminated waste poses potential liabilities to the generator.

Individual states may have other specific regulatory requirements governing the disposal of fluorescent tubes. However, in most cases fluorescent tubes can be legally handled and disposed as municipal solid waste, creating a potential liability to the waste generator. To minimize potential environmental impacts, fluorescent tubes can be recycled. The mercury containing material can be extracted, while the remaining glass and metal parts can be recycled. This eliminates mercury going to the landfill, while decreasing the volume of solid waste disposal through recycling.

Before disposing of fluorescent tubes or lighting ballasts, you should contact your state or local regulatory agency for specific handling and disposal requirements. They may also have information on fluorescent tube recycling in your state or area. Consult your local telephone directory for phone numbers.

For information on Federal requirements, contact the following:

Resource Conservation Recovery Act (RCRA/Superfund/Right-to-Know Hotline
Phone: (800) 424-9346 or (703) 412-9810 in the Washington DC area.
Request documents such as *EPA Fact Sheet: Options for Disposal of Lights that Contain Mercury* and *Lighting Waste Disposal*, a general document published by the EPA's Green Lights Program on best management practices that includes recycling. Memorandums on the subject are also available through the fax-on-demand system. Dial (202) 651-2060 from the fax phone receiver, press 1 to order documents, press 11906 and 11907 (press 1 to confirm ordering each document), press # to finish ordering, then press start on your fax machine.

Toxic Substances Control Act (TSCA) Assistance Information Hotline
Phone: (202) 554-1404
Request regulatory guidance on the management and disposal of ballasts that contain PCBs.

Several fact sheets are available over the World Wide Web that contain background information as well as lists of fluorescent tube and lighting ballast recyclers:

U.S. Air Force Center for Environmental Excellence, PRO-ACT
http://www.afcee.brooks.af.mil/pro-act/main/proact4.htm
Select "Fact Sheets" from Home Page menu. Information in the PRO-ACT web site is public domain. However, telephone inquiries and requests for research or information are only available to Air Force users.

Enviroene
http://es.inel.gov/techinfo/facts/lamps-fs.html
Fact sheet on disposal of spent fluorescent light tubes, developed by the Department of Public Works, City of Los Angeles. Contains a list of additional resources.

POLLUTION PREVENTION INFORMATION SOURCES

Pollution prevention information sources are widespread. There are Federal-, state-, regional, and even local sources of pollution prevention information. At the Federal level, the U.S. EPA Office of Pollution Prevention and Toxics (OPPT) distributes a variety of pollution prevention information and oversees several pollution prevention initiatives. They publish the *Pollution Prevention News*, available in hard copy or through the U.S. EPA Pollution Prevention Home Page (see below for URL). OPPT also operates the Pollution Prevention Information Clearinghouse (PPIC). It is a free, non-regulatory service which provides telephone reference and referral, document distribution for selected EPA documents, and a special collection available for interlibrary loan. Publications available from PPIC are listed on the U.S. EPA Pollution Prevention Home Page (see below for URL).

Pollution Prevention Information Clearinghouse (PPIC)
Phone: 202-260-1023 (8:30 AM to 4:00 PM EST)
Fax: 202-260-4659
E-Mail: ppic@epamail.epa.gov
Mail: Pollution Prevention Information Clearinghouse
Environmental Protection Agency, MC 7409
401 M Street, SW
Washington, D.C. 20460
EPA Contact: Beth Anderson 202-260-2602

When calling PPIC for the first time, request a listing of all available documents. A more useful document for the first time user is the *Pollution Prevention Directory* (EPA/742/B-94/005) which identifies Federal, state, regional, and commercially-available pollution prevention resources.

Some of the more popular World Wide Web starting points for Federal, state, and regional pollution prevention information include the following:

U.S. EPA Pollution Prevention Home Page
http://www.epa.gov/opptintr/p2home/
This web site provides general information on pollution prevention, pollution prevention initiatives, and links to other pollution prevention-related web sites.

Enviroene
http://es.inel.gov/
Enviroene is a "one-stop" repository for pollution prevention, compliance assurance, and enforcement information and data bases. Included are pollution prevention case studies , technologies, points of contact, environmental statutes, executive orders, regulations, and compliance and enforcement policies and guidelines. Enviroene has numerous links to other Federal, regional, state, industry and academic pollution prevention resources. Enviroene is an excellent "jumping off" point for additional pollution prevention information available on-line.

Defense Environmental Network & Information Exchange (DENIX)
http://denix.cecer.army.mil/denix/public/public.html
DENIX is a source of information for the Department of Defense agencies and other authorized users. It has a public access menu which allows users from the public domain to obtain a variety of environmental information. Under the "Public" web page, select "Library" then "Pollution Prevention" for numerous pollution prevention articles and information.

Old Version

EPA/600/R-96/111
September 1995

POLLUTION PREVENTION ASSESSMENT: U.S. POSTAL SERVICE BULK MAIL CENTER, DALLAS, TX

by

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This study was conducted in cooperation with the
United States Postal Service

NATIONAL RISK MANAGEMENT RESEARCH LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OHIO 45268

DISCLAIMER

The information in this document has been funded wholly or in part by the United States Environmental Protection Agency under EPA contract No. 68-C2-0148 WA 3-10 to Science Applications International Corporation. It has been subjected to peer and administrative review, and it has been approved for publication as an EPA document. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

CONTACT

James Bridges and N. Theresa Hoagland are the EPA contacts for this report. They are presently with the newly organized National Risk Management Research Laboratory's Sustainable Technology Division in Cincinnati, OH (formerly the Risk Reduction Engineering Laboratory). The National Risk Management Research Laboratory is headquartered in Cincinnati, OH, and is now responsible for research conducted by the Sustainable Technology Division in Cincinnati.

FOREWORD

The U.S. Environmental Protection Agency is charged by Congress with protecting the Nation's land, air, and water resources. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. To meet this mandate, EPA's research program is providing data and technical support for solving environmental problems today and building a science knowledge base necessary to manage our ecological resources wisely, understand how pollutants affect our health, and prevent or reduce environmental risks in the future.

The National Risk Management Research Laboratory is the Agency's center for investigation of technological and management approaches for reducing risks from threats to human health and the environment. The focus of the Laboratory's research program is on methods for the prevention and control of pollution to air, land, water, and subsurface resources; protection of water quality in public water systems; remediation of contaminated sites and ground water; and prevention and control of indoor air pollution. The goal of this research effort is to catalyze development and implementation of innovative, cost-effective environmental technologies; develop scientific and engineering information needed by EPA to support regulatory and policy decisions; and provide technical support and information transfer to ensure effective implementation of environmental regulations and strategies.

This publication has been produced as part of the Laboratory's strategic long-term research plan. It is published and made available by EPA's Office of Research and Development to assist the user community and to link researchers with their clients.

E. Timothy Oppelt, Director
National Risk Management Research Laboratory

ABSTRACT

The United States Postal Service (USPS) in cooperation with EPA's National Risk Management Research Laboratory (NRMRL) is engaged in an effort to integrate waste prevention and recycling activities into the waste management programs at Postal facilities. This report describes the findings of the Pollution Prevention Opportunity Assessment of the United States Postal Service, Bulk Mail Center located in Dallas, Texas. This assessment was conducted during the week of May 15, 1995.

The report describes the mission of each of the functional areas of the BMC including operations performed, processes and materials employed and the wastes and emissions generated. Then, the Assessment Team makes recommendations concerning the procurement of office supplies, maintenance supplies and hazardous materials; management of hazardous materials and wastes; purchase of chemicals on USEPA's 33/50 list; improvement of source separation and recycling of paper and paper products, metals and plastics; management of unwanted equipment; and other recommendations that can lead to the elimination, reduction or improved management of the facility's solid and hazardous waste streams and emissions to air and water.

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ACKNOWLEDGEMENTS

Funding for this project was provided by the United State Postal Service under an interagency agreement. Jim Bridges and Terri Hoagland of the EPA Office of Research and Development, National Risk Management Research Laboratory managed the project and participated in the opportunity assessments. Special thanks are extended to Charlie Bravo and Bernie Denno of the USPS Office of Environmental Management Policy and the staff of the USPS Dallas Bulk Mail Center.

SECTION 1.0

INTRODUCTION

The United States Environmental Protection Agency (EPA) is actively supporting the development of pollution prevention program plans for Federal facilities. Since 1988, the EPA has managed a technical support effort known as the Waste Reduction Evaluations at Federal Sites (WREAFS) Program. WREAFS was established to provide pollution prevention solutions to environmental issues through research, development and demonstration of pollution prevention techniques and technologies, and transferring lessons learned within the Federal community and related private sector support industries. WREAFS has conducted more than 37 separate RD&D efforts under funding from both EPA and nine other Federal departments and agencies via interagency agreements.

The United States Postal Service (USPS), in cooperation with EPA's National Risk Management Research Laboratory (NRMRL), is engaged in an effort to integrate pollution prevention and recycling activities into the waste management programs at postal facilities. The purpose of this project is to perform pollution prevention opportunity assessments (PPOAs) at several types of Postal Service facilities, representing a cross-section of the USPS inventory; to identify the pollution prevention opportunities for these facilities; to recommend implementation strategies; and to develop facility guidance that can be incorporated into a revision of the USPS Waste Reduction Guide.

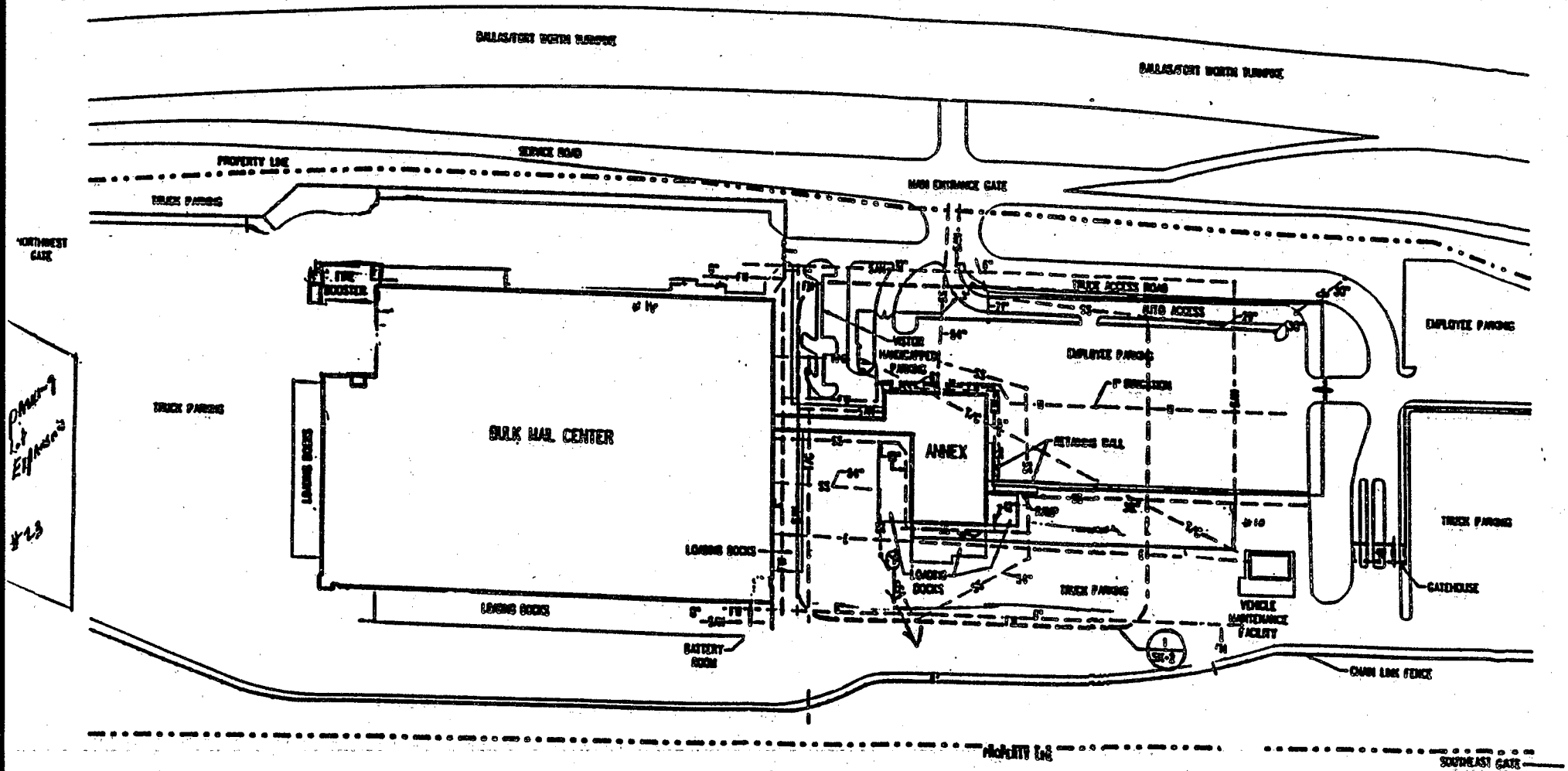
This report describes the findings of the PPOA conducted for the United States Postal Service Bulk Mail Center (BMC) located in Dallas, Texas. The site assessment was conducted during the week of May 15, 1995.

The Assessment Team performed a multi-media assessment. Issues of concern included: hazardous material acquisition, use and storage; hazardous waste storage and disposal; procurement and solid waste management, including recycling. The report begins with a brief description of the facility. This is followed by descriptions of specific operations and the wastes and emissions generated. The report makes both site-wide and operation-specific recommendations that may lead to the elimination, reduction, or improved management of the facility's waste streams. While energy was not part of the multi-media assessment, the Assessment Team makes energy-related recommendations where appropriate. Mention of trade names, commercial products, or vendors does not constitute endorsement or recommendation for use.

1.1 SITE DESCRIPTION

The BMC is located in Dallas, Texas, at 2400 Dallas-Fort Worth Turnpike. The facility occupies 75 acres along the I-35 corridor west of downtown Dallas. The surrounding area is devoted to mixed commercial/industrial and residential uses. The site is bordered on the north by Route 35 and an industrial park, on the south by a residential area, on the east by Hampton Road and a commercial area and on the west by an additional commercial area. The USPS operations include one major building and several smaller buildings that house maintenance, groundskeeping and traffic control operations. Exhibit 1.1 presents the layout of the Dallas BMC.

EXHIBIT 1.1 MAP OF BMC



SECTION 2.0

BULK MAIL CENTER (BMC)

This section addresses the operations performed within the BMC and associated facilities and the wastes and emissions generated by those operations. The section includes a description of current waste management practices.

2.1 BULK MAIL CENTER

The national bulk mail system is a network of mechanized bulk mail centers that process 3rd and 4th class mail. The USPS operates two large BMCs, five medium BMCs and 14 small BMCs. Classification is based on facility size, rather than mail throughput. The Dallas BMC with approximately 450,000 square feet is considered a medium-sized BMC and processes between 500,000 and 800,000 parcels per day.

The BMC facility in Dallas, TX performs the sorting and routing of packages and bulk business mail for Texas, Oklahoma and parts of Kansas, Arkansas, and Louisiana. In addition, mail is routed to the twenty other regional BMCs. The facility employs approximately 1,600 individuals, of which approximately 150 are supervisors and clerical workers. The facility operates three eight-hour shifts per day, six days per week and two shifts on Sunday. An additional 300 workers are hired during the Christmas holiday season.

2.1.1 Physical Description of Facility

The BMC facility occupies 75 acres. The main building contains approximately 452,000 square feet of space which houses administration, workroom floor, facility electrical utilities, air handlers and air chillers. The space is divided as follows:

Penthouse (air chillers, air handlers, electrical service)	30,064 sq. ft.
3rd Floor (Administrative/Conference Rooms)	16,128 sq. ft.
2nd floor (Administrative)	16,128 sq. ft.
1st floor (Administrative)	16,128 sq. ft.
Workroom floor	374,000 sq. ft.

In addition, the facility houses a 2,000 sq. ft. lubrication storage area (lube room) that contains supplies of petroleum products used in the BMC, a used oil storage tank, a staging area for cardboard recycling and a staging area for oil, rags, and filter disposal.

At the east end of the site is a 2,048 sq. ft. former vehicle repair shop that is now used to repair aluminum mail transport equipment known as over the road containers (OTRs). This shop also serves as a fuel and oil dispensing area for postal vehicles. On the west end of the site is a 1,000 sq. ft. "tin shed" that houses groundskeeping equipment and miscellaneous machinery.

The BMC also has two remote sites: a USPS-owned warehouse at 1982 Fort Worth Ave. which is shared with the Dallas General Mail Facility (GMF), and a leased facility of 59,000 sq. ft. located at 3706 La Reunion Parkway that houses the Crossdock Pallet Facility (CPF).

2.1.2 Mail Handling

Mail enters the main facility via trucks through loading docks on one of 42 inbound docks, on the east and west side of the facility. Mail is processed and sorted and leaves the facility via 78 outbound docks on the south of the building. Mail is handled through the facility according to its physical characteristics and destination. Mail comes in four basic forms: sacks, parcels, nonmachinable outsides (i.e., those pieces that can not be machine sorted), and bulk business mail.

Sacks enter from the inbound docks on extendible conveyors. The conveyor transports the sacks to slides which feed keying stations. The keyer locates the sack label, positions the sack in a cradle and keys in the zip code on the label. The cradle tips the sack onto a moving tray sorter that travels at 70 trays per minute. Sacks placed on a tray travel to the destination chute where the tray tips and the sack slides into the chute. The chute leads to an extendable conveyor on the outbound docks where the sacks are bedloaded (stacked on the bed of the vehicle rather than containerized) onto the outgoing trucks.

Parcels arrive at the facility in mail transport equipment (heavy-duty aluminum OTRs, cardboard gaylords, or wire cages), sacks or bedloaded individually. Containers are rolled off the trucks at the inbound docks and placed onto the Fixed Mechanization Automated Container System (FMACS or tow line) and brought to the container unloaders. The unloader dumps the parcels on to a conveyor which moves them to the parcel keying stations on the primary sorters. Parcels in sacks are sent through the sack sorter (see above) and then sorted to the sack shakeout operation where the sacks are opened and the parcels removed and placed on conveyors leading to the primary parcel sorter. Bedloaded parcels are unloaded directly onto conveyors which bring them to the keying stations on the parcel sorters. Once sorted, packages slide onto a tray sorter that dumps them to chutes according to destination. Parcels are loaded into OTRs, wire cages or gaylords, depending on destination, and moved onto outgoing trucks.

Bulk business mail enters the BMC on pallets and in mailer-prepared sacks which are distributed by the sack system to the east wing annex. Sacks are opened and dumped onto a belt where individual bundles are sorted to mail transport equipment and sacks.

2.2 BMC WASTE GENERATING OPERATIONS

Wastes generated by BMC operations include excess and obsolete equipment and supplies; corrugated cardboard; computer paper; white paper; mixed office paper, including forms and envelopes; magazines and newsprint; employee wastes including cans, bottles, wrappers and food; pallets; shrink and stretch wrap; aluminum and other metals; wood; fluorescent tubes and lighting ballasts; batteries; plastic and metal strapping; rags; and oil filters and waste oil.

2.2.1 Solid Waste Management

The main building at the BMC has a 40 cubic yard compactor provided by Southwest Paper Stock. Prior to the segregation of cardboard gaylords for recycling, the compactor was pulled 30 times per month. Currently, the compactor is pulled approximately 12 times per month. The BMC is charged $147.50 per pull which includes compactor rental. The waste collected by Southwest Paper is sent to a materials recovery facility for separation prior to disposal in a landfill. The BMC recycles aluminum and other metals, cardboard gaylords, high grade white office paper, and some scrap wood. In addition, there is a six cubic yard container at the Crossdock Pallet Facility (CPF) that is pulled 26 times per month for a cost of $3,774 per year. There is no recycling occurring at the CPF. The BMC spends approximately $27,000 per year on waste disposal.

2.2.2 Sorting Floor

As noted above, all bulk mail entering the facility is sorted and routed on the sorting floor. The sorting floor generates large amounts of cardboard, metal from equipment repair, oils, grease, and paper. Cardboard gaylords used for the movement of packages are the largest single source of old corrugated cardboard (OCC). After packages that enter the facility in gaylords are dumped for sorting, the gaylords are broken down and placed in an OTR. The OTR is attached to the tow line and sent to the lube room where the gaylords are processed for recycling. Staff stated that the lack of storage space and the inability of staff to segregate reusable from damaged gaylords prevents the wide reuse of gaylords. Reuse of gaylords is limited to times when no new gaylords are available. The BMC currently recycles only cardboard gaylords; other OCC is put into the compactor.

Weyerhauser places a trailer at the dock in the lube room. The gaylords are placed on pallets in the lube room. Strapping, shrinkwrap and other contaminants are removed, and the OCC is placed in the trailer. The BMC staff believe that they recycle approximately 70 to 80 percent of the OCC. The BMC plans to consolidate the recycling in a separate area, purchase a horizontal auto-tie baler and become the USPS regional collection point for OCC recycling. The BMC recycles approximately 60 tons of gaylords per month and receives $140 per ton, representing revenue of approximately $8,400 per month.

The sorting floor also generates significant quantities of undeliverable bulk business mail (UBBM) and loose-in-mails (LIMs), the USPS term for loose or damaged bulk mail. UBBM is currently discarded into the compactor. There are nine LIMs chutes that generate approximately five to six wire cages of LIMs per day. The LIMs are sorted to verify that no deliverable mail is present and the remains are discarded into the compactor.

The Rewrap Section processes mail that has been damaged or is otherwise undeliverable. Broken, leaking or questionable packages are sent to the Rewrap Section where they are opened, examined and, if possible, repackaged using new cardboard boxes and returned to the mail processing system. This section generates a substantial amount of mixed paper and corrugated cardboard that is currently discarded into the compactor.

2.2.3 Lube Room

The lube room is located in the southeast corner of the main building and contains an oil storage rack, a used oil storage tank, a parts washer, a tow line grease storage container and two flammable materials cabinets. The flammable materials cabinets were completely filled with paints, oils, cleaners, and degreasers. Several products contained ozone depleting substances (ODCs) and constituents included on the EPA 33/50 list of chemicals targeted for reduction. Appendix A provides a list of ODCs and EPA 33/50 chemicals. The lube room had an open drain that leads to the sanitary sewer. The lube room also serves as the staging area for loading of cardboard for recycling.

2.2.4 Tow Lines

During routine maintenance, the tow lines are cleaned out quarterly, generating a thick heavy grease. The BMC generates approximately four 55-gallon drums of tow line sludge per quarter. The sludge is placed in a closed basin in the lube room. The sludge is then biotreated using microbes to reduce the viscosity of the grease so it is pumpable. Following treatment the grease is filtered and pumped to the used oil tank in the lube room. See Section 2.3.2 for a discussion of used oil management.

2.2.5 Cafeteria

The cafeteria/lunch room serves food via vending machines. Wastes from the cafeteria include wastes disposed by employees such as paper and plastic bags, aluminum foil and other containers, such as yogurt or soup, brought in from home. Food waste is mixed with these materials. Beverages are sold in aluminum cans and glass and plastic bottles. An aluminum can collection box was present in the cafeteria. Deliveries of food products generate corrugated boxes and packaging which are sent to the compactor.

2.2.6 OTR Repair, Vehicle Fueling/Maintenance

The BMC has a 2,000 sq. ft. repair facility that consists of two buildings at the east end of the site. One building is used for the mechanical repair of OTRs, wire cages and other equipment. This building houses welding equipment as well as other machine shop equipment. Repairs performed include structural repairs as well as replacement of tow pins, wheels, or other parts. The shop is typically staffed with five to six employees. The OTR shop repairs between 10 and 18 OTRs per person per day. The repair area had at least 300 OTRs and wire cages stockpiled awaiting repair. Numerous additional pieces of mail transport equipment requiring repair arrive each day from all parts of the country.

The second building is a maintenance shop for painting and prep of OTRs and other maintenance. This building is adjacent to the fueling area so no "hot" work occurs in this building. In addition, this facility readies new OTRs for use by painting on the marking area and adding a Dallas identification number.

Each building has a flammable materials cabinet that contains numerous containers of paints, oils, and degreasers. Several partially used containers of insecticide were also found in the two buildings. Adjacent to the fueling area is a flammable materials cabinet that contains drums of motor oil for vehicles. An inspection of the flammable materials cabinet in the OTR repair shop revealed the bottom filled with several inches of oil.

2.2.7 Purchasing and Stock Room

The stock room at the BMC stores parts and materials used by the BMC staff and is the central ordering area for equipment. All parts and supplies are ordered through the stock room. The stock room staff uses a computerized ordering system to acquire materials from GSA or the Materials Distribution Center in Topeka, KS. The staff also orders from local suppliers. Approximately 25 people have access to the stock room. Nine individuals have the authority to order parts and materials. These orders are approved by one of three maintenance supervisors, the maintenance manager and the purchasing officer. Parts requests from staff are entered via a computer terminal on a shelf outside of the stock room. The stock room staff retrieves the part if it is in stock or orders the part if necessary.

2.2.8 Maintenance Shops

The maintenance department performs repairs on sorting equipment as well as building maintenance and upkeep. The maintenance shop contains two degreasers that use "Powersolv" solvent, an aqueous-based cleaner degreaser. Rags used by the maintenance staff tend to be very oily and the staff has found that they cannot be cleaned and reused. The facility was using a rag service, but found that they were continually purchasing new rags because the service could not clean the rags. All rags are now purchased either locally or through GSA and disposed via incineration. The BMC purchased 6,250 pounds of rags in 1994 for $2,375 and in 1995 through April have purchased 3,750 pounds for $555. The facility generates

three to four 55-gallon drums of rags per month which are incinerated for approximately $400 per drum ($1200 to $1600 per month).

All flammable materials storage cabinets contained products with chemical constituents listed on the EPA 33/50 list. The BMC staff has discontinued ordering products containing these chemicals, found suitable replacements and is in the process of depleting stocks.

2.2.9 Battery Charging Room

The battery room, located on the main floor of the BMC, is used for recharging and storage of batteries used in BMC vehicles, approximately 37 forklifts and 20 jitneys. Each vehicle has three batteries: one in use, one charged and ready, and one charging. The facility estimates there are 150 batteries on-site. The room has an open floor drain with no diking to prevent spills from entering the sanitary sewer. The BMC is presently in the process of upgrading the battery charging room to increase storage capacity, install better ventilation and lighting and provide a limestone tank for the neutralization of any acids released in the battery room. In 1994, the BMC recycled 30 batteries to Exide Corporation, a battery manufacturer.

2.2.10 Administrative Offices

The BMC contains three floors occupied by offices and conference rooms (approximately 48,000 sq. ft.). The significant wastes include computer printouts, white paper, mixed office paper, toner cartridges and employee wastes. The BMC has initiated a white paper recycling program. While some employees were participating in the recycling program, most were not, as evidenced by white paper in nearly all trash containers. Lighting in all offices, conference rooms and restrooms is motion sensitive. The BMC plans to install new carpeting manufactured from recycled polyethylene.

2.2.11 Facility Perimeter

During a walk around the facility perimeter, the Assessment Team noted the presence of a "tin shed", several roll-off containers and several miscellaneous material storage areas. The tin shed houses groundskeeping equipment and a variety of excess equipment and materials including tires and other parts. Near the tin shed is a 30 cubic yard container dedicated to the collection of wood wastes. According to the BMC staff, this container is pulled for recycling by Southwest Paper on an "on-call" basis. The contents of the container were contaminated with plastic and cardboard boxes. There is also a 30 cubic yard container for metals recycling. The BMC generates 10 to 12 tons of scrap metal per month. The container is typically pulled twice per month by Atlas Scrap and the USPS receives approximately $70 per ton, generating revenue of approximately $800 per month. The facility also generates 15 to 20 tires per year. These tires are either removed by the tire company performing the replacement or are sent to the VMF in Dallas for management. Scrap equipment piles were located all around the west and northwest perimeter awaiting use or disposition. Bulk aluminum is typically sold at auction in 20,000 pound lots; however, in

fiscal year 1995 there has been one sale of approximately 97,000 pounds of aluminum for which the USPS received approximately $7,929.

2.2.12 Crossdock Pallet Facility

The Crossdock Pallet Facility (CPF) is a 59,000 sq. ft. leased facility located at 3706 La Reunion Parkway in an industrial park approximately one mile from the BMC. The CPF redistributes palletized materials from bulk mailers. Palletized materials arrive on trucks from bulk mailers. The CPF personnel unload the trucks and determine if the materials on each pallet are already sorted by BMC or are mixed. Those pallets that are correctly separated for other BMCs are put directly onto trucks. Pallets that contain mixed loads are broken down, sorted, re-palletized, shrinkwrapped and put on the correct truck for shipment. If the pallets are for the Dallas region, the packages are sent to the BMC for sorting and routing.

The CPF is also the accumulation point for all sacks for the Dallas BMC region. Sacks arrive from all over the Dallas region loose, bagged, or in OTRs and wire cages. The sacks are sorted by type, checked for mail, removed from service if damaged, repackaged, and sent to the annex. Sacks are shipped to local Post Offices or bulk mailers, as required.

All waste generated at the CPF is disposed in a six cubic-yard container that is emptied daily for a cost of $3,774 per year. No recycling is performed at this facility. Wastes generated include pallets, shrinkwrap, cardboard, damaged sacks, and strapping. USPS plastic and pressboard pallets are shipped to the Arlington TX pallet distribution center. Wood pallets are disposed. The facility also has a fork truck battery charging operation with no safety or spill prevention equipment present.

2.2.13 Warehouse

The warehouse, located at 1982 Fort Worth Ave., is a facility shared by the BMC and the GMF. The facility is approximately one mile from the BMC. The BMC uses this space primarily for the storage of cardboard gaylords for use in the BMC and some excess equipment. It was unclear which material belonged to the BMC and which to the GMF. The warehouse also had a fork lift battery charging station in operation with no safety or spill prevention equipment present. One area in the facility is used for records storage. There is no trash service at this facility. All wastes generated here are discarded of at the BMC or GMF facilities.

2.3 ADDITIONAL WASTE STREAMS

2.3.1 Hazardous Waste

The BMC does not generate large amounts of hazardous waste on a regular basis. The BMC has begun to take all aerosol cans to a central depository. The aerosol cans are punctured and drained into one of two drums. One drum is designated for paints, the other

for oils. Once emptied, the cans are recycled with the metal scrap. The BMC has not yet generated a full drum for disposal.

The BMC generated one 55 gallon drum of hazardous waste in 1994, which was waste paint classified F003 and F005.

2.3.2 Used Oil

Used oil from sorting machines and motors is typically filtered and reused on the tow line. The BMC uses a portable filtering unit that can be used for motor oils and cooling oils. After final use the oils are sent to the used oil collection tank. Used oil is collected by Worldwide Reclamation who sends it to CSC Disposal for rerefining. In 1994, the BMC generated approximately 11,500 pounds (1,500 gallons) of waste oil. The facility generates 10 to 20 oil filters per year from the compressors and other equipment. The oil filters are collected by Worldwide Reclamation and sent off-site for incineration.

2.3.3 Pest Control

The facility has discontinued the application of pesticides by its employees and contracts all pest control to licensed applicators. The staff has attempted on more than one occasion to remove all aerosol pesticides from the facility, but several containers were found during the assessment.

2.3.4 Lighting

The BMC primary lighting is provided by fluorescent fixtures. The facility is in the process of changing over to halogen lighting; however, capital improvements funding for the lighting systems were recently denied by the regional environmental office. The BMC staff stated that it is their goal to eliminate all fluorescent lights from the facility because of the environmental impacts of the disposal of fluorescent tubes. The BMC discards 21 fluorescent tubes per day, five days per week into the compactor. The staff collects lighting ballasts and batteries for recycling. The staff is currently investigating the use of new sulfur-based lighting systems under development by Fusion Lighting and the Department of Energy. Motion sensitive lights were in use in the office spaces, but nowhere else.

SECTION 3.0

BULK MAIL FACILITY POLLUTION PREVENTION OPPORTUNITIES

This section describes pollution prevention opportunities specific to the operations of the Bulk Mail Facility. Exhibit 3.1 presents a summary of the BMC waste generation, current management and potential pollution prevention opportunities.

EXHIBIT 3.1 BMC SOLID WASTE GENERATION

Waste	Current Management	Opportunities
Obsolete, damaged or defective equipment	Disposed or sold as scrap	Repair at USPS Computer Repair Facility (CRF) in Topeka, KS, Reuse
Corrugated cardboard	Some reused, gaylords recycled, other cardboard disposed	Reduce use of gaylords;Increase use of OTRs; Reduce incoming boxes; reuse boxes; Improve diversion for recycling
Computer print-out	Discarded as waste	Reduce generation, divert for recycling
White paper	Some recycled	Reduce generation, improve diversion for recycling
Mixed paper	Discarded as waste	Reduce generation, divert for recycling
Magazines	Discarded as waste	Reduce generation, divert for recycling
Toner cartridges	Returned for recycling	Continue recycling
Pallets	USPS pallets sent to Arlington facility for redistribution. Pine pallets sold as scrap for mulch	Reduce variety, reuse pine pallets, establish recycling options for pine pallets
Plastic stretch wrap	Discarded as waste	Reduce generation, divert for recycling
Rags	Discarded as waste	Investigate rag service feasibility
Fluorescent tubes	Discarded as waste	Improve ambient light, install motion sensitive lighting, divert for recycling
Strapping	Discarded as waste	Divert for recycling
Oil	Rerefined	Purchase rerefined oil
Alkaline Batteries	Recycled	Use rechargeable batteries
Lighting Ballasts	PCB ballasts managed as hazardous, non PCB ballasts recycled	Improve ambient light, install motion sensitive lighting, turn lights off

3.1 ENVIRONMENTAL OVERSIGHT

Current Conditions

The Dallas BMC does not have an environmental coordinator who is responsible for environmental activities at the facility. Instead, environmental activities are addressed on an as-needed basis by either the facility maintenance supervisors or other staff members. More importantly, no one is designated to monitor environmental compliance and issues at the site. Ultimately, the highest ranking USPS employee on site is responsible and liable for all environmental activities. BMC personnel attend meetings sponsored by the area environmental compliance coordinator to share ideas on reducing the environmental impacts of USPS operations.

Pollution Prevention Opportunities

1. Appoint an Environmental Coordinator

The Dallas BMC should appoint at least one environmental coordinator for the facility. This individual should monitor environmental issues and implement opportunities to reduce waste disposal and emissions at the facility.

3.2 REDUCE PAPER USE

Current Conditions

Office personnel interviewed by the Assessment Team, while aware of the double-sided copying capabilities of duplicating equipment, do not consistently use those options. Staff is not aware of any efforts to encourage reduction in the quantity of paper used and disposed. The Assessment Team observed a significant amount of white paper and computer print-out in the waste containers. White paper is recycled by some personnel, but mixed office papers and magazines are not recycled. Some older copy machines do not have double-sided copying capabilities.

Pollution Prevention Opportunities

1. Adopt paper waste reduction techniques

Before initiating an enhanced recycling program, facility managers and staff should adopt and promote a variety of techniques to prevent or reduce the quantity of paper generated for disposal.

- Establish a duplex copying policy for all multi-page documents and provide staff training in the use of the double-sided function on copying equipment. As equipment is replaced, specify easy to use, rapid, duplex capability.

- Expand and encourage the use of electronic mail rather than paper memos and distribution copies.

- Limit distribution lists. If paper copies are necessary, circulate one memo or report with a cover sheet indicating distribution.

- Identify opportunities to reuse paper and paper products. Corrugated cardboard boxes, jiffy bags, manila envelopes and other packaging materials are reusable for their original function; paper can be turned over and used as scratch paper or made into message pads.

- Encourage staff to proofread on screen and save information on disks rather than as paper file copies.

3.3 REUSE AND RECYCLING

Current Conditions

Currently, the BMC separates cardboard gaylords, aluminum cans, other aluminum and metals, used lubricating oil and some paper for recycling. Staff flatten the gaylord boxes after one use and place them in an OTR on the tow line for staging for recycling. All other OCC is placed in the trash compactor. The BMC staff predict that they will spend more than $1,000,000 in fiscal year 1995 to purchase gaylord boxes, each of which will be used only once. USPS plastic and pressboard pallets are sent to the Arlington, Texas pallet distribution center. Wooden pine pallets are recycled as wood scrap. The recycling program for paper is limited to collection of high grade white paper. The office staff has not been trained to participate in recycling; some offices had recycling containers, many did not. Many desks had small recycled paper holders which typically are inadequate to hold a sufficient quantity of recycled paper and often are not used. No other paper is being recycled. UBBM and LIMs are currently discarded into the compactor. All waste generated at the Crossdock Pallet Facility is discarded; no recycling is occurring at this facility.

Pollution Prevention Opportunities

1. Use OTRs instead of cardboard gaylords

The use of gaylords for moving packages has increased significantly in the last several years. BMC staff stated that this is caused by the inability to obtain adequate supplies of mail transport equipment, especially BMC OTRs. As a result, OTRs are used only to transport packages within the Dallas region. Packages that leave the Dallas region are packed in gaylords or are bedloaded. OTRs are hoarded by all USPS facilities to cope with seasonal mail volume increases. According to USPS Headquarters Mail Transport Equipment Office, aluminum OTRs cost $1,138 and have an expected life of 10 years. Gaylords are used for a

single trip at the Dallas BMC and cost approximately $6.00 each, depending on the size. The Dallas BMC predicts that it will purchase in fiscal year 1995 approximately 28,425 30- inch gaylords for a cost of $147,969 and 143,000 54-inch gaylords for $875,000. The BMC will spend more than $1,000,000 to purchase new gaylord boxes in fiscal year 1995. Exhibit 3.2 provides a simple cost/benefit analysis of OTR versus gaylord use. This analysis shows that an OTR could be used as few as 39 times per year and be more cost effective than the use of gaylords. As a result, the USPS should increase the number of OTRs in the system and increase the repair staff to keep OTRs in service to reduce the reliance on gaylords.

EXHIBIT 3.2 COST/BENEFIT ANALYSIS FOR OTRS VERSUS GAYLORD USE*

Cost/Activity	Aluminum OTR	Double-Walled Cardboard Gaylord
a. Initial Cost	$1,138.00	$6.00
b. Number of Trips	1500 (150/year for 10 years)	1
c. Maintenance Cost	$1000 ($100/year for 10 years)	None
d. Scrap Value	$30	$0.70
e. Total Cost	$2,108	$5.41
f. Cost Per Trip	$1.40	$5.41

* Assumptions:

1. An OTR is used for three trips per week, 50 weeks per year for a total of 150 trips per year.
2. An OTR is in repair two weeks per year; for an annual cost of $100.00.
3. Life expectancy of an OTR is 10 years.
4. An OTR weighs 385 pounds. Scrap aluminum value is $0.08 per pound based on recent auction price for aluminum scrap.
5. A gaylord is used for one trip (based on Dallas BMC usage).
6. A gaylord weighs 10 pounds and scrap value is $0.07 per pound ($140 per ton).

2. Cancel the Integrated Mail Handling System

USPS has an existing inventory of mail transport containers, including both aluminum and steel BMC OTRs, originally intended for use in the immediate service area of each Bulk Mail Center. Although OTRs were not intended to be used to move mail between BMCs or PDCs and BMCs, workers found it too time consuming to unload bedloaded trucks. Now, postal employees use OTRs to move mail between facilities. BMCs and PDCs hoard OTRs for the holiday season, and bulk mail customers take OTRs and do not return them. The BMCs have no control over the OTR inventory, thus OTRs are not readily available to move the mail.

To solve the problem of access to mail transport equipment, the USPS has designed the Integrated Mail Handling System (IMHS). The planned IMHS would substitute disposable, corrugated cardboard gaylord boxes for the permanent, reusable OTR containers. In addition, because gaylord boxes of adequate volume are too tall, existing BMC mail handling equipment, designed to accommodate OTRs, will require modification.

Rather than invest in costly equipment and program modifications that will increase solid waste quantity and handling costs, the USPS should purchase enough additional OTRs or other permanent mail transport equipment for the nationwide movement of non-peak period mail volume and design and implement a nationwide bar-code labeling and tracking system for the OTRs. By utilizing Regional Equipment Processing Centers to track and distribute OTRs in a timely fashion, the need for the cardboard gaylords will be eliminated. The gaylords currently stocked for the IMHS can be used only during the Christmas season.

2. Reuse cardboard gaylords that enter facility

As noted above, gaylords that enter the BMC are sent to the lube room for recycling. Gaylords are only reused when no new gaylords are available. USPS employees believe that it is too difficult to determine the structural integrity of a used gaylord and that it is too time consuming to flatten the used gaylord and return it to the storage area for reuse. The BMC should establish a procedure to evaluate each gaylord entering the facility. Reusable gaylords should be broken down and staged for reuse. Damaged gaylords should continue to be managed by recycling. One reuse of each gaylord will reduce the costs for gaylords in half, saving the BMC $500,000 in purchasing expenses.

3. Reuse cardboard boxes in other processing operations

All corrugated cardboard, with the exception of gaylords, is sent to the trash compactor. Boxes of the appropriate size in good condition should be reused in other operations. For example, the Rewrap Section uses all new boxes for repackaging parcels. The BMC should segregate the appropriate sized boxes for use in Rewrap and only use new boxes when reusable boxes are not available.

4. Segregate for recycling the OCC that cannot be reused

The BMC believes that it is recycling 70 to 80 percent of its cardboard by recycling the gaylords and that only 20 to 30 percent is sent to disposal. The Assessment Team believes these figures are accurate. The BMC recycles approximately 60 tons of OCC each month and receives $140 per ton. In fiscal year 1995, to date, the BMC has received revenues totaling approximately $39,000. Collecting the additional 20 to 30 percent of OCC would reduce disposal costs and could yield additional revenues. To increase the recycling rate, however, would require additional labor to evaluate and separate the OCC for reuse or recycling. This will be economically justifiable when the proposed recycling center is built and the baler utilized.

5. Improve office paper recycling system

Given the current market value of all grades of office paper, the BMC should improve the separation of paper for recycling. The BMC should provide more individual and area collection containers for recyclable paper. These container should be clearly labeled and/or a distinct color to distinguish them from the waste containers. A collection container for paper recycling should be located next to each printer and copying machine. Employees should be encouraged to empty their desk collection boxes into centralized consolidation containers. The recyclable paper should be regarded as a valuable commodity, not a waste. Employees need information concerning the kinds of paper that can and should be recycled. Employees should be involved in the planning and implementation of the recycling program so that they will value participating in it. Exhibit 3.3 provides information on some local companies interested in discussing paper recycling opportunities and the materials and prices currently quoted. USPS Environmental Management Policy Office is developing a draft recycling contract and guidance to assist postal facilities in selecting a recycler.

EXHIBIT 3.3 RECYCLERS IN THE DALLAS/FORT WORTH AREA

Recycler	Material Accepted	Material Price (September, 1995)	
Recycle America Of Dallas (Waste Management) 12260 Garland Rd Dallas, TX	Paper Mixed Paper Cardboard	OCC Mixed Office White Paper Computer	$169 per ton $60-70 per ton Varies depending on grade Varies depending on grade
Daltex Recycling Company 408 Singleton Blvd. Dallas, TX 75212	Paper OCC	OCC CPO Mixed White	$205-215 per ton baled $80 per ton on skids $150 per ton $30 per ton $90 per ton
Rock Tenn 9233 Denton Drive Dallas, TX 75235	OCC Mixed office Paper Computer Paper White Ledger	OCC Mixed office Computer White Ledger	$190 per ton baled $150-170 per ton loose $30 per ton $400 per ton $300 per ton

6. Reduce quantity of UBBM and LIMs

USPS bulk mail policies and support services to bulk mailers contribute to the quantity of undeliverable bulk business mail (UBBM), including magazines and newsprint, in the USPS waste stream. Current USPS policy promotes recycling of UBBM; a policy promoting UBBM reduction is not under consideration. UBBM and LIMs constitute a substantial input into the BMC wastestream and the USPS incurs significant costs to process, transport, deliver and dispose of UBBM.

To determine whether reduction or recycling is the most cost effective management practice for UBBM, the USPS should perform a cost analysis to compare the combined revenues from bulk mailing and recycling of UBBM to the costs associated with sorting, handling, transporting and processing undeliverable mail and associated packaging.

To reduce the quantity of UBBM managed by postal facilities, the USPS could expand its mailing list maintenance service. Annual mailing list updates, particularly for third and fourth class mail, could be integrated into the bulk mail permitting process.

7. Begin UBBM and LIMs recycling

At a minimum, the Dallas BMC should begin to recycle UBBM and LIMs to avoid the disposal costs and potentially earn revenues. There would be a minimal additional handling costs because the UBBM and LIMs are already hand-verified prior to disposal and would only need to be segregated for recycling. Many areas have initiated hauling of UBBM, magazines and newsprint to a central location by integrating hauling of UBBM into the existing mail transportation system. A separate transportation system to move UBBM to an accumulation point will increase costs and environmental impacts.

8. Set up additional recycling bins in cafeteria

Metal, glass and plastic food and beverage containers should be separated for recycling. Metal containers can be accommodated in the existing metals recycling containers. A new recycling program should be established for glass and plastic food and beverage containers.

3.4 PALLETS

Current Conditions

The BMC receives a variety of pallets including pine, HDPE plastic, and pressboard pallets. The BMC currently does an excellent job of collecting and sending the plastic and pressboard pallets to the Pallet Distribution Center in Arlington, TX facility. Purchasing staff believe that pine pallets also are sent to the Arlington facility. The wood container on the north side of the facility, however, contained numerous pallets which were being sold as wood scrap. In addition, pine pallets at the CPF are discarded into the waste container.

Pollution Prevention Opportunities

1. Establish a recycling program for pine pallets

Establish a formal recycling system for pine pallets. Recyclers will repair or rebuild pallets for resale. Exhibit 3.4 provides a summary of some pallet recycling services available in the Dallas area.

EXHIBIT 3.4 EXAMPLES OF PALLET RECYCLERS IN THE DALLAS AREA

Company	Size Collected and Price
American Pallet Rebuilders Phone: (214) 744-4840	The company will only purchase 48"x 48" pallets and will pay up to $2.50 per pallet, depending on condition. Will collect, at no charge, a minimum of 400 to 500 pallets.
AAA Pallets Phone: (214) 445-0036	AAA Pallets will pay 50 to 75 cents per pallet, depending on condition. Accept all sizes of pallets for recycling. For once-a-week pickup, AAA will leave a van onsite; for once-per-month pickup, AAA will send a van. AAA recycles and repairs pallets. Nothing goes to the landfill.
All Size Pallet Supply Phone: (800) 281-8150	All Size Pallet Supply will pay $1.00 for 48" x 48" pallets. All other sizes will be collected at no cost, but the company will not pay for them. Pallets are torn down and rebuilt into needed sizes or repaired and sold to customers.
Summers Pallet Service Phone: (800) 992-2052	Summers will collect all pallet sizes but only pays for certain sizes. Prices range from 50 cents to $3.00. For a 48" x 48" pine pallet, they quoted $2.00. Would provide drop trailers if volume is considerable. Summers recycles pallets, disassembles odd sizes and remakes them, and grinds rotten pallets for compost.

3.5 LIGHTING AND ENERGY

Current Conditions

The Federal government is a major consumer of energy, using more than two percent of all energy consumed in the United States. The Energy Policy Act of 1992 requires Federal agencies to reduce energy consumption per gross square foot 20 percent by the year 2000 and Executive Order 12902 requires Federal agencies to reduce energy consumption 30 percent by the year 2005. Although the USPS is not an Executive Branch Agency, it is Postal Service policy to adhere to Executive Orders whenever feasible. Both reductions are from a 1985 baseline. In addition, Federal agencies must conduct comprehensive energy audits and install cost-effective energy conservation measures; agencies are encouraged to audit 10 percent of their facilities each year, using "no-cost" audits where practicable. These requirements are summarized in Exhibit 3.5.

The BMC is in the process of upgrading the lighting on the floors with high intensity lighting and hopes, over time, to eliminate the use of fluorescent lights completely. The BMC is a 22 year old building and is in need of significant lighting upgrades. One potential improvement is to switch all the fluorescent lights to sulfur lighting tubes. The Dallas BMC has volunteered to be a "model facility" for sulfur lighting. The USPS regional environmental coordinator will purchase the lights, and the Department of Energy will install the lighting system in the facility. The BMC is willing to consider other methods to improve the floor lighting as well as the lighting efficiency.

EXHIBIT 3.5 FEDERAL ENERGY POLICIES

Energy Policy Act of 1992	Executive Order 12902
Reduce energy consumption per gross square foot 10 percent by 1995 (1985 baseline)	Reduce energy consumption per gross square foot 30 percent by 2005 (1985 baseline)
Reduce energy consumption per gross square foot 20 percent by 2000 (1985 baseline)	Reduce energy consumption per gross square foot 20 percent in industrial facilities by 2005 (1990 baseline)
Conduct comprehensive facility audits and install cost-effective energy conservation measures	Conduct surveys and comprehensive audits
In Federally owned buildings, install all energy and water conservation measures that have payback periods of less than 10 years	Implement recommendations for energy efficiency, water conservation and renewable energy that have payback periods of less than 10 years

In a separate, but related issue, the roof at the BMC is also in need of repairs. In several locations throughout the building, leaks have developed in the roof. There has been some discussion about replacing the roof and, as a result, ambient lighting projects may be considered.

Pollution Prevention Opportunities

1. Increase the Use of Motion Sensitive Lighting

While motion sensitive lighting was used in office areas it was not apparent in other parts of the facility. The BMC staff should review the lighting plans and install motion sensitive lighting in infrequently used areas.

2. Establish a "lights out" policy

Establish a policy of turning off lights and equipment when leaving an area. Where machine design permits, turn photocopiers to low power when not in use. Each kilowatt hour saved prevents the formation of air pollutants, including 0.68 kg of carbon dioxide, 5.8 g of sulfur dioxide and 2.5 g of nitrogen oxides.

3. Investigate Increasing the Use of Ambient Lighting

The Dallas BMC should study the possibility of installing daylighting systems (i.e., skylights) to allow more energy efficient lighting into the building. An estimated 30 to 50 percent of the energy used in a commercial building is spent illuminating the interior. Daylight can significantly reduce energy consumption and peak energy use in commercial buildings.

There are two basic systems for daylighting, active and passive. Active daylighting systems employ a system of stacked reflective mirrors and a robotics unit with an infrared, light-sensitive photo diode that tracks the sun as it travels through the sky. The units are set for the specific latitude of the building. During the day, the units turn to catch the sun at its maximum angle, then reflect the light down through the skylight. With passive daylighting systems, the sunlight penetrates the external dome and directs the light into the building. Exhibit 3.6 presents the approximate square feet of coverage per daylighting unit.

EXHIBIT 3.6 SQUARE FEET OF COVERAGE PER DAYLIGHTING UNIT

Ceiling Height (feet)	Low Levels of Light (30-50 foot candles)	High Levels of Light (50-100 foot candles)
8 to 9	400 sq ft	300 sq ft
10 to 15	700 sq ft	500 sq ft
16 to 19	900 sq ft	700 sq ft
20 to 40	1000 sq ft	800 sq ft

There a several companies that produce and install daylighting systems. Two companies provided information for this report: So-Luminaire Daylighting Systems Corporation and The Natural Lighting Company. The So-Luminaire system is an active daylighting system that is installed in 4' x 4' casings on the roof of a building and reflects natural sunlight through a skylight into the interior of a building. A cluster of diffusion lenses spreads the daylight inside the building. So-Luminaire's two diffusion lenses create dead air spaces which act as thermal barriers to reduce conductive heat gain/heat loss by approximately 50 percent. So-Luminaire estimates that each unit eliminates the use of over two million watts of fluorescent lighting per year, and only consumes one cent in energy costs per year.

The Natural Lighting Company manufactures both active and passive daylighting systems. The active daylighting system uses sun-tracking mirrors to redirect sunlight into a reflective light well and diffusing lens. The passive daylighting system uses an innovative prismatic dome, reflective light well and diffusing system to light interior spaces. The Natural Lighting Company also produces the So-Dark motorized shade screen which is built into the skylight frame allowing a skylight to be partially or completely darkened at the flip of a switch. This product can be used with either the active or passive daylighting systems.

There are several benefits to daylighting and improved facility lighting. The most important is that energy-efficient building design can significantly increase worker productivity. A recent study by the Rocky Mountain Institute found that efficient lighting (as well as heating and cooling) measurably increased worker productivity, decreased absenteeism, and/or improved the quality of work performed. An increase of 1 percent in productivity can provide savings to a company that exceed its entire energy bill. The study presents eight case studies of improved productivity resulting from increased lighting efficiency. One case study included the main post office in Reno, Nevada which found that a

lighting retrofit with a six-year payback led to a six percent gain in productivity -- worth more than the cost of the retrofit.

Other benefits of daylighting include:

- reducing electric lighting utility costs
- reducing electric lighting maintenance costs
- reducing electric lighting heat loads on air conditioning systems

4. Investigate Technical Assistance from Green Lights Program

The staff at the BMC expressed interest in technical assistance to modify the lighting at the facility. USEPA operates Green Lights, a voluntary, non-regulatory program promoting pollution prevention through the installation of energy efficient lighting. Federal partners agree to upgrade lighting to maximize energy savings wherever it is profitable. The Green Lights program benefits participants by lowering electricity bills, improving lighting quality, and increasing worker productivity. Energy efficiency also reduces the quantity of pollutants released in the generation of electricity. For example, EPA estimates that if Green Lights were fully implemented, where profitable, in the United States, it would save over 65 million kilowatts of electricity annually, reducing the national electric bill by $16 billion per year. The program would also result in reductions of carbon dioxide, sulfur dioxide, and nitrogen oxides equivalent to 12 percent of U.S. utility emissions, curbing acid rain and smog and helping to slow the greenhouse effect.

5. Become a Federal Partner in the Green Lights Program

Federal organizations can become Green Lights Partners by signing a Memorandum of Understanding (MOU) with USEPA (see Appendix B) agreeing to:

- Survey agency facilities and identify lighting upgrades that will reduce energy use 50 percent,
- Upgrade 90 percent of the square footage of agency facilities no later than September 1, 2005, and
- Appoint a coordinator to oversee participation in the program and document annual energy efficiency improvements.

Green Lights provides free technical assistance to participants through written materials, information hotlines, and thorough survey and analysis software products that allow Green Lights participants to analyze their options for installing energy-efficient lighting. The system helps participants survey the lighting systems in their facilities, assess their retrofit options, select the option that maximizes energy and pollution savings while simultaneously rating or improving lighting quality and meeting the Green Lights profitability criteria, and produces reports suitable for use by facility managers, financial staff, and senior management.

EPA provides the following support systems to help Green Lights participants obtain information on energy-efficient lighting technology, financing options, and public recognition opportunities.

- Lighting Services Technical Support: provides extensive technical support through a hotline, a comprehensive Lighting Upgrade Manual, and workshops.

- Survey and Analysis Tools: state-of-the-art computer software helps participants survey facilities and select lighting upgrade options that maximize energy savings and meet profitability goals.

- Financing Directory: Federal agencies may utilize third party financing or traditional procurement mechanisms. In addition, however, Federal participants may consider utility financing, energy savings performance contracts and the Federal Energy Efficiency Fund. EPA can also provide survey and analysis services through an inter-agency agreement.

- The National Lighting Product Information Program: objective source of current performance and price information on energy- efficient lighting products.

- Public Recognition: participants receive public recognition for their environmental leadership through EPA-generated news articles, media events, and public service advertisements. EPA encourages participants to promote their own Green Lights activities by distributing free, ready-to-use promotional materials.

In the MOU, EPA and the Federal agency agree: "that the commitment to survey buildings and complete lighting upgrades is contingent upon the availability of appropriated funds or third-party financing resources."

The USPS can commit to the Green Lights program by signing a Memorandum of Understanding with USEPA agreeing to assign a coordinator, survey facilities and begin installation of energy efficient lighting. For further information on Green Lights for Federal Facilities contact:

Gwendolyn Taylor, Federal Program Manager
Green Lights & Energy Star Programs
501 3rd Street, NW (Mail Code 62 02J)
Washington, DC 20001
Telephone: (202) 233-9472
Fax: (202) 233-9578

6. Procure computers that meet Energy Star requirements

Future computer equipment purchases should specify equipment that is energy efficient. Executive Order 12845 requires Federal agencies to purchase computer equipment that meets EPA Energy Star requirements for energy efficiency. The EPA Energy Star Program is a voluntary partnership with the computer industry to promote energy-efficient personal computers, monitors and printers. Participating companies have committed to develop computer equipment that powers down when not in use. The "sleep" feature cuts energy use by 50-75%. Energy Star also includes a category for controlling devices, external retrofit products that reduce the energy consumption of existing computer equipment by automatically turning them off when not in use. The Federal Supply Service offers a product called the Intelligent Energy Saver, a PC add-on device that controls electrical power to the PC and its peripherals. The complete PC system can be powered on and off at user-defined dates and times. Appendix C provides information on how to purchase Energy Star equipment and a list of participating companies and manufacturers of equipment that meets Energy Star requirements.

3.6 FLUORESCENT LIGHTING

Current Conditions

The BMC offices, warehouses and work areas are lighted with approximately 1,500 fluorescent tubes. The BMC discards at least 21 fluorescent tubes per day, five days per week into the trash compactor. Staff believe that if they limit their disposal to 24 tubes per day, they do not need to dispose of them as a hazardous waste. According to the Texas Natural Resources Conservation Commission, Industrial and Hazardous Waste Division, fluorescent lights are not automatically hazardous. A determination must be made using TCLP or by simply declaring them as hazardous. The determination on whether they must be managed as a hazardous waste is dependent on the RCRA status of the facility.

Fluorescent lights are one of the most energy efficient lighting sources available. However, fluorescent lighting tubes contain mercury, which is used as an element to conduct the flow of the electric current. Historically, fluorescent lighting tubes were discarded into landfills. When the tubes broke, mercury was released to the environment. This potential hazard caused many states to classify fluorescent lighting tubes as hazardous waste and require that they be managed in accordance with applicable hazardous waste laws and regulations.

Recycling spent fluorescent lighting tubes offers an environmentally sound alternative to expensive hazardous waste disposal. Additionally, recycling may relieve the generator of future liability concerns associated with tube disposal. Several companies provide recycling services for spent fluorescent lighting tubes and some of these companies also accept ballasts, a component of the light fixture. Ballasts manufactured prior to 1980 contain polychlorinated biphenyls (PCBs), which also present disposal problems. However, ballasts produced after

1980 do not contain PCBs. According to Ron Newman of A-TEC Recycling, the useful life of ballasts is approximately 15 years. Since ballasts manufactured after 1980 do not contain PCBs, ballasts containing PCBs should not present significant disposal problems beyond the near term.

Some states allow ballasts that do not contain PCBs to be disposed of in sanitary landfills. However, according to Stephanie Small of DYNEX Environmental, Inc., non-PCB ballasts contain diethylhexylphthalate (DEHP). Evidence indicates that DEHP is a human carcinogen. Due to either the PCBs or DEHP content, Ms. Small recommends that customers manage all ballasts as hazardous.

USPS Memorandum for Managers, Operations Support dated Decernber 16, 1994 states that "Under no circumstances should these lamps be mechanically crushed or ground into smaller pieces. This method of disposal increases the exposure of hazardous materials to both employees and the environment. Lamps should be boxed prior to disposal."

Pollution Prevention Opportunities

1. Establish Fluorescent Tube Recycling Program

Store expired bulbs in boxes in a safe area. USPS facilities should ship expired bulbs to an approved facility for recycling of glass, metals, and mercury.

Exhibit 3.7 provides information on the specific services offered by companies that provide fluorescent tube recycling services, the cost of the services and the geographic area serviced by each company. For further information on the services of each company, see Appendix D.

EXHIBIT 3.7 FLUORESCENT LIGHTING TUBE RECYCLERS

Company/Address/Contact	Services Offered	Cost of Services (Spring, 1995)	Geographic Area Serviced
Envirosol 212 South Mesquite Suite 2A Arlington, TX 76010 (800) 488-7974	1. Lamp recycling: Customer to pack lamps in original box. 2. Pick-up service. 3. PCB and non-PCB Ballast disposal	• Per linear ft/lamp: $ 0.10-0.12 • HID $ 3.00 each • Ballasts $0.80-0.90/lb - Cost does not include shipping. - $300.00 minimum per shipment.	Texas
DYNEX Environmental, Inc. 4751 Mustang Circle St. Paul, MN 55112 (612) 784-4040	1. Lamp recycling: Customer to pack lamps in original box. 2. Provides reusable boxes to customer for rental. 3. Pick-up service. 4. PCB and non-PCB Ballast disposal (3 methods)	• 4-ft lamp (min. of 100) $0.39 • Over 4 ft (min. of 100) $0.66 • Ballasts - Method 1: Landfill $1.19/lb at (1 drum minimum) $795/drum - Method 2: Decap $1.49/lb at (1 drum minimum) $1,100/drum - Method 3: Incinerate $2.59/lb at (1 drum minimum) $2,000/drum	Nationwide
Lighting Resources, Inc. 386 South Gordon Street Pomona, CA 91766 (800) 572-9253	1. Lamp recycling: Customer to pack lamps and prepare bill of lading. 2. Pick-up service 3. Ballast recycling	• Per lamp $0.07 to $0.10 • Per HID $0.75 to $2.75 • Ballasts $0.75/lb at $700 to $750/drum	Nationwide
Mercury Technologies International 1940 Westwood Blvd., No. 218 Los Angeles, CA 90025 (310) 475-4684	1. Lamp recycling 2. Pick-up service	• Per linear ft/lamp $0.07 to $0.10 • Per HID $3.00	Nationwide

Company/Address/Contact	Services Offered	Cost of Services (Spring, 1995)	Geographic Area Serviced
Recyclights 2010 East Hennepin Avenue Minneapolis, MN 55413-2799 (800) 831-2852 or (612) 378-9568	1. Lamp recycling 2. Pick-up service	• 4-ft lamp $0.40 to $0.60 • over 4 ft/lamp $0.60 to $0.83 • Per HID $2.50 to $5.00	Nationwide
Mercury Refining Company 1218 Central Avenue Albany, NY 12205 (518) 459-0820	1. Lamp recycling 2. Pick-up service	• Per linear ft/lamp $0.08 ◦ Crushed lamps - per 55 gallon drum $650 ◦ HID/gal. with 1.5" diameter $15 • HID/gal. with less than 1.5" $20	Nationwide
Bethlehem Apparatus Company, Inc. 890 Front Street P.O. Box Y Hellerton, PA 18055 (610) 838-7034	1. Lamp recycling: customer to ship whole tubes in original box or crushed lamps in 55 gallon drums.	◦ 4-ft lamp whole - (1-3000) $3.00 - (3000-6000) $2.25 - (over 6000) $1.50 ◦ 8-ft lamp whole - (1-3000) $4.50 - (3000-6000) $3.50 - (over 6000) $2.25 ◦ 1 to 5 Drums $1,235/each ◦ 6 to 10 Drums $930/each • over 10 Drums $650/each	Nationwide
USA Lights Environmental Inc. 2007 Country Road C-2 Roseville, MN 55113 (612) 628-9370	1. Lamp recycling: Customer to pack lamps in original boxes, secure box with tape, and record number of lamps on the box. 2. Pick-up service. 3. Pollution Liability Insurance coverage	• 4-ft lamp $0.44 • 8-ft lamp $0.62 ◦ Per HID $2.29	Nationwide

3.7 RECHARGEABLE BATTERIES

Current Conditions

The Dallas facility uses numerous alkaline batteries for various functions. The batteries are used predominantly in flash lights utilized during machine repairs and maintenance activities. The BMC uses numerous AA, C, D, and 9v batteries. The stock room maintains a barrel to collect the batteries for recycling. The Dallas facility generates one 55-gallon drum of used alkaline batteries every three months; these are recycled with other metals.

Pollution Prevention Opportunity

1. Purchase Rechargeable Batteries

The Dallas BMC should purchase rechargeable batteries and a charging unit to recharge the batteries. By using rechargeable batteries, the BMC would reduce the purchase cost of batteries. Rechargeable batteries, however, do not provide power for as long as alkaline batteries before recharging is necessary.

GSA has Rayovac rechargeable alkaline batteries which are now available through Muffin or FWW-19. Rayovac's patented *Renewal* batteries offer the high performance attributes of regular alkaline batteries along with the cost and environmental benefits of a reusable system. *Renewal* batteries are available in battery sizes AAA, AA, C, and D. The power stations for recharging batteries also are available from GSA. Stock numbers and prices are listed below. For additional information, call Ms. Genni Brown 817-334-8377.

Rayovac Rechargeable batteries

Size D	Model 713	6140-01-413-3925	Box (20 per box)	$32.80
Size C	Model 714-2	6140-01-413-3923	Box (20 per box)	$32.80
Size AA	Model 715-4	6140-01-413-3926	Box (40 per box)	$35.90
Size AAA	Model 724-4	6140-10-413-3928	Box (40 per box)	$35.90
Charger (All Sizes)	Model PS2	6140-01-413-3929	Box (4 per box)	$90.08

3.8 AFFIRMATIVE PROCUREMENT

Current Conditions

The BMC does not make it a standard practice to purchase items with recycled content, such as paper. Instead, most items purchased are made of virgin material. It appears that the purchasing officials at the BMC are unaware of USPS policy and federal legislation

requiring the purchase of materials with recovered content. The United States Postal Service Waste Reduction Guide (AS552, February, 1992) directs Requiring offices to "review purchase specifications to eliminate prohibitions or limitations on use of recovered materials" and to modify specifications to encourage use of recycled products.

Section 6002 of the Resource Conservation and Recovery Act (RCRA) directs Federal agencies to purchase "items composed of the highest percentage of recovered materials practicable." To date, USEPA has established procurement guidelines for paper and paper products, retread tires, re-refined lubricating oil, building insulation, and cement and concrete containing fly ash. EPA recently published the Comprehensive Guideline for Procurement of Products Containing Recovered Material (60 FR 21370, May 1, 1995) adding 19 additional products including engine coolant, trash bags, toner cartridges, binders and desktop accessories. These guidelines provide information about the recommended percentage of recovered material, product availability and performance, and specification language.

In Executive Order 12873, October 22, 1993, President Clinton directs agencies to develop and implement affirmative procurement programs for all EPA guideline items and ensure that these programs require that 100 percent of their purchases of products meet or exceed the EPA guideline standards.

The BMC was not able to document successful implementation of USEPA procurement guidelines for products manufactured with recovered content. The BMC is, however, in the process of eliminating products containing the seventeen chemicals on USEPA's 33/50 list. Purchasing officials are not sure whether procurement specifications have been updated to include recycled content in paper products. Current supplies of printing, duplicating and computer paper do not contain any recovered content.

Pollution Prevention Opportunities

1. Purchase products with recycled content and train staff

The BMC should establish preference programs and adopt specifications for the purchase of products made with the percentages of recovered materials specified in USEPA Guidelines. The GSA catalog has special sections for environmentally sound products, such as paper with recycled content. These items are highlighted in green throughout the catalog. The BMC purchasing official should make it a standard practice to purchase items with the highest amount of recycled content. Changes in the procurement system will create staff training opportunities and staff will need training on Federal affirmative procurement requirements. Exhibit 3.8 presents products for which EPA has established minimum recovered content levels.

EXHIBIT 3.8 EPA ESTABLISHED MINIMUM RECOVERED CONTENT LEVELS

Category/Product	Percent Recycled Content
Paper	
High grade bleached printing and writing paper	50%
Mimeo and duplicator paper	50%
Computer paper	50%
Envelopes	50%
Tissue Products	
Toilet tissue	20%
Paper towels	40%
Paper napkins	30%
Facial tissue	5%
Unbleached packaging	
Corrugated boxes	35%
Vehicular Products	
Lubricating Oil (re-refined oil)	25%
Tires	retread tires
Construction Products	
Fiberglass (glass cullet)	20-25%
Cellulose loose-fill and spray-on (post-consumer paper)	75%
Structural fiberboards	80-100%
Laminated paperboards	100%
Cement and Concrete (coal fly ash)	0-40%
Cement and Concrete (ground granulated blast furnace slag)	25-50%
Polyester Carpet Face Fiber (PET resin)	25-100%
Patio blocks (rubber or rubber blends)	90-100%
Patio blocks (plastic or plastic blends)	90-100%
Floor tiles (rubber)	90-100%
Floor tiles (plastic)	90-100%
Transportation products	
Traffic cones (PVC, LDPE, Crumb Rubber)	50-100%
Traffic barricades (HDPE, LDPE, Pet Steel)	80-100%
Traffic barricades (Fiberglass)	100%
Park and Recreation Products	
Playground surfaces (rubber or plastic)	90-100%
Running tracks (rubber or plastic)	90-100%
Landscaping Products	
Paper-based hydraulic mulch (post-consumer recovered paper)	100%
Wood-based hydraulic mulch (recovered wood and/or paper)	100%
Non-paper Office Products	
Office recycling containers and waste receptacles (plastic)	20-100%
Office recycling containers and waste receptacles (steel)	25-100%
Plastic desktop accessories (polystyrene)	25-80%
Plastic-covered binders (plastic)	25-50%
Chipboard, paperboard, pressboard binders	80%
Plastic trash bags	10-100%

EPA has developed lists of manufacturers and vendors of the items designated in the Comprehensive Procurement Guidelines. These lists will be updated periodically as new sources are identified and EPA becomes aware of changes in product availability. To assist procuring agencies, the lists will be made available at no charge by calling EPA's RCRA Hotline at (800) 424-9346.

The U.S. General Services Administration (GSA) publishes an Environmental Products Guide, which lists items available through its Federal Supply Service. This guide, formerly the Recycled Products Guide, has been prepared to assist Federal civilian and military agencies to identify the environmentally oriented products and services available to them through the supply system of the General Services Administration's Federal Supply Service. The guide contains information about more than 2,900 such items from GSA's supply system. In the general category of recycled-content paper products alone, there are more than 900 entries. Some of these items contain 100% post-consumer recovered materials and all meet or exceed guideline requirements established by the Environmental Protection Agency. This publication is available to federal agencies at no cost from the GSA Centralized Mailing List Service in Fort Worth, Texas 76115 or at (817) 334-5215.

In addition to the information provided by EPA and GSA, there are other publicly-available sources of information about products containing recovered materials. For example, the Official Recycled Products Guide (RPG) was established in March 1989 to provide a broad range of information on recycled content products. Listings include product, company name, address, contact, telephone, fax, type of company (manufacturer or distributor), and minimum recycled content. Price information is not included. The RPG is available on a subscription basis from American Recycling Market, Inc. at (800) 267-0707

The Defense General Supply Center in Richmond, VA also distributes the Environmentally Preferred Products Catalog which lists hundreds of environmentally preferable products in its supply system, ranging from aqueous degreasers to remanufactured laser printer toner cartridges. Environmentally preferable means products and services that have less or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance or disposal of the product or service. For more information about environmentally-preferable products, call or write:

Defense General Supply Center
Attn. Marketing Office
8000 Jefferson Davis Highway
Richmond, VA 23297-5762
1-800-848-4847

3.8 OVERSIGHT OF CHEMICAL STORAGE

Current Conditions

All shops and flammable materials cabinets in the BMC contained products with chemical constituents listed on the EPA 33/50 list. The BMC staff has discontinued ordering materials with EPA 33/50 chemicals, found suitable replacements and is in the process of depleting stocks. The BMC has established a system in which all material purchases are reviewed for ODC and EPA 33/50 constituents prior to purchase. Over time the BMC staff believes that this system will eliminate the use of ODCs and EPA 33/50 chemicals. The maintenance shops has a solvent sink that uses an aqueous degreaser. Flammable materials cabinets were filled with products, many apparently very old. One flammable materials cabinet in the OTR repair shop had several inches of oil in the bottom.

Pollution Prevention Opportunities

1. Evaluate the Contents of all Flammable Materials Cabinets

The BMC staff should perform an inventory on all flammable materials cabinets in order to determine if materials are old, expired, or no longer needed by an operation. Old or expired chemicals should be removed from the shops and disposed of properly. Products no longer needed should be inventoried and used as needed in other operations.

2. Perform periodic inspections of flammable materials cabinets

The BMC staff should perform periodic inspections of flammable materials cabinets to determine if contents are intact and that products brought in from sources other than procurement are eliminated. Periodic inspection and cleanout of cabinets will minimize the risk of spills and interaction of incompatible chemicals.

3.9 RAGS

Current Conditions

The maintenance staff currently use rags to wipe up and clean up during maintenance operations. These rags tend to be very oily. The facility was using a rag service in the past but found that they were continually purchasing new rags because the service could not clean the rags. All rags are now purchased either locally or through GSA and disposed via incineration. The BMC purchased 6,250 pounds of rags in 1994 for $2,375 and in 1995 through April have purchased 3,750 pounds for $555. The Facility expects to purchase approximately 6,900 pound of rags for an approximate cost of $1,000. The facility generates three to four 55-gallon drums of rags per month which are incinerated for approximately $400 per drum.

Pollution Prevention Opportunities

1. Test another rag laundering service

Several rag recyclers and linen services in the Dallas/Fort Worth area were contacted; only one would launder oily rags. National Uniform (a division of National Linen Service) (817) 429-5891 will pick up, launder and deliver rags from the Dallas BMC at a cost of $1.50 per pound. National stated that they will accept oily rags but not rags with chemicals, solvents, degreasers etc and that they would appreciate MSDS on oils used by the USPS. An analysis of the costs show that laundering rags may be cheaper than purchasing new rags. Laundering rags may save between $400 and $1,100 per year. Exhibit 3.9 presents a simple cost/benefit analysis of laundering rags.

EXHIBIT 3.9 COST BENEFIT ANALYSIS OF LAUNDERING RAGS*

Cost/Activity	Laundering	New
Initial Rag Purchase Cost	$1,030	$1,030
Laundering Cost	$10,350 ($1.50 per pound)	none
Disposal Costs	$3,600 (25 percent of $14,400)	$14,400 based on three 55 gallon drums per month at $400 per drum.
Year 1 cost	$2.17 per pound	$2.23 per pound
Cost Savings	$414	
Year 2 rag replacement cost	$258	
Year 2 cost	$2.06 per pound	$2.23 per pound
Cost Savings	$1,173	

* Assumptions:
1. BMC uses 6,900 pound of rags per year.
2. Under reuse option BMC replaces 25 percent of the rags each year.
3. Disposal cost is $400 per drum and the BMC currently generates 3 drums per month.

3.10 BATTERY CHARGING

Current Conditions

The BMC uses numerous battery powered forklifts for the movement of materials. For the main facility the batteries are stored and charged in the battery room. Typically for each forklift there are three batteries; one in use, one charging and one ready for use. When needed, the batteries are filled with water and recharged. The Assessment Team noted that there was an open drain in the battery room that leads to the sanitary sewer. The battery room in the BMC is scheduled to be upgraded to increase the space, lighting, ventilation and

add lime neutralization tanks. Forklift batteries are charged at several other BMC locations. For example, both the warehouse and the CPF facility had battery charging occurring with no supervision, no spill containment, and no safety equipment.

Pollution Prevention Opportunity

1. The drain in the battery room should be diked to prevent the accidental discharge of battery acid to the sanitary sewer. There are devices commercially available to dike drains. Once spills are contained, neutralize the battery acid with sodium bicarbonate (baking soda) and then wash the neutralized acid down the drain with water. Neutralizing the acid will reduce the likelihood of corrosion of pipes.

2. Review procedures on the proper charging of batteries to prevent accidental acid overflows.

3. Remove battery charging operations from remote facilities if possible or provide the appropriate safety and containment equipment for these sites.

3.11 DEDICATED OIL CONTAINERS

Current Conditions

The Dallas BMC oil room has a bulk distribution system which stores several types of oil and a solvent called Pro-Power, which is an oil emulsifier. This distribution system stores materials in 55 gallon containers and has clear PVC tubes that connect to corresponding lockable, self closing faucets to distribute the materials. Several unmarked, open containers are stored under the bulk distribution system. These containers are used to distribute and transport the materials for use. After each use, staff must empty the remaining oil into the waste oil drum and then clean the container with solvent for reuse. This process generates unnecessary waste because excess oil is disposed, instead of being reused, and because the containers must be cleaned with solvent after each use.

Pollution Prevention Opportunities

The BMC should purchase and dedicate containers for specific materials. These containers should have tight-sealing lids and be clearly marked with the type of material for which the container is intended. There are many containers on the market that also have marks indicating the volume. This will ease distribution and help to reduce the amount of excess material dispensed from the bulk distribution system. Also, by having closed, clearly marked containers, the excess materials can be left in the container for reuse. This will eliminate the need to clean the containers with solvent after each use, thereby reducing solvent use.

3.12 POLLUTION PREVENTION INFORMATION SOURCES

Current Conditions

During the site visit, Dallas BMC staff indicated that they would like information on accessing pollution prevention information.

Pollution Prevention Opportunities

There are numerous sources of pollution prevention information nationwide. Appendix E provides a summary of pollution prevention information sources.

There are several sources of pollution prevention information on the internet. Perhaps, the best source is Enviroene. This internet-based information source is funded by the Environmental Protection Agency and the Strategic Environmental Research and Development Program. Enviroene allows those implementing pollution prevention programs or developing research and development projects to benefit from the experience, progress, and knowledge of their peers. Enviroene includes a pollution prevention forum for all levels of government, researchers, industry, and public interest groups. Enviroene has been developed to host an expert architecture known as the Solvent Umbrella. The Solvent Umbrella will allow users to access solvent alternative information through a single, easy-to-use command structure. Enviroene is also modem accessible via Bulletin Board System (BBS). Through Netscape, Enviroene address is:

http://wastenot.inel.gov/envirosense.

The EPA also has a World Wide Web (WWW) Server, which is being run as a prototype system, to provide public access to EPA information. The EPA provides the comprehensive Access EPA document describing environmental information, as well as a number of other pointers to Information Locators that can be obtained from the EPA and related organizations. In addition to this document, the EPA's Public Information Center is available to provide assistance in accessing environmental information. An experimental EPA People Locator is also available. Through Netscape, EPA's WWW server can be accessed through http://www.epa.gov.

The EPA WWW server provides information on EPA Agency information and environmental data, including:

- Press Releases, Calendar, Announcements, Speeches,
- EPA Offices and Regions,
- Consumer Information,
- EPA Initiatives, Policy and Strategy Documents,
- Rules, Regulations and Legislation,
- EPA Standards,

- Science, Research and Technology,
- Information about Grants, Contracts (RFPs), and Job Vacancies,
- Newsletters and Journals, and
- Software and Databases.

Another source of environmental information is the Air Force Center for Environmental Excellence (AFCEE), Pollution Prevention Directorate located at Brooks AFB in Texas. AFCEE produces PRO-ACT factsheets on various pollution prevention topics, ranging from corrugated cardboard pallets to a summary of environmental Executive Orders. Through Netscape, the PRO-ACT fact sheets can be accessed through:

http://chppm-meis.apgea.army.mil/pro-act/index_txt.html.

SECTION 4.0

CONCLUSIONS AND RECOMMENDATIONS

This Pollution Prevention Opportunity Assessment report documents the processes performed, wastes generated and current waste management practices at the USPS Bulk Mail Center in Dallas, Texas. During the assessment process, the Assessment Team identified opportunities to reduce both the quantity and toxicity of the wastes generated by this facility and recommended techniques for implementation of those pollution prevention options. The opportunities described in the previous sections constitute the recommendations of the Assessment Team. Exhibit 3.1 presents a summary of the major recommendations.

Dissemination of this report will encourage application of the pollution prevention opportunities in USPS bulk mail facilities nationwide as well as in other Federal facilities with similar operations.

APPENDIX A.

EPA 33/50 CHEMICALS AND OZONE DEPLETING CHEMICALS

Benzene
Cadmium and Cadmium compounds
Carbon Tetrachloride
Chloroform
Chromium and Chromium compounds
Cyanide compounds and Hydrogen Cyanide
Lead and Lead compounds
Mercury and Mercury compounds
Methylene Chloride
Methyl Ethyl Ketone
Methyl Isobutyl Ketone
Nickel and Nickel compounds
Tetrachloroethylene (Perchloroethylene)
Toluene
1,1,1-Trichloroethane
Trichloroethylene
Xylenes

OZONE DEPLETING CHEMICALS

Halocarbon Number	Chemical Name	Primary Uses*
	CLASS I ODCs	
CFC-11	Trichlorofluoromethane	1,2,3,4,5
CFC-12	Dichlorodifluoromethane	1,2,4
CFC-113	Trichlorotrifluoroethane	2.3.4
CFC-114	Dichlorotetrafluoroethane	1,2,3,4,6
CFC-115	Chloropentafluoroethane	6
Halon 1211	Bromochlorodifluoromethane	3,7
Halon 1301	Bromotrifluoromethane	1,3,5
Halon 2402	Dibromotetrafluoroethane	1,3
CFC-13	Chlorotrifluoromethane	6,7
CFC-111	Pentachlorofluoroethane	0
CFC-112	Tetrachlorodifluoroethane	4
CFC-211	Heptachlorofluoropropane	0
CFC-212	Hexachlorodifluoropropane	0
CFC-213	Pentachlorotrifluoropropane	0
CFC-214	Tetrachlorotetrafluoropropane	0
CFC-215	Trichloropentafluoropropane	0
CFC-216	Dichlorohexafluoropropane	0
CFC-217	Chloroheptafluoropropane	0
Carbon Tetrachloride	Tetrachloroethane	1,4,5,8
Methyl Chloroform	Trichloroethane (all isomers)	4,5,8
Methyl Bromide		4,5,8
	CLASS II ODCs	
HCFC-21	Dichlorofluoromethane	1,4
HCFC-22	Chlorodifluoromethane	1,4,5
HCFC-121	Tetrachlorofluoroethane	0
HCFC-122	Trichlorodifluoroethane	0
HCFC-123	Dichlorotrifluoroethane	1,3
HCFC-124	Chlorotetrafluoroethane	1,3
HCFC-131	Trichlorofluoroethane	0
HCFC-132	Dichlorodifluoroethane	0
HCFC-133	Chlorotrifluoroethane	0
HCFC-141	Dichlorofluoroethane	2
HCFC-142	Chlorodifluoroethane	1,4,5

* The eight use categories are as follows:

1. Refrigeration; Air Conditioning
2. Blowing Agents for Plastics
3. Fire Extinguishing Agent
4. Solvent: Dry Cleaning Agent; Degreaser
5. Intermediate for Synthesis of Other Compounds
6. Dielectric Gas
7. Aerospace Chemical
8. Fumigant: Pesticide

APPENDIX B.

GREEN LIGHTS INFORMATION AND SAMPLE MEMORANDUM OF UNDERSTANDING (MOU) FOR GREEN LIGHTS PARTNERS

United States
Environmental Protection
Agency

Air and Radiation
6202J

EPA 430-B-94-001A
December 1994

Green Lights for Federal Participants

When EPA launched Green Lights -- its flagship voluntary pollution prevention program -- it engaged the free market by promoting profitable investment in energy-efficient lighting. Since 1991, more than 1,500 organizations across the country have joined Green Lights to conserve energy, cut their electricity bills, and reduce the amount of air pollutants released into the atmosphere. This dynamic program continues to grow and meet the energy needs of the country. Currently, Green Lights is helping Federal agencies comply with mandated energy conservation goals.

The Federal government is a major consumer of energy, using over 2 percent of all energy consumed in the US. Two mandates — The Energy Policy Act of 1992 (EPAct) and Executive Order 12902 (EO 12902) — require Federal agencies to cut energy use. Green Lights provides mechanisms for Federal agencies to meet these mandates by offering extensive technical expertise and planning support.

CONTENTS

FEDERAL ENERGY CONSERVATION MANDATES

The Energy Policy Act of 1992 (EPAct)

EPAct requires Federal agencies to reduce energy consumption per gross square foot 20 percent by the year 2000 (compared to 1985). It also requires that agencies install energy conservation measures with less than 10-year payback periods. Certain buildings are excluded from this mandate (see box). EPAct encourages Green Lights participation in Section 543 (paragraph b.4).

"An agency may participate in the EPA's Green Lights program for purposes of receiving technical assistance in complying with the requirements of this section."

Executive Order 12902

EO 12902 requires Federal agencies to reduce energy consumption 30 percent per gross square foot by the year 2005 (as compared to 1985). It also requires a 20 percent reduction in energy consumption in industrial facilities by 2005 (compared to 1990). The order compels agencies to conduct comprehensive facility audits and install cost-effective energy conservation measures. Agencies should audit about 10 percent of their facilities each year. However, if a facility has had a comprehensive audit within the last three years, it counts as current. Agencies must use "no-cost" audits wherever practicable. The actions required of Federal agencies by EO 12902 are summarized below.

Buildings exempt from EPAct

- Federal agency facilities that generate or transmit electric energy
- Uranium enrichment facilities operated by DOE
- Buildings in which compliance with the requirements would be impractical

Goals for Energy Use/SqFt Reduction in Existing Federal Buildings

EPACT. 1992.....20% by 2000 relative to 1985

EO 12902. 1994.....30% by 2005 relative to 1985

Activities Required by EO 12902

September 1994

- ✓ Begin implementing cost-effective recommendations from comprehensive facility audits performed within the last three years to install energy efficiency, water conservation, and renewable energy technologies
- ✓ Designate one major building to showcase energy or water efficiency (and other renewable energy technologies if possible)
- ✓ Develop showcase implementation plan

March 1995

- ✓ Identify high priority facilities to audit
- ✓ Complete first 10 percent of comprehensive facility audits

Within six months of each audit

- ✓ Begin installing cost-effective recommendations (i.e., those with less than 10 year payback) for energy efficiency, water conservation, and renewable energy technologies

September 1995

- ✓ Complete prioritization surveys for all facilities

December 1995

- ✓ Reclassify "exempt" or "industrial" facilities based on prioritization surveys, and report to the Federal Energy Management Program and the Office of Management and Budget

Interaction Between EPAct and EO 12902

Both EPAct and EO 12902 require Federal agencies to reduce energy consumption per gross square foot and to implement energy conservation measures.

EO 12902 effectively extends the EPAct timeline for Federal energy conservation measures to 2005 and requires additional energy savings by that time. It also requires energy conservation in industrial facilities. Finally, while EPAct allowed exemptions of entire facilities due to specialized, energy-intensive activities, EO 12902 requires agencies to designate specific buildings as exempt and implement cost-effective conservation measures wherever possible in other parts of those facilities.

EPAct

- reduce energy consumption per gross ft^2 10 percent by 1995 (compared to 1985)
- reduce energy consumption per gross ft^2 20 percent by 2000 (compared to 1985)
- install all energy and water conservation measures with payback periods of less than 10 years in Federally owned buildings
- exempt buildings in which energy intensive activities are carried out

EO 12902

- reduce energy consumption per gross ft^2 30 percent by 2005 (compared to 1985)
- reduce energy consumption per gross ft^2 20 percent in industrial facilities in aggregate by 2005 (compared to 1990)
- conduct surveys and comprehensive audits and implement recommendations with payback periods of less than 10 years
- reclassify "exempt" facilities

To assist in overcoming many of the obstacles that may have stalled lighting upgrades in the past, participants will receive extensive support materials and services from EPA. We currently provide participants with the following products, information, and services.

* Information Hotlines
* Green Lights Electronic Bulletin Board
* Energy Star Fax-Line System
* "Specifier Reports"
* "Lighting Answers"
* "Light Briefs"
* Lighting Upgrade Manual
* Lighting Upgrade Workshops
* Green Lights Financing Directory
* Lighting Waste Disposal Information
* Decision Support System
* ProjectKalc
* ReportKalc
* Directories of Green Lights Allies
* Implementation Planning Assistance
* Communications Assistance

FEDERAL GREEN LIGHTS

In Federal buildings, approximately 25 percent of the energy consumed is for lighting. Retrofitting such systems could result in substantial energy savings, providing cost-effective options for meeting Federal energy mandates.

EPAct encourages participation in Green Lights because it provides Federal agencies with many of the tools they need to get moving on lighting retrofits. It offers comprehensive, up-to-date lighting information and responsive support services. The program also has analytic tools to help participants rapidly analyze lighting systems and select appropriate upgrade solutions. Additionally, Green Lights helps participants effectively plan upgrades and publicize their successes once upgrades are complete.

Who Can Be a Federal Partner?

Green Lights is open to any Federal organization (including sub-agencies) that has control over its own facilities and budget, and has its own management structure. In other words, legislative branch agencies, executive branch departments, and administrations, bureaus, and services within departments can join. A diverse mix of Federal Partners has already joined the program, including the Bureau of Reclamation, Kelly Air Force Base, the National Security Agency, and several Department of Energy and Department of Defense facilities.

What Do You Agree to Do by Joining?

Federal Partners agree to reduce lighting energy use by 50 percent, provided lighting quality is not compromised. In the Memorandum of Understanding (MOU), Federal Partners agree to conduct a variety of energy saving activities in owned facilities:

- Survey all agency facilities and identify lighting upgrades that will reduce energy use 50 percent without compromising lighting quality.
- Upgrade 90 percent of the square footage of agency facilities no later than January 1, 2005.
- Implement all lighting projects with payback periods of less than 10 years by January 1, 2005.
- Re-survey and, if necessary, upgrade each facility within five years of the initial surveys and upgrades.
- Appoint an implementation director who oversees participation in the program.
- Document annual energy efficiency improvements.
- Encourage regulatory reform and public awareness efforts.

Design new facilities in compliance with applicable codes and regulations (e.g., 10 CFR Part 435 Subpart A).

EPA encourages organizations to look at lighting as an investment opportunity, not as an overhead cost. Green Lights asks federal participants to cut lighting energy use 50 percent, contributing to the overall 30 percent energy reduction required by EPAct. This goal is achievable, because Green Lights participants are accomplishing average returns of over 40 percent

and reducing their lighting electricity use by an average of 46 percent.

Upgrading Leased Space

Federal Partners also agree to upgrade leased facilities. However, several factors can limit their ability to upgrade these facilities: the length of the lease, the cooperation of the landlord and tenants, and whether the building is federally owned. The following MOU agreements take these limits into account.

- Survey leased facilities where the agency pays directly for electricity or where the General Services Administration (GSA) delegates management authority
- Identify lighting upgrades in applicable facilities that will reduce energy use 50 percent without compromising lighting quality
- Upgrade 90 percent of the square footage of qualifying leased facilities no later than January 1, 2005.

Non-delegated GSA buildings are the responsibility of the GSA, not the Federal Partner. However, Partners agree to work with the GSA to expedite surveys and upgrades of these buildings. If landlords or tenants refuse to cooperate, EPA will conduct meetings to identify the benefits of Green Lights and to seek GSA cooperation.

Three circumstances generally preclude upgrades in leased spaces:

- payback period exceeds the remaining duration of the lease term
- lease expires less than five years from the date the MOU is signed
- Federal Partner does not pay utilities directly

Definitions of Financial Terms*

LCC = (investment costs - salvage values) + (non-fuel O&M costs) + (replacement costs - salvage costs) + (energy costs)

NPV = $LCC_{\text{without project}} - LCC_{\text{with project}}$

Savings to Investment Ratio

= PV Savings in energy and non-fuel O&M costs / PV Costs in investment and replacement costs - salvage values

IRR = [(terminal value of savings/present value of costs) $^{1/n}$ - 1], where n = the number of years in the study period

Simple Payback

= Number of years required for investment costs to equal (cumulative energy cost savings - non-fuel costs), not considering future price changes or discount rates

* as defined in 10 CFR Part 436

EVALUATING UPGRADE OPTIONS

Green Lights encourages Partners to choose profitable lighting alternatives that are the most energy-efficient, thereby maximizing energy savings.

As they begin their upgrades, participants use the *Decision Support System (DSS)* to select the mix of technologies that maximize energy savings. Next they use internal rate of return (IRR) and net present value (NPV) to measure profits from lighting investments. A Green Lights upgrade is considered profitable if the IRR is equal to or greater than 20%. Green Lights chooses this hurdle rate because of the low risk involved in lighting upgrades and the added benefit of pollution prevention. NPV calculations help participants select the most profitable project among several that meet the IRR test. ProjectKalc (another Green Lights analytical tool) can analyze NPV on a system- or building-wide basis. For more information, see *Financial Considerations*, a section of the *Lighting Upgrade Manual*.

.ife-Cycle Costs

PAct refers to 10 CFR Part 436 to specify life-cycle ost calculations. According to these regulations, ife-Cycle Costs (LCC) refer to the total costs of wning, operating, and maintaining a building over its seful life, and are determined by evaluating and omparing lternative building ystems. For eased buildings, ne LCC are alculated over the ffective emaining term of he lease. The nethod of calculating LCC, pecified in 10 CFR 436, is a ystematic analysis of elevant costs -- excluding costs incurred before the analysis -- producing a discounted cash flow and calculating the net present value. Future versions of the DSS and ProjectKalc will calculate LCC.

- Internal rate of return (IRR) is an acceptable LCC method provided that the IRR (as described in 10 CFR 436.22) is greater than the discount rate as set by DOE.

Cost-Effectiveness

Building energy conservation measures are deemed cost-effective if one of the following criteria is met.

- ✓ LCC are estimated to be lower than other alternatives.
- ✓ NPV is estimated to be positive.
- ✓ Savings-to-investment ratio is estimated to be greater than one.
- ✓ Adjusted IRR is estimated to be greater than the discount rate as set by DOE.
- ✓ Simple payback is significantly less than the life of the system and the federal building in which it is installed.

Investments are not deemed cost-effective for buildings that are...

- × under a short-term lease, with less than one year remaining and without a renewal option or with a renewal option that is not likely to be exercised.
- × occupied under a lease that includes utilities in the rent and does not provide a pass-through of energy savings to the government.
- × scheduled to be demolished or retired from service within one year or less.

FINANCING OPTIONS

Besides third-party financing and traditional procurement routes, Federal agencies have several options for financing lighting upgrades. They are:

- utility financing
- energy savings performance contracts
- Federal Energy Efficiency Fund

The Federal MOU includes a financial disclaimer stating that "both parties agree that the commitment to survey buildings and complete lighting upgrades is contingent upon the availability of appropriated funds or third-party financing resources."

Utility Financing

EPAct authorizes agencies to participate in utility programs that increase energy efficiency, conserve water, or manage electricity demand. According to EPAct, agencies may accept rebates or other incentives to increase energy efficiency and may not be denied them if they satisfy the criteria other customers must meet. Agencies may also enter into negotiations to address any unique needs of their facilities.

Energy Savings Performance Contracts

Energy savings performance contracts (ESPCs) are also authorized by EPAct. ESPCs are contracts with energy service companies that guarantee energy savings to an agency and require annual energy audits. The contractor in urs the costs of implementing energy savings measures -- including the costs of audits, equipment installation, and training -- in exchange for a share of the energy savings. The head of a federal agency may enter into these contracts to achieve energy savings and benefits.

The term -- which may not exceed 25 years -- and conditions of any government payments and

performance guarantees are specified in the contract. Aggregate annual payments to utilities and contractors cannot exceed the amount an agency would have paid for utilities without an ESPC. Additionally, Federal agencies may incur debt to finance energy conservation measures using ESPCs, provided guaranteed savings exceed payments.

To facilitate the selection of contractors, DOE has developed an annually-updated list of qualified energy service firms. Federal agencies are required to use contractors from this list.

Federal Energy Efficiency Fund

The Federal Energy Efficiency Fund was established by EPAct to provide grants to assist agencies in meeting its requirements. Guidelines for submitting proposals were issued on June 30, 1993.

Funds have been appropriated through 1995. Up to $6 million was available for fiscal year 1994, and up to $50 million is available in fiscal year 1995. These funds will be distributed to agencies based on a combination of several factors:

- cost-effectiveness of project
- amount of energy and cost savings anticipated
- amount of funding committed to the project by the agency
- the extent to which proposals leverage financing from non-Federal sources

FEDERAL AGENCY ACCOUNTING REQUIREMENTS

To encourage energy efficiency, EPAct mandates that some of the energy and water cost savings remain available to Federal agencies. An amount equal to 50 percent of the cost savings (from utility rebates or ESPCs) remains available for additional energy efficiency programs, particularly at those facilities where energy savings are achieved. To maintain these savings, agencies must establish a fund and maintain strict financial controls, documenting savings realized and expenditures made. These records must be made available for public inspection upon request.

Federal organizations that make the commitrnent to Green Lights are profiting by reducing their energy consumption and electricity bills, improving lighting quality, and increasing worker productivity. By using energy-efficient lighting, they are also reducing the air pollution caused by power generation (particularly carbon dioxide, sulfur dioxide, nitrogen oxide, and heavy metal emissions). As one of the first market-driven, non-regulatory programs sponsored by EPA, Green Lights is revolutionizing the way America cleans up the environment.

NOTES:

GREEN LIGHTS
A Bright Investment in the Environment

Green Lights is an exciting and innovative programs sponsored by the US Environmental Protection Agency (EPA) that encourages major US corporations and other organizations to install energy-efficient lighting technologies.

Organizations that make the commitment to Green Lights will profit by lowering their electricity bills, improving lighting quality, and increasing worker productivity. They will also reduce the air pollution caused by electricity generation.

For more information contact:

Green Lights Program
US Environmental Protection Agency
401 M Street, SW (6202J)
Washington, DC 20460

Green Lights Information Hotline
(for program, technical, and software support)

☎ (202) 775-6650
Fax (202) 775-6680

Green Lights Ally Information

☎ (202) 293-4527
Fax (202) 223-9534

Energy Star Fax-Line System

☎ (202) 233-9659

Green Lights for Federal Participants is an appendix to the *Lighting Upgrade Manual.* Other documents in the *Manual* are listed below.

Lighting Upgrade Manual

PLANNING

- *Green Lights Program*
- *Implementation Planning Guidebook*
- *Financial Considerations*
- *Lighting Waste Disposal*
- *Progress Reporting*
- *Communicating Green Lights Success*

TECHNICAL

- *Lighting Fundamentals*
- *Lighting Upgrade Technologies*
- *Lighting Maintenance*
- *Lighting Evaluations*
- *The Lighting Survey*

☞ To order other documents or appendices in this series, contact the Green Lights Hotline at (202) 775-6650. Look in the monthly Green Lights *Update* newsletter for announcements of new and relevant publications.

In order to maintain consistency and fairness among program participants, this Memorandum of Understanding may not be changed.

Memorandum of Understanding Between The United States Environmental Protection Agency and Federal Agency

I. Common Agreements and Principles

A. This is a voluntary agreement between Federal Agency ("Federal Partner") and the United States Environmental Protection Agency (EPA), by which Federal Partner joins EPA's Green Lights Program. This agreement can be terminated by either party without penalties or liability to either party.

B. Federal Partner and EPA agree that the primary purpose of the Green Lights Program is to encourage U.S. organizations to install energy-efficient lighting, in order to prevent the creation of air pollution (including greenhouse gases, acid rain emissions, air toxics, and tropospheric ozone), solid waste, and other environmental impacts of electricity generation. Green Lights is part of a larger program, and Partners are encouraged to explore additional opportunities for pollution prevention by joining EPA's Energy Star Buildings Program and the Energy Star Computers Program. Either or both of those programs may be entered by signing addenda to this Memorandum of Understanding.

C. Federal Partner and EPA agree that installation of energy-efficient lighting can improve profitability and competitiveness, reduce government operating costs, and enhance national energy security.

D. Federal Partner and EPA agree that energy-efficient lighting can maintain or enhance lighting quality and can improve employee productivity.

E. Federal Partner and EPA agree that communicating Partner's commitments (as stated in this MOU) to the public demonstrates:

- the concern of Federal Partner for the environment,
- the vitality of the free enterprise system in reducing costs, and
- the capability of voluntary programs to achieve national goals with minimal regulation.

F. Federal Partner and EPA agree that maintaining public confidence in the credibility of the Green Lights Program and its participants is critical to achieving the shared goals stated above.

G. Federal Partner and EPA agree that joining Green Lights constitutes participation in the U.S. Department of Energy's (DOE) Federal Relighting Initiative. Federal agencies may participate in the Federal Relighting Initiative without joining Green Lights.

H. Federal Partner and EPA agree that provisions of this agreement are in accordance with Executive Order 12902 Energy Efficiency and Water Conservation at Federal Facilities (March 10, 1994).

II. Federal Partner's Responsibilities

A. Definition of Partner and Eligibility. A Federal Partner is a Federal organization that joins the Green Lights Program by signing this Memorandum of Understanding. Any authority of the Government of the United States, in the Executive, Legislative, or Judicial branches (including those within or subject to review by a parent organization), that has financial and operational control of any of its own facilities may join Green Lights. Examples may include legislative branch agencies, executive branch departments, and administrations, bureaus, and services within departments.

Federal Partner recognizes that the Energy Policy Act of 1992 (Pub. L. 102-486) authorizes Federal agencies to participate in the Green Lights program. Additionally, Federal Partner recognizes that the Clean Air Act (42 U.S.C. 7412) and the Pollution Prevention Act (42 U.S.C. 13101) provide the authorities for the Green Lights program, and that Executive Order 12902 and Section 543 of the National Energy Conservation and Policy Act (42 U.S.C. 8253), as amended by the Energy Policy Act of 1992, provide authorities for Federal energy management.

Federal Partner agrees that it has financial and operational control of some or all of its facilities, and further agrees that its membership in Green Lights commits all of its component suborganizations (such as subsidiaries, divisions, campuses, etc.) over which it can and/or does exercise financial or operational control. In completing the square footage tally on Appendix A, Federal Partner agrees to include all facilities subsumed by this definition.

B. Green Lights Implementation Director. Federal Partner agrees to appoint a senior representative of the organization (designated on Appendix A) as Green Lights Implementation Director. The Green Lights Implementation Director will be the person responsible for ensuring that Federal Partner successfully completes its commitments as stated in this MOU, and Federal Partner agrees to assign the authority to the Implementation Director needed to execute that responsibility. The Green Lights Implementation Director's responsibilities include:

- establishing and overseeing Green Light Partner's implementation plan, which includes the securing of personnel and financial resources, and the scheduling of upgrade projects.
- directing Federal Partner's lighting upgrades.
- coordinating Federal Partner's participation in Green Lights activities.
- facilitating communication with the Green Lights Program Office at EPA, and
- annual reporting to EPA of Federal Partner's lighting surveys and upgrades.

Federal Partner agrees to notify EPA in writing within two weeks of any change in the designation of the Green Lights Implementation Director.

C. **Communications Director.** Federal Partner agrees to appoint a representative of the organization (designated on Appendix A) as Green Lights Communications Director. The Communications Director will direct Federal Partner's communications effort to ensure (as deemed appropriate by Federal Partner) that the organization is properly recognized for its environmental protection achievements through Green Lights, and, in addition, to educate all employees and the general public about the Program. Federal Partner agrees to notify EPA in writing within two weeks of any change in the designation of the Green Lights Communications Director.

D. **Staff Commitment.** Based on the experience of Partners who have already joined the Green Lights Program, Federal Partner should anticipate devoting a combination of internal (staff) and external (consultant/contractor) personnel resources at the approximate level of 1 person-year for every 5 million square feet of facility space, for the purpose of surveying buildings, specifying upgrades, supervising upgrade installations, and managing other aspects of Federal Partner's participation in Green Lights. Federal Partner agrees to provide adequate staff to fulfill the commitments it undertakes in the MOU.

E. **Financial Commitment.** Federal Partner recognizes that, although energy-efficient lighting upgrades are highly profitable (typically earning 20-40% post-tax rates of return), an initial investment of $0.50-2.00 per square foot (depending upon existing equipment, purchasing strategy, and scope of the lighting upgrades) will be required on average to implement its participation in Green Lights. Federal Partner agrees to allocate each year sufficient funds (or secure third-party financing) to allow for the investment in energy-efficient lighting to meet its commitments under this agreement.

F. **Energy-Efficient Lighting Upgrades (terms in bold defined at Appendix B).**

Federal Partner agrees to:

- survey the lighting in all of the square footage of its eligible facilities.
- consider the full range of lighting technology, design, and maintenance options that can reduce energy use, and
- upgrade the lighting with the set of options that, taken as a whole on a facility- aggregate basis, maximizes energy savings and that also (1) reduces lighting energy use by 50% and (2) meets Federal Partner's lighting quality objectives.
- maximize energy savings while meeting lighting quality objectives; where lighting quality concerns prevent energy reductions of 50% or more . Partner agrees to maximize energy savings while meeting quality objectives.

Federal Partner agrees to complete no later than January 1, 2005:

- lighting surveys of 100% of the square footage of its eligible facilities, and
- upgrades of 90% of the square footage of its eligible facilities other than those that are no-upgrade facilities.
- projects with payback of less than 10 years, using methodologies for estimating payback consistent with Section 544 of the National Energy Conservation Policy Act (42 U.S.C. 8254) and implementing regulations at 10 CFR Part 436 Subpart A ("A Methodology for Life Cycle Cost Analyses).

The following is a recommended implementation schedule:

	Cumulative Percentage of Square Footage	
End of Year	Completed Surveys	Completed Upgrades
1	5%	1%
3	90%	40%
5	100%	90%

G. **Leased Space.** Federal Partner shall survey and upgrade leased space meeting the following criteria according to the provisions of paragraph II.F: (1) Federal Partner directly leases from a non Federal landlord under an agreement expiring more than five years after the date this MOU enters into force, and (2) Federal Partner pays for electricity costs directly to an electric utility.

1. **Predominantly Short-Term Leased Space.** Notwithstanding paragraph II.F, if Federal Partner's facilities are comprised of more than 75 percent short-term (less than 5 years remaining) leased space, Federal Partner agrees to:
   - survey at least 50% of its short-term leased space,
   - consider the full range of lighting technology, design, and maintenance options that can reduce energy use, and
   - upgrade the lighting with the set of options that, taken as a whole on a facility- aggregate basis, maximizes energy savings and that is also (1) profitable and (2) meets Federal Partner's lighting quality objectives.

For short-term leased space, a project is defined as "profitable" when it provides a payback term shorter than the remaining term of the lease. Federal Partner agrees to upgrade 90% of the square footage of its short-term leased facilities other than those that are "no-upgrade facilities" within the recommended 5-year period.

2. **Delegated Buildings.** Where Federal Partner occupies space leased by the General Services Administration (GSA) and in which management authority has been delegated by GSA to Federal Partner, Federal Partner agrees to treat such buildings as in paragraph II.F.

3. **Non-Delegated Buildings.** Federal Partner and EPA agree that space managed by GSA without delegation to Federal Partner shall be considered the responsibility of GSA, not of Federal Partner. Federal Partner agrees to work with GSA in good faith to expedite surveys and upgrades of such buildings.

4. **Lessor.** Where Federal Partner leases (as controlling or majority owner) to other parties and Federal Partner pays for electricity costs directly to an electric utility, Federal Partner agrees to treat such buildings as in paragraph II.F.

H. **Quick Start.** Within 180 days of signing this MOU, Federal Partner agrees to:

1. Specify and install a 5,000-15,000 square foot demonstration lighting upgrade with technical cooperation from EPA, if needed. If Federal Partner's total square footage is less than 5,000 square feet, participant will do a demonstration upgrade of at least 50% of their square footage.

2. Create a list of all facilities to be surveyed and/or upgraded under this agreement, their location, square footage, projected survey date, and pre-survey estimated upgrade budget. EPA agrees to provide assistance with budget estimation, upon Federal Partner's request.

3. Conduct, in cooperation with EPA, a kick-off meeting. EPA agrees that it will provide materials, orientation information, planning assistance, technical training, and networking ideas at or to this kickoff meeting. Federal Partner agrees that all parts of its organization with a stake in Green Lights (such as facilities management, environmental compliance, human resources, corporate communications, strategic planning, financial resources, etc.) will be represented by a senior manager at the kick-off meeting. EPA's participation may take the form of supplying materials, participating via telephone or videoconference, or sending Green Lights staff or consultants to the meeting at the request of Federal Partner.

I. **Upgrades Completed Prior to Joining Green Lights.** EPA and Federal Partner agree that Federal Partner may count toward its upgrade commitment lighting upgrades that were completed fewer than 18 months prior to joining Green Lights, provided that the upgrades meet the Green Lights Program standards and proper documentation is provided (see "Reporting," below). EPA and Federal Partner agree that facilities in which upgrades were completed earlier than 18 months prior to Federal Partner's joining Green Lights shall be surveyed, and, according to the criteria of this MOU, upgraded. Based on the experience of Federal Partners already in the Green Lights Program, it is common that a new lighting survey would determine that no additional measures are warranted in a previously upgraded facility, provided that the earlier upgrade was done in a thorough manner.

J. **Reporting.** Federal Partner agrees to submit Green Lights Implementation Reports (blank copy attached as Appendix D) or the equivalent Electronic Progress Report (diskette available upon request) to EPA for each lighting survey and upgrade project that it undertakes. Federal Partner agrees to submit reports at least annually, to
   - establish the credibility of Federal Partner's pollution-prevention achievements,
   - demonstrate the benefits of energy-efficient lighting to Partner's management, customers, and other stakeholders, and to
   - increase participation by other organizations in Green Lights.

More frequent reporting is encouraged in order to avoid the need for large "batch" processing by either Federal Partner or EPA. EPA agrees to assist Federal Partner with completing Partner's first implementation report, if Partner requests.

If Federal Partner has not undertaken any new surveys or upgrades since its previous membership anniversary, Federal Partner agrees to send a letter to EPA in lieu of the Green Lights Implementation Report.

Federal Partner is encouraged to submit this information to DOE's Annual Report on Federal Energy Management.

K. **New Construction.** Federal Partner agrees to design all new facilities in compliance with applicable codes and regulations, with particular attention to 10 CFR Part 435 Subpart A, as required by law. When designing new lighting systems in areas that are not intended for manufacturing or commercial or industrial processing, Federal Partner further agrees to at least meet (and attempt to exceed) the most current lighting energy standards, defined as follows:

1. Until December 31, 1994, the building energy guidelines of the U.S. Department of Energy, or any new Illuminating Engineering Society (IES) lighting energy standard (if one has been issued), or ASHRAE/IES 90.1-1989 if no new IES standard has been issued.
2. Following January 1, 1995, any post-1989 IES lighting energy standard (if one has been issued), or the building energy guidelines of the U.S. Department of Energy, or another post-1989 building energy standard more stringent than ASHRAE/IES 90.1-1989 that has been created via an industry/professional/public consensus process.

Federal Partner agrees that all new leases that it signs (whether as a lessor or lessee) lasting 5 years or longer will be treated as "New Construction."

L. **Re-Surveys.** Because of the continuing improvement in and falling prices of energy-efficient lighting equipment, Federal Partner agrees to re-survey facilities and reanalyze options at all eligible facilities no later than five years after completing an upgrade at that facility or determining that the facility was a "no-upgrade facility." Federal Partner agrees to implement options that meet the Green Lights upgrade criteria that then exist within five years of the re-survey.

M. **Employee Education.** Federal Partner agrees to educate its employees about the economic and environmental advantages of energy-efficient lighting and, to the extent that is possible and consistent with the organization's policies, to encourage employees to purchase such products for their homes.

N. **Communication.** Federal Partner agrees to cooperate with EPA efforts to help raise public awareness of the Green Lights Program and of the benefits of energy-efficient lighting in general. This could include Federal Partner's preparation of case studies, advertisements, and press releases and their distribution to the media, employees, other Green Lights participants, potential participants, and the general public. Federal Partner agrees to provide at least one case study to EPA by the end of its second year of membership.

O. **Non-Endorsement.** Federal Partner agrees that participation in the Green Lights Program, use of the Green Lights Program logo, or any publicity relating to its participation in the Green Lights Program does not constitute EPA's endorsement of Federal Partner for anything other than its commitment to install energy-efficient lighting. Federal Partner agrees that it will not imply otherwise.

P. **Regulatory Reform.** Federal partner agrees to work with EPA to remove any unjustified regulatory, administrative, and other barriers to the widespread adoption of energy-efficient lighting. Federal Partner will also promote additional mechanisms and incentives that will encourage the widespread adoption of energy-efficient lighting in the Federal Government, consistent with overall Federal policy and Federal Partner's authority.

Q. **National Historic Preservation Act.** Federal Partner shall not be required to undertake any actions that would violate the National Historic Preservation Act, as amended.

III. Associated Considerations

A. The EPA strongly encourages and recommends that Partners initially address lighting upgrade projects prior to other energy systems such as heating or air conditioning. EPA experience has shown that energy reductions accomplished from lighting improvement projects can significantly impact and reduce HVAC requirements and their associated costs.

IV. EPA's Responsibilities

A. **Liaison.** EPA agrees to designate a single liaison point for the Green Lights Program, and will attempt to notify Federal Partner within 2 weeks of any change in the designated liaison. The liaison is: Chief, Green Lights Branch; U.S. EPA (6202J); 401 M Street, SW; Washington, DC 20460; PH# 202-233-9120; FAX # 202-233-9569; HOTLINE 202-775-6650.

B. **Technical Support.** EPA agrees to assist Federal Partner in adopting new cost-effective lighting technologies in the following ways:

1. EPA agrees to provide to Federal Partner a comprehensive summary of the best available information about energy-efficient lighting and implementation methods.
2. EPA agrees to offer workshops and training courses that Federal Partners may attend. These workshops and training courses will teach Federal Partners about energy-efficient lighting technologies, analytical techniques, and the use of technical tools developed by the Green Lights Program.

3. EPA agrees to provide lighting analysis software designed to help Federal Partner conduct their lighting surveys, complete their options analyses, and choose the most energy-efficient and profitable lighting upgrade package.
4. EPA agrees to manage Green Lights Allies Programs in which lighting manufacturers, installation companies, electric utilities, lighting equipment distributors, and lighting surveyors agree to follow specific criteria.
5. EPA agrees to support an independent lighting product information program that will test lighting products on a name-brand basis. EPA further agrees to provide Federal Partner with a copy of each report produced by this program.
6. EPA agrees to provide Federal Partner with a comprehensive directory (updated semi-annually) of utility rebate programs in the U.S. In addition, EPA agrees to provide a similarly updated directory of non-utility financing organizations (such as leasing companies and energy service companies) that provide financing for energy-efficient lighting upgrades.
7. EPA agrees to operate informational hotlines for Federal Partner to provide Federal Partner with the most up-to-date information available on energy-efficient lighting, implementation techniques, and the Green Lights Program.
8. EPA agrees to provide model Requests for Proposals (RFPs) for Federal Partners wishing to procure lighting products and services on a positive cash flow basis (e.g., using shared energy savings, guaranteed savings, operating leases, energy-savings performance contracting).
9. EPA agrees to encourage electric utilities to provide financing for lighting upgrades, as permitted by law and where consistent with other policies, in areas where Federal partners, as a group, have significant facility square footage and to encourage agencies to utilize such financing.
10. EPA agrees to work with various agencies that set Federal policy on budgets, leases, and procurement to develop rules, mechanisms, and financing that facilitates adoption of energy-efficient lighting.

Recognition. EPA agrees to provide Federal Partner with recognition for its public service in protecting the environment by:

- publishing articles and performing analyses about the pollution prevented by participants.
- organizing at least one major media event each year.
- publishing articles describing the Green Lights Program and organizations that have completed outstanding lighting upgrades, and
- creating public service advertisements that raise awareness of the program as a whole.

Advertising. EPA agrees to work with Federal Partners independently and/or in conjunction with other Partners to develop advertisements publicizing Federal Partners' involvement in the Green Lights Program. Due to limited advertising space and varying audiences, EPA may, on occasion, work with selected Federal Partners to develop advertisements. Federal Partners may be invited to participate in an advertisement on the basis of such criteria as organization size (e.g., square feet or number of employees), date of entry into the Program, type of commercial/industrial sector, scope of organization (e.g., national, regional, local), organization headquarters location, or other practical limitations.

E. Direct Support. At Federal Partner's request, EPA agrees to undertake surveys and analyses for part or all of Federal Partner's facilities, contingent upon the completion of separate interagency agreements that contain sufficient funds to support such activities by EPA's expert teams.

V. Use of EPA-Developed Materials

A. EPA Materials. Both parties to this agreement agree that EPA-developed publications are a valuable tool in educating the public about the pollution-prevention benefits of energy-efficient lighting and the Green Lights Program.

B. Green Lights Logo. EPA agrees to permit Federal Partner to use the Green Lights Partner logo for use on non product-specific materials that will publicize Federal Partner's participation in the Green Lights Program. Federal Partner agrees that appropriate use of the EPA Green Lights Program logo is encouraged by EPA, but that such use does not constitute EPA's endorsement of Federal Partner's products or services.

C. **EPA Materials.** EPA agrees to provide to Federal Partner, at Partner s request, available camera-ready negatives, mechanicals, and other directly reproducible material, from which Federal Partner can create:

1. Green Lights brochures, Light Briefs, and video(s)
2. Green Lights Program logo
3. Other Green Lights materials

Federal Partner agrees to return to EPA the directly-reproducible material identified above within 30 days of receipt.

D. **No Charge.** EPA agrees not to charge Federal Partner for such materials.

E. **Reproduction of EPA Materials.** Federal Partner agrees to reproduce such EPA-developed materials faithfully, without altering their form, content, or appearance in any way, except, at Federal Partner's option, to add the phrase "Distributed at no cost by [Federal Partner], with permission of EPA's Green Lights Program," as well as Federal Partner's own logo, address, and phone number.

F. **Recycled Paper.** Federal Partner agrees to use recycled paper for all of its reproductions of EPA-developed informational materials.

G. **Distribution.** Federal Partner agrees to distribute EPA-developed informational materials to Federal Partner's employees and potential Federal Partners to promote and expand the use of energy-efficient lighting and membership in the Green Lights Program.

VI. Criteria and Standards

A. Each party to this agreement agrees to assume the good faith of the other party as a general principle for the Green Lights Program.

B. Both parties agree to notify each other if any problems arise and to work together to foster maximum public confidence in the Program. Either party can terminate this agreement, without penalty, via 10 days' written notice to the other, and both will then cease to publicize Federal Partner's participation in the Green Lights Program. Reasons that could cause EPA to terminate this agreement with Federal Partner include (but are not limited to):

- Partner's failure to provide annual report(s),
- Partner's failure to make adequate progress on lighting upgrades, to the point where it is evident that Partner will not be able to fulfill its upgrade commitments as stated in this MOU, and
- Partner's use of the Green Lights logo in an inappropriate manner.

Because public confidence in the credibility of Federal Partners' achievements is so important, EPA will make a best-faith effort to assist Federal Partner in meeting all of the goals of this MOU.

C. Each party's commitments will be subject to any legal restrictions that may apply.

D. EPA agrees that information provided by Federal Partner to EPA will be treated pursuant to EPA's public information regulations under 40 Code of Federal Regulations, Part Two.

E. Both parties agree that the commitment to survey buildings and complete lighting upgrades is contingent upon the availability of appropriated funds or third-party financing resources.

The undersigned hereby execute this Memorandum of Understanding on behalf of their parties. This Memorandum takes effect when signed by both parties.

For the U.S. Environmental Protection Agency (EPA):

_____ On: _____

Paul Stolpman, Director
Office of Atmospheric Programs

For Federal Agency:

_____ On: _____

_____ _____

Name (Please Print) Title

Please return:
(1) the signed MOU in its entirety, including Appendices A & B, and (2) a camera-ready version of your organization's logo (EPA uses colleges of company logos in Green Lights brochures, newsletters and advertisements. Where a single organization is being focussed on, that organization is given the opportunity to review and approve the logo use.) to: Chief, Green Lights Branch; US Environmental Protection Agency (6202J); 401 M Street, SW; Washington, DC 20460.
Thank you. Welcome aboard.

Federal Agency

_____

Appendix A: Please enclose the following information with the signed MOU:

Secretary/Administrator's Name: _____

Title: _____

Address: _____

Telephone Number: _____ Fax Number: _____

Please identify your Green Lights Implementation Director:
Communications Director:

Mr./Ms./Rank _____

Title _____

Address _____

Phone _____ Fax _____

Please identify your Green Lights

Mr./Ms./Rank _____

Title _____

Address _____

Phone _____

Fax _____

What is the Nature of Organization's Business _____ SIC Code _____

Approximate number of employees _____ Approximate number of facilities _____

Headquarters location _____

Approximate square footage:

Office _____ Warehouse _____ Health Care _____

Industrial/Manufacuring _____ Lodging (hotels, dormitories) _____

Education (classrooms) _____ Assembly (auditoriums) _____

Food Sales & Services _____

Other ( ) _____ Parking Garage _____
please specify

Is the organization signing this MOU a component of another organization? If so, please provide the name of the parent organization:

_____

What is the first day of your organization's next fiscal year?_____

Who referred you to Green Lights?_____

Appendix B: Definitions

1. **Lighting** includes all electrical and natural (daylight) lighting installations, including those found indoors and outdoors (facades, roadways, parking lots and garages, security/safety lighting, signage, etc.).

2. **Eligible Facilities** includes: (1) all domestic facilities that Federal Partner owns; (2) all domestic facilities it currently leases from other parties under agreements that expire more than five years after the date this agreement enters into force. Space that Federal Partner leases under agreements terminating sooner than five years after the date this agreement enters into force are excluded from "eligible facilities;" and (3) all facilities where Federal Partner is the majority or controlling owner and that it currently leases to other parties (including facilities managed by property management firms). Facilities that the Federal Partner reasonably anticipates selling sooner than five years from the date this agreement enters into force are excluded from "eligible facilities." EPA encourages Federal Partner to include facilities outside the U.S. New leases, as lessor and lessee, are discussed under "New Construction."

3. **Profitable.** Due to the relatively low risk involved in installing energy-efficient products and the tangible, but difficult to measure, benefits of enhanced quality, a project is defined as "profitable" when it provides an annualized internal rate of return that is equal to or greater than twenty percentage points, with an analysis term of at least 10 years. Projects that maximize energy savings while providing internal rates of return higher than twenty percentage points (the typical Green Lights upgrade yields an IRR of 20-40% post-tax) meet this criterion. EPA does not expect Green Lights partners to include measures within an upgrade project that are non cost-effective. EPA defines a non cost-effective measure as any individual measure within an upgrade project that has an internal rate of return of less than twelve percentage points. (Organizations in financial distress may qualify for a different criterion.)

4. **Lighting Quality.** Federal Partner and EPA agree that Federal Partner shall make all determinations affecting lighting quality and quantity, although Federal Partner may seek EPA's advice.

5. **No-Upgrade Facility.** After completing lighting surveys on all eligible facilities, Federal Partner need not upgrade those facilities that are identified as "no-upgrade facilities" according to one of the following three criteria:

   a. If a facility's circumstances are such that, after a survey, no upgrade can be identified that would save energy while being profitable and meeting Federal Partner's lighting quality objectives, such a facility need not be upgraded. It has been the experience of Federal Partners that such circumstances are rare.

   b. In a facility that Federal Partner leases from another party, the landlord must cooperate in the proposed installation program and in the division of financial benefits (e.g., by adjusting rents and/or other lease provisions) so that the upgrade project is profitable for Federal Partner. If, following good-faith efforts on the part of the Federal Partner, the landlord declines to cooperate, Federal Partner agrees to provide EPA with an opportunity to seek the landlord's cooperation through an EPA presentation on the benefits of the Green Lights Program. If the landlord still declines to cooperate, then such a facility need not be upgraded.

   c. In a facility that Federal Partner leases to other parties, the tenant(s) must cooperate in the proposed installation program and in the division of financial benefits (e.g., by adjusting rents and/or other lease provisions) so that the upgrade project is profitable for Federal Partner. If, following good-faith efforts on the part of the Federal Partner, the tenant(s) refuse(s) to cooperate, Federal Partner agrees to provide EPA with an opportunity to seek the tenant(s)'s cooperation through an EPA presentation on the benefits of the Green Lights Program. If the tenant(s) still decline(s) to cooperate, then such a facility need not be upgraded.

Federal Agency

Appendix C: Green Lights publishes a monthly newsletter that gives news about events, new participants, media coverage, training opportunities, etc. We would be happy to send copies to 20 people in your organization, in addition to the Green Lights Implementation and Communications Directors. Our current participants usually designate as their 20 subscribers, managers and executives in: public affairs department, environment department, energy department, facilities management (regional managers or managers of major facilities), real estate department, strategic planning department and corporate finance department. Please provide names and addresses below. Thank you.

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APPENDIX C.

ENERGY STAR EQUIPMENT INFORMATION

Requiring Agencies to Purchase Energy Efficient Computer Equipment

Whereas, the Federal Government should set an example in the energy-efficient operation of its facilities and the procurement of pollution preventing technologies;

Whereas, the Federal Government should minimize its operating costs, make more use of taxpayer provided dollars and reduce the Federal deficit; and

Whereas, the Federal Government is the largest purchaser of computer equipment in the world, and therefore has the capacity to greatly accelerate the movement toward energy efficient computer equipment;

Now, therefore, by the authority vested in me as President by the Constitution and the laws of the United States of America, including section 381 of the Energy Policy and Conversation Act, as amended (42 U.S.C. 6361), section 205 of the Federal Property and Administrative Services Act, as amended (40 U.S.C. 486), section 152 of the Energy Policy Act of 1992 (Public Law 102-486), and section 301 of title 3, United States Code, and to ensure the energy-efficient operation of the Federal Government's facilities and to encourage the procurement of pollution-preventing technologies that will save taxpayer money, reduce the Federal deficit and accelerate the movement to energy-efficient designs in standard computer equipment, it is hereby ordered as follows:

Section 1. Procurement of Computer Equipment That Meets EPA Energy Star Requirements for Energy Efficiency.

(a) The heads of Federal agencies shall ensure that, within 180 days from the date of this order, all acquisitions of microcomputers, including personal computers, monitors and printers, meet "EPA Energy Star" requirements for energy efficiency. The heads of Federal agencies may grant, on a case-by-case basis, exemptions to this directive for acquistions, based upon the commercial availability of qualifying equipment, significant cost differential of the equipment, the agency's performance requirements and the agency's mission.

(b) Within 180 days from the date of this order, agencies shall specify that microcomputers, including personal computers, monitors and printers, acquired by the agency shall be equipped with the energy-efficient low-power standby feature as defined by the EPA Energy Star computers program. This feature shall be activated when the equipment is shipped and shall be capable of entering and recovering from the low-power state unless the equipment meets Energy Star efficiency levels at all times. To the extent permitted by law, agencies shall include this specification in all existing and future contracts, if both the Government and the contractor agree, and if any additional costs would be offset by the potential energy savings.

(c) Agencies shall ensure that Federal users are made aware of the significant economic and environmental benefits of the energy-efficient low-power standby feature and its aggressive use by including this information in routine computer training classes.

(d) Each agency shall report annually to the General Services Administration on acquisitions exempted from the requirements of this Executive order, and the General Services Aministration shall prepare a consolidated annual report for the President.

Sec. 2. Definition. For purposes of this order, the term "agency" has the same meaning given it in section 151 of the Energy Policy Act of 1992.

Sec. 3. Judicial Review. This order does not create any right or benefit, substantive or procedural, enforceable by a nonfederal party against the United States, its officers or employees, or any other person.

United States
Environmental Protection
Agency

Air and Radiation
6202J

EPA 430-F-93-048
November 1993

EPA

Energy Star Computers

Introducing...
The Energy Star Computers Program

The U.S. Environmental Protection Agency (EPA) promotes energy efficiency because electricity generation contributes to air pollution, including 35 percent of all U.S. emissions of carbon dioxide. It also accounts for 75 percent and 38 percent of all U.S. emissions of sulfur dioxide and nitrogen oxides, respectively. By using more energy-efficient equipment in our homes, offices, and factories, we can reduce this pollution—while saving money!

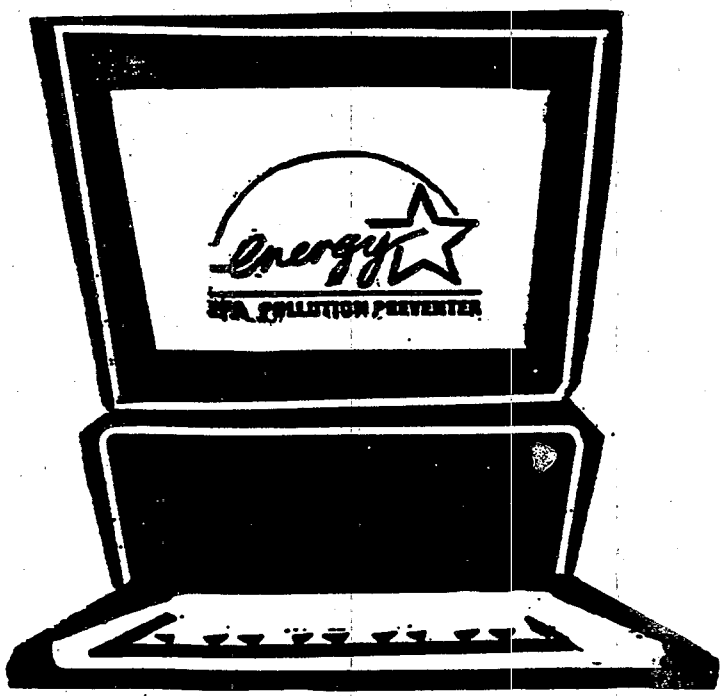
Why Energy-Efficient Computers?

Computers are the fastest-growing electricity load in the business world. They account for 5 percent of commercial electricity consumption—and if action is not taken, this could rise to 10 percent by the year 2000. Ironically, much of this electricity is wasted: research shows that most of the time personal computers are on, they are not actively in use—and 30–40 percent are left running at night and on weekends.

What Is EPA Doing About It?

EPA has signed partnership agreements with industry-leading manufacturers, who sell 70 percent of all desktop computers and 90 percent of all laser printers sold in the United States. These companies are introducing desktop computers, monitors, or printers that can automatically power-down to save energy when they are not being used. This "sleep" feature could cut a product's annual electricity use by about one-half.

Consumers will easily recognize the new, more efficient systems because they will be identified by the EPA Energy Star™ logo shown here.

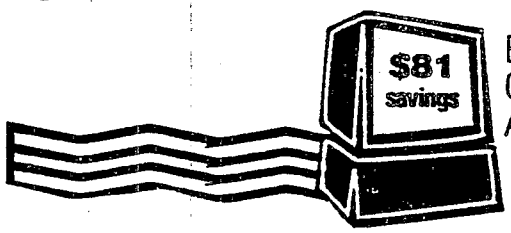


Energy Star™-bearing office equipment could save enough electricity each year to power Vermont, New Hampshire, and Maine, cut electricity bills by $2 billion, and reduce CO_2 pollution equal to the emissions from 5 million autos.

An EPA Energy Star computer can save users a great deal of money by going to sleep. And according to manufacturers, a majority of their products will have this feature within just a couple of years. This added functionality will be invisible to the user, both in terms of performance and in terms of price tag—making it noticeable only by the EPA Energy Star™ logo—and, of course, the lower electricity bill.

How Much Can My Energy Star Save?*

Conventional System
On all the time
Annual Cost: $165



Energy Star System
On all the time
Annual Cost: $84

Energy Star Syste
Turned off at nigh
Annual Cost: $26

*As compared to a typical computer, monitor, and laser printer on all day and night, assuming 235 W, 8¢/kWh. Does not include heat gain from computer equipment.

Who Buys Energy Star Computers?

EVERYONE! Everyone who values high performance at a lower cost—and the extra satisfaction of owning an environmentally superior product.

The **U.S. Government**—the largest buyer of computer equipment in the world—will take the lead in purchasing Energy Star equipment.

President Clinton, in an Earth Day address emphasizing the link between the environment and a growing economy, released an Executive Order directing U.S. agencies to purchase only desktop computers, monitors, and printers that meet EPA Energy Star requirements for energy efficiency—provided that they are commercially available and meet the agencies' performance needs. The Executive Order took effect in October 1993 and will save taxpayers $40 million annually. In fact, EPA itself will save enough money using the new, energy-efficient products to pay for the Energy Star Computers program several times over—making it one of the most cost-effective government initiatives in history.

EPA is also encouraging **public- and private-sector consumers** to buy products bearing the Energy Star™ logo. Many of these organizations are already part of EPA's Green Lights program, and are asking EPA for advice on other smart energy-efficiency investments.

In addition, **electric utilities** will purchase Energy Star™-bearing computers for their own use and will encourage companies in their service territories to do the same.

If your organization is interested in learning more about maximizing its purchasing power to help the environment, contact EPA about available Energy Star products.

EPA POLLUTION PREVENTE

For more information abou Energy Star Computers, please contact:

Manager
Energy Star Computers
U.S. EPA (6202J)
Washington, DC 20460
fax: 202 775-6680

Or call: 202 775-6650

For more information by fa (available 24 hours a day), call: 202 233-9659.

United States
Environmental Protection
Agency

Air and Radiation
6202J

EPA 430-K-94-006
July 1994

EPA

Purchasing An Energy Star[SM] Computer

Energy Star
EPA POLLUTION PREVENTER

The EPA Energy Star Computers program is a partnership effort with the computer industry to promote the introduction of energy-efficient personal computers, monitors, and printers. Reducing energy consumption can help to combat smog, acid rain, and global warming by reducing emissions from electricity generation. By using more energy-efficient equipment in our homes, offices, and factories, we can both improve the environment *and* save money.

What is Energy Star Equipment?

"Energy Stars" are energy-efficient computers, monitors, and printers that save energy by powering down and going to "sleep" when not being used. An Energy Star computer has all the performance features of a regular computer—it simply has the additional ability to "power-down." These energy-efficient machines save money on electricity bills and reduce pollution, improving your bottom line and the earth's environment.

EPA has signed partnership agreements with industry-leading manufacturers who sell more than 75 percent of all desktop computers and 90 percent of all laser printers sold in the United States. These companies have introduced more than 2,000 desktop computers, monitors, and printers that have earned the right to bear the EPA Energy Star[SM] logo, shown at the top of the page.

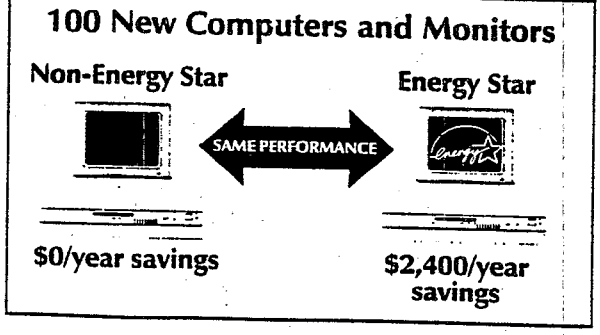
Computer equipment is the fastest growing electric load in the business world, and energy use by computers could double by the year 2000. Ironically, much of this energy is wasted: research shows that most of the time personal computers are on they are not actively in use—and 30 to 40 percent are left running at night and on weekends. By the year 2000, Energy Star equipment could save enough electricity to power Vermont, New Hampshire, and Maine for a year, cut electricity bills by $2 billion, and reduce CO_2 pollution equal to the emissions from 5 million automobiles.

Real Savings

Energy Star computers are available at no additional cost, and a single Energy Star computer and monitor can save anywhere from $7 to $52 per year in electricity bills. If you notice computers and printers left on when leaving the office at night and on weekends, your savings will be toward the higher end of this range.

If you add an Energy Star printer to your system, you can increase your savings by an additional $35 per year.

For an office environment where one-third of the computers are left on all the time, purchasing 100 Energy Star PCs and monitors instead of non-efficient equipment could save you $2,400 per year. In addition, Energy Stars generate less heat, and upgrading your existing equipment to Energy Star as it naturally turns over can lead to cooling reductions of up to 25 percent.



How to Find Energy Star Products

Consumers can easily recognize the new, more efficient systems because they will be identified by the EPA Energy Star℠ logo. Since there are now more than 2,000 products available from all major manufacturers, EPA is encouraging companies and organizations to specify Energy Star compliance in all future purchases of computer equipment.

- If you are a business, ask your MIS or procurement official about purchasing Energy Star equipment, and look for the Energy Star℠ logo in advertisements and on specification sheets.
- If you work in the Federal Government, the General Services Administration has issued guidelines on the acquisition of Energy Star computers. Call (202) 519-4860 for a copy.
- If you need a computer for home, look for the Energy Star℠ logo on display models in local retail stores—if you do not see it, ask for it.

To help, EPA offers a database of available products which is updated monthly. Just call or write EPA to receive a copy.

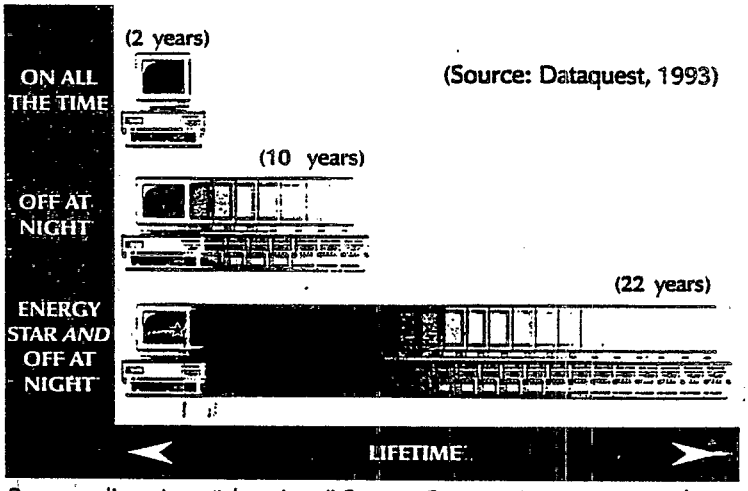
User Advantages

Besides the cost savings, Energy Star equipment offers users several key advantages.

- Energy Star PCs can be **quieter** since some have no fans.
- Sleeping Energy Star monitors **emit fewer electromagnetic fields (EMF)** since they are not displaying any visual image when "asleep."
- Energy Star monitors can also **increase file security** since the "sleeping" screen is dark.
- All Energy Star equipment produces less heat, and thus contributes to a cooler and **more comfortable workspace.**
- Energy Star PCs tend to be a **less intrusive desktop** item since they are usually smaller than traditional PCs.

Increased Reliability

In addition, Energy Star equipment may actually last longer than conventional products because it will most likely spend a large portion of time in a low-power sleep mode. Non-Energy Star computer equipment left on at night and over weekends may last only 2 to 3 years, but Energy Star computers "sleeping" during the day *and* turned off at night could last almost **10 times as long** (see graph).



By spending time "sleeping," Energy Star equipment can reduce wear and tear, leading to extended life and increased reliability.

Which Energy Star Is Right for Me?

Committing to an "Energy Star purchasing strategy" for your organization is the first crucial step. The second step is figuring out *which* Energy Star products to buy. It is important to realize that not all Energy Star computers are the same, and your choice will depend on your needs and preferences.

If you operate on a Local Area Network (LAN), make sure that your Energy Star computer is compatible with that network system. Most Energy Stars are now being network tested, but specify your particular environment—whether its Novell Netware, Banyan Vines, Windows NT, Lan Manager, or others, to ensure that it is compatible (see sample procurement language on page 4).

You also may want to specify certain "user-friendly" features, such as an Energy Star or power management "icon", which is easily accessible and gives the user a quick and simple way to change the "sleep" settings. Some users may want to set their computer to go to sleep after 15 minutes of inactivity, while others may choose 30 minutes. Having a user friendly power management feature to customize an Energy Star computer to your own schedule contributes to productivity and increases energy savings.

What If No Energy Star Is Available?

If you need an expert computer system or an extremely high speed printer, there might not yet be an Energy Star model available. Because high-end equipment was designed to give you maximum performance, it also tends to use more power. Until the designers of this higher end equipment develop Energy Star models, you will have to buy non-Energy Star. The goal of the Energy Star program is to save energy with no sacrifice in performance or cost. If you need a high-end system to do your job, and there is not an Energy Star available, then buy what you need.

However, if you are considering the purchase of a computer with certain specifications and have the choice between an Energy Star and a non-Energy Star machine, buy the Energy Star. If both machines have the exact same performance and are similar in cost, purchasing the Energy Star system will give you the additional benefits of saving on your electric bill and helping to prevent pollution.

President Clinton's Executive Order

In April 1993, President Clinton signed Executive Order 12845 requiring all federal agencies to purchase Energy Star computers, monitors, and printers where commercially available. This order, which took effect on October 18, 1993, reads in part:

> *Agencies shall specify that microcomputers, including personal computers, monitors, and printers, acquired by the agency, shall meet the EPA Energy Star specifications. This feature shall be activated when the equipment is delivered to the customer and shall be capable of entering and recovering from the low-power state unless the equipment meets Energy Star efficiency levels at all times.*

Should I Still Turn My Energy Star Off at Night?

Yes. Power-managed Energy Stars will go to sleep by themselves, but remember that the sleep mode does not mean "off." Sleeping Energy Stars use less power than when fully activated, but they still draw some power when in the sleep mode. To save additional energy and increase the lifetime of the equipment, be sure to turn your system completely off at the end of each day. It is a common myth that turning computer equipment off and on is bad for it; in fact, the exact opposite is true. **Turning off your computer at night may actually *increase* its life** because it will reduce susceptibility to heat and mechanical stress, the two leading causes of personal computer failure. *The recommended approach: set your Energy Star to sleep when you are away during the day, and turn off the system when you leave at night.*

What Can I Do for My Existing Equipment?

Again, turning off your existing equipment at night is the easiest and most cost-effective strategy for reducing the energy consumption of non-Energy Star equipment. However, if you are unable to turn off existing equipment or wish to make additional savings, consider retrofitting your equipment with an Energy Star-compliant controlling device. These devices are fairly easy to install and can completely shut off the power to your PC, monitor, or printer after a period of inactivity or at a specified time of the day.

What to Specify When Ordering Energy Star Equipment

☑ *Energy Star Compliant*

"Provide computer products that meet the EPA Energy Star requirements for energy efficiency in the requested configuration." This means that PCs, monitors, and printers shall be able to enter and recover from a low-power standby mode when not in use. For PCs and monitors, the low-power mode is defined as 30 watts or less (30 watts for the PC and 30 watts for the monitor). For printers with speeds of less than 15 pages per minute, the requirement is 30 watts; and for printers with speeds of 15 or more pages per minute, the requirement is 45 watts. All high-end color printers must not exceed 45 watts in low-power mode.

☑ *Shipped Activated*

"Ship all products with the Energy Star low-power feature activated or enabled." This eliminates the need for users to configure the power management feature after delivery and helps to ensure that the energy-saving feature is used.

☑ *Network Compatibility*

"If equipment will be used on a local area network, the PC must be fully compatible with the specified network environment; PCs resting in a low-power state should not be disconnected from the network." Many manufacturers are now testing their Energy Star equipment on networks and can report, for example, that they are compatible on Novell Netware, Banyan Vines, Windows NT, Lan Manager, and other network systems.

☑ *Monitor Control*

"Ensure monitors are capable of entering a low-power mode when connected to the accompanying PC." Most monitors cannot power down by themselves, and must rely on some external input to trigger their low-power state. This is typically accomplished via one of the following: (1) VESA Display Power Management Signalling (DPMS), a signalling protocol that allows a PC equipped with DPMS to control a DPMS compatible monitor (both the computer and monitor must be DPMS compatible), (2) the actual shut off of power to the monitor via a special plug from the PC (this does not require an Energy Star monitor), or (3) the use of a proprietary software utility shipped with the monitor. Organizations may wish to specify one approach or the other. DPMS compatible PCs and monitors will provide seamless power management and immediate recovery from the low-power state, but only when used with each other. PCs that include the power switch approach can shut off power to any monitor, not just an Energy Star monitor.

☑ *Software Compatibility*

System must be able to run commercial off-the-shelf software both before and after recovery from a low-power state, including retention of files opened before the power management feature was activated.

What Products are Available?

More than 2,000 products are now available that meet the Energy Star guidelines.

To receive an abbreviated list of qualified products, call the Energy Star fax-back line. Dial 202 233-9659 and enter #5306 for PCs, #5309 for monitors, and #5307 for printers.

To receive the detailed list of qualified products by mail, call the Energy Star hotline at 202 233-9114.

To fax yourself general program information, call the Energy Star fax-back line at 202 233-9659, or call or write us:

Energy Star Computers
U.S. EPA (6202J)
Washington, DC 20460
Office 202 233-9114
Fax 202 233-9578

EPA · POLLUTION PREVENTER

EPA ENERGY STAR COMPUTERS

Participant List as of February 1, 1995

EPA POLLUTION PREVENTER

COMPUTERS AND MONITORS (number: 387)

3D Microcomputers
★ A Plus Info
★ Acer/Acros
Achieva Computer
★ ACMA Computers
ACME
★ ACTech
Action Electronics
★ Acula Technology
Addtech Computer
★ ADI
★ Adtec
★ Advanced Digital Systems
Advanced Integration Research
★ Advanced Intelligence
Akran Systems
★ Alaris
Allen Bradley Company
★ ALR
Altima Systems
AMAX
★ Ambra Computer
American Business Computers (ABC)
★ American Megatrends
★ Amrel Technology
ANT Computer
Antechron Research
★ AOC
Apaq Technology
APF
★ Apple
★ Applied Digital Data Systems
Apricot
★ Aquarius System
★ Aqualine
★ Arche Computer & Technologies
Area Electronics Systems
★ Aspect Computer
★ AST Research
★ AT&T Global Information Solutions
Atima Technology
ATS
★ Austin Computer
★ Avnet Computer
Axik Computer
★ Bankers Systems
Barron MicroComputer
Blue Star Marketing
★ Bridge Information
Brother International Europe
Byte Technology
★ Caliber
★ Canon
★ Capetronic
★ Cemtech
CFC Technology Services
Channel Electronics
★ Cheer Electronics
CHEM
★ Chien Hou Electronics
Cognisoft
Commax Technologies
Commodore
★ Communication Lab International
★ Compal Electronics
★ Compaq
★ CompuAdd
★ Compudyne
★ Computer Creations
Computer Dealers Source
Computer Extension Systems
Computer Management
Computer Sales Professional
Computer Tec
CompuTrend Systems/ Premio
Comtech Micro System
Comtrade
Conrac Elektron
Continental Resources
Corion Industrial
★ Cornerstone Imaging
Corporate Micro Systems
★ CP & G Technologies
(CSS) Computers, Etc.
★ CSS Laboratories
CTL
★ CTX International
Cube Computer
★ CyberStar
★ Daesun Industrial
Daewoo Electronics Canada
★ Daewoo Telecom
★ Daly Computers
★ Data General
★ Data Storage Marketing
★ DataExpert
Datavarehuset
DD & TT Enterprise USA
★ DDI Dynex
★ Dell
★ Delta Products
★ Desktop Displays
Destiny
★ DFI
★ Diamond Technologies

★ Indicates companies which have announced Energy Star compliant products

★ Digital Equipment (DEC)
Dimension Computer
Display Technologies
Dolch Computer Systems
★ DTK
★ Duracom Computer Systems
★ DynaColor
EFA
EKM Computer
Electronic Technology Group
★ Elonex
Elsa GmbH
EMPaC
★ EPS Technologies
★ Epson
★ Equix
Ergo Computing
★ Essex Monitor Company
★ Everex Systems
Evergreen Systems
★ Fair Electronic Company
Fedcom Microsource
★ Fieldworks
Firepower
★ First International Computer
★ Flytech Technology
★ Foshan Wingbao Information Enterprise
★ Fountain Technologies
Fujitsu
★ Gateway 2000
GCH Systems
Genova
★ Giga-Byte Technology
★ GoldStar
Grand Micro
Great Lakes Electronics Distributing
Green Labs
Green PC
GVC
Hammond and Hammond
★ Hectronic
★ Hewitt Rand
★ Hewlett-Packard
Highwave Technologies
HIQ Computer Systems
★ Hitachi America
★ Hitachi European Centre
Hitachi, Office Systems Division
HI-VI Electronics
HSI
★ Hyundai Electronics
★ IBM
★ ICL
★ IDEA
★ IDEK/Iiyama N.A.
★ Identity Systems Technology
★ IDP
Ikegami Electronics
Infotel/Midwest Micro
★ Inmac
★ Insight Distribution
Integrated Systems Group, Inc.
Intelicom USA
Intelligent Computers and Technologies
Intelligent Decisions
Intelligent Notebook Systems
Interactive Computing Devices
Intergraph
Intermec
★ International Data Systems
Intra Electronics USA
★ IPC
★ I.S.L. Automatisering
J-MARK Computer
JTA
Key Power
Keydata
Keypoint
★ KFC
★ Korea Computer
★ Korea Data System
★ Korea Electronics
LCC Computers
★ Leading Edge
★ Leo Systems
LION America
★ Lite-On Technology
★ Liuski International
★ MAG Innovision
ManTech Systems
Manufacture Technology Resource
★ MASS Research
★ Matsushita Electric Industrial
★ Max Group
MaxVision
★ Mecer
★ Memorex Telex
Metrovision Microsystems
Micron Computer
MicroNiche Information Systems
★ Micronics Computers
MicroPen Computer
MicroSource
MicroSource (TX)
Mind Computer Products
Mini-Micro Supply
miro Computer Products
★ Mitac
★ Mitsuba
★ Mitsubishi
Modern Instruments
Modular
Monitor Technology
MSSI Consultants
Multimax
★ Mustek
Mynix Technologies
NAI Technologies Systems Division
★ Nanao USA
National Advantages
National MicroComputers
★ NCD
★ NEC
NETiS
★ Nissei Sangyo America/Hitachi
★ Nokia
Northern Electronic Technologies
Northern Micro
★ Northgate
Northwest Micro
Ocean Information Systems
Ocean Interface
Ocean State Computers

★ Indicates companies which have announced Energy Star compliant products

Office Automated Technology
★ Olivetti
★ Optiquest
★ Orion Electric
Osborne Computer
★ Packard Bell
Pam Pacific Associates
★ Panasonic
Paragon Development Systems
Patriot Computer
PC Channel
★ PC-Expanders
PC Pros
★ PC&C
PC Ware International
★ Percomp Microsystems
Perpetual Technologies
★ Philips Consumer Electronics\Magnavox
Pine Technology
Pioneer Technologies Group
★ Planar Systems
★ Precision America
★ Precision Technology
★ President Technology
★ Primax Data Products
★ Progen
PSI
★ PT Pembina Galindra Electric
★ QHT Systems
★ QMS
★ QNIX Computer
★ Quantex Microsystems
★ Quest Group
★ Qume
R & S Computers & Enhancements
★ Radius
Random
RasterOps
★ Regent Technologies
Relialogic
★ Relisys
Repco Data
★ Republic Technology
Royal Electronic
★ Royal Information Electronics
★ Sampo Technology
★ Samsung Electronics
★ Samtron Displays
Sanyo Information Business
★ Sceptre Technologies
★ Scion Computers
★ Seanix Technology
Serviceworks Distribution
★ Shamrock Technology
★ Sharp Electronics
★ Sherwood Terminals Division, Inkel (USA)
★ Shin Ho Tech/Hi-Com
★ Shinlee
★ Shuttle Computer
★ Sidus Systems
★ Siemens Nixdorf
Sigma Designs
Sigma Designs Imaging Systems (SCIS)
★ Silent Systems
Silicon Graphics
SiO Technology
Sirex USA
★ SKV International/ Computermill
Smith Corona
★ Sony
SsangYong Computer Systems
★ STD Technology
Summit Micro Design
★ Sun Microsystems
Super Distributor
Supercom
★ Swan
Synnex Technology International
★ Sysorex
Tae II Media
★ Tagram
★ Taiwan & Hong Kong Monitor
★ Taiwan Video and Monitor
★ Tandberg Data Display
★ Tandy
★ Tangent Computer
★ Tatung
★ Taxan
TCP
TeamMax
★ TECO
Tempest Micro
★ Texas Instruments
★ Tobishi Electronic Company
★ Toshiba
Total Control Products
Total Peripherals
Tri-Cor Industries
Tri-Star Computer
★ TriGem
★ TriGem America
★ TriGem Microsystems
Tripole
TS Micro
TTX Computer Products
★ Tulip Computers
TWC
★ Twinhead
Twinhead International
Twin T Distributors
★ Tyh Fa Electronic
Tystar Electronics
★ Unisys
Unisys Canada
★ United Solutions
★ Unitek Technology
Unitron
★ USA Teknik
USIT
★ USON
U.S. Systems and Technologies
★ Veridata
Vextrec Technology
Vierci Computers
★ ViewSonic
★ Viglen
★ Vision Computer Technologies
★ Vita Electronics
Vobis Microcomputer
VTech Computers
Wang Laboratories
★ Wearnes Technology
Wedge Technology
WEN Technology

★ Indicates companies which have announced Energy Star compliant products

Western Imaging
★ Win Laboratories
Winnet
Wyle Laboratories
★ Wyse Technology
XCV
Xinetron
Xpro Systems
Xyxt Infotek
Yanjen Electronic
Young Microsystems
Z & M Advanced Technology
★ Zenith Data Systems
★ Zenon
★ Zeos

PRINTERS (number: 56)

★ Advanced Matrix Technology
★ Alps Electric
★ Apple
★ Brother
★ Bull Italia
★ CalComp
★ C-TECH
★ Canon
CIE America
Citizen Watch
★ Data General
★ Data Rental & Sales
Dataproducts
★ Digital Equipment (DEC)
★ Enabling Technologies
Epson
★ Fujitsu
★ GCC Technologies
★ General Parametrics
★ GENICOM
Goldstar
★ Hewlett-Packard
IBM
Intergraph
★ Kodak
★ Kyocera
★ Lexmark
★ Mannesmann Tally
★ NEC
★ Okidata
★ Olympus Image Systems
★ Omnifax
★ Output Technology
★ Panasonic
★ Pentax Technologies
Printronix
★ QMS
Qnix Computer
Ricoh
★ Samsung
Sanyo Information Business
Seiko Instruments USA
Serviceworks Distribution
★ Sharp Electronics
Sony Electronics
SsangYong Computer Systems
★ Star Micronics
★ Summagraphics
★ SunPics
★ Tektronix
★ Texas Instruments
Toshiba America Information Systems
Twin T Distributors
★ Unisys
Westrex
★ Xerox

CONTROLLING DEVICES[1] (number: 36)

★ Alpha Micro Technologies
Antechron Research
★ Aten International
Bayview Technology Group
★ B & B Electronics
Communica
Compu Sci
★ Connectix
(C.C.S.) Computers Etc.
Curtis Manufacturing
Cypress Computer
★ Defenders Network
Dinexcom
Energy Interface
Engram International
★ Ergonomics
Eskel-Porter
Glitch Master
GreenInk
Greenware Technologies
Hibernation Software
★ IBM
★ IDC
★ Image Plus
★ King Jaw Industrial
★ Mecer
MSSI Consultants
Newpoint
Optiquest
Panamax
★ Powercard
Quantum Composers
Sequence Electronics
SIIG
Sophisticated Circuits
Tripp Lite

[1] These are external retrofit products that can reduce the energy consumption of non-Energy Star computers, monitors, and printers.

★ Indicates companies which have announced Energy Star compliant products

ALLIES[2] (Components and Software: number: 144)

Achieva Computer
Acronics Systems
Advanced Micro Devices
Advanced Integration Research
AFEQT
Allied Signal, Amorphous Metals
Alpha Technology
American Proimage
American Power Conversion
Amkly Systems
Anigma
Artek Innovations
Arvee Systems
Aslan Computer
Astec
ATMEL
AT&T Microelectronics
Award Software
Axelen
B&B Electronics
BCM
Beyond Technology
CAREO
Cartaco
Chips and Technologies
Chisholm
Cirrus Logic
Computer Resources
Connor Peripherals
CreSonic
Cypress Computer
Cyrix
Databook
DELTEC
DFI
DIA Semicon Systems
Diablo Scientific
Diamond Computer Systems
DynaComp
EFA
EFAR Microsystems
EFI Electronics
Elitegroup
Elsa GmbH
Energy Concepts
Engram International
Exide Electronics
First International Computer
Free Computer Technology
Glitch Master
Golden Power Systems
Green Labs
Greenware Technologies
Hampton Technology
Harmony
Harmony Power
Hibernation Software
HIPRO Electronics
Holly Electronic
Image Plus
Informatic Power Systems
Intel
Iomega
J-MARK Computer
Jabil Circuit
Lattice Semiconductor
Lead Year Enterprise
LION America
Lite-On
LLR Technologies
M Technology
Macase Industrial
Market Central
Maxi Switch
Maxtor
Metasoft
Michada Computers
Michi Tech System
Micro Energetics
Microsoft
Microtest
Minta Technologies
Moretec Electronics Industrial
Morex Information Enterprise
New Bios
NMB
North American Power Supplies
Nova Distributing
Ogden Atlantic Design
OPTi
Orchid Technology
Palo Alto Digital Systems
Panamax
PAOKU P&C
Para Systems
Phoenix Technologies
PicoPower Technology
Pine Technology
Pinnacle Micro
Power Monitors
Professional Sound
PSC
Pulizzi Engineering
Quadnovation
Rumarson Technologies
SciTech Software
Seagate Technology
Sejin America
Sequence Electronics
Server Technology
Silicon Star International
Silicon Valley Technology
Smart Industries
SOLA
Southeastern-Facts
Soyo USA
Speaking Devices
Sprint Manufacturing
Standard Microsystems
SunPics
Symphony Laboratories
SystemSoft
T & T Computer
Taken
Tamarack
Teach Me How Company
TEKRAM
Texas Instruments
Texas ISA
TMC Research
Topower Computer
Tripp Lite
U.S. Power & Technology
Unipower
United Solutions

[2] The Ally agreement does not contain individual product specifications, so no products are "compliant."

USAR Systems
Vasco Import und Vertriebs GmbH
Vextrec Technology
VLSI Technology
Wave Energy
WCLC
Western Digital
Western Telematic
Zytec

APPENDIX D

FLUORESCENT LIGHTING TUBE RECYCLING SERVICES

Envirosol
212 South Mesquite
Suite 2A
Arlington, TX 76010
(800) 488-7974

Envirosol provides lamp recycling and ballast disposal services. Envirosol can arrange for lamp pick up or the lamps may be delivered. The company requests that the generator place the lamps back into the boxes in which they were received.

Envirosol's service area is Texas. The company accepts PCB and non-PCB ballasts. The cost of fluorescent recycling is $ 0.10-0.12 per linear ft. HID lights are recycled for $ 3.00 each. Ballasts are recycled for $0.80-0.90/lb. The above costs do not include shipping. There is a $300 minimum per shipment.

DYNEX Environmental, Inc.
4751 Mustang Circle
St. Paul, MN 55112
(612) 784-4040

DYNEX Environmental provides lamp recycling and ballast disposal services. DYNEX can arrange for lamp pick up or the lamps may be delivered. The company requests that the generator place the lamps back into the boxes in which they were received. If the customer does not have the original boxes, DYNEX provides a rental service for reusable boxes.

DYNEX maintains a nationwide service area. The lamps are processed in the company's Milwaukee, WI facility where they are placed in a lamp machine. The machine breaks the glass and separates the glass, mercury and metal into separate containers. The metals are recovered for reuse, the recovered glass is used in products, such as fiberglass, and the mercury is purified and reused in various commercial applications.

The company accepts PCB and non-PCB ballasts. As mentioned above, the company's representative recommends that generators manage all ballasts as hazardous. DYNEX offers the following three options for ballast disposal:

1. Environmental Protection Agency (EPA) Approved Landfill Method - the ballast is transported in Department of Transportation (DOT) approved drums to an EPA approved hazardous waste landfill. This option is the least expensive of the three (disposal cost: $1.19 per pound, 1 drum minimum at

$795); however, future liability concerns remain because the waste has not been destroyed.

2. EPA Approved Reclamation Decap Method - The capacitor within the ballast contains the PCB oil. Under this method, the capacitor, which comprises approximately 20% of the total weight of the ballast is transported to an EPA-approved facility for incineration, eliminating future liability. The remaining 80% of the ballast contains metals that are recovered and reused. This decap process is conducted at DYNEX's Detroit, MI facility. This method is not an option if the ballast is leaking. The disposal cost is $1.49 per pound, 1 drum minimum at $1100.

3. EPA-Approved Total Incineration - The whole ballast is transported in DOT approved drums to an EPA approved facility for total incineration, eliminating any future liability for the waste. This is the only option available for leaking ballasts. The disposal cost is $2.59 per pound, 1 drum minimum at $2000.

The price of DYNEX's recycling services are dependent upon volume, lamp type and transportation. General price information, excluding transportation, is: 39 cents per 4 foot lamp, with a minimum of 100 lamps; 66 cents per lamp over 4 feet, with a minimum of 100 lamps; and $2.89 per HID.

Lighting Resources, Inc.
386 S. Gordon Street
Pomona, CA 91766
(800) 572-9253
(800) 866-6818

Lighting Resources is an ally of EPA's Green Lights Program, which is a voluntary program to encourage American corporations to assist with pollution prevention by using more efficient lighting systems. Lighting Resources provides complete lamp recycling services throughout the continental United States. The company picks up lamps from the generator. Lighting Resources requires that the customer pack the lamps and prepare the bill of lading.

The lamps are processed in a manner similar to the processes described above. The glass recovered from the process is sent to a cullet broker and is ultimately used in products, such as fiberglass. The aluminum recovered from the lamp end caps is also recovered for reuse. After an initial distillation process, the recovered mercury is sent to Bethlehem Apparatus Company for additional processing and ultimate reuse (for more information on Bethlehem Apparatus Company, see the contact summary below).

Lighting Resources accepts ballasts and processes them at two of its three facilities. The company's Greenwood, IN facility handles both lamps and ballasts. The PCB ballasts are disassembled and the capacitors are incinerated or landfilled. The remaining metals are recovered for reuse.

Cost for services provided by Lighting Resources is dependent on lamp and ballast volume and shipping distances. Jerry Balch provided a price range for the recycling services: 7 to 10 cents per lamp; 75 cents to $2.75 per HID; and approximately 75 cents per pound of ballasts or $700 to $750 per 55 gallon drum of ballasts.

Mercury Technologies International
1940 Westwood Blvd., No. 218
Los Angeles, CA 90025
(310) 475-4684

Mercury Technologies International (MTI) also is an ally of EPA's Green Lights Program. MTI provides complete fluorescent lighting tube recycling services. The company's facilities located in California, Florida and Pennsylvania provide nationwide service. However, MTI does not accept ballasts.

MTI can arrange for lamp pick up. The lamps are processed in- house and all materials are recycled; according to Sandy Factor, nothing is land disposed. MTI also performs a triple distillation process to prepare the mercury for immediate commercial reuse.

The recycling fees vary based on volume and shipping distance. Generally, MTI charges between 7.5 and 10.5 cents per linear lamp foot. For HIDs, MTI charges $3.00 each.

Recyclights
2010 E. Hennepin Avenue
Minneapolis, MN 55413-2799
(800) 831-2852 or (612) 378-9568

Recyclights offers lamp recycling services on a nationwide basis, but does not handle ballasts. The company can arrange to pick up the spent lamps. The lamps are processed within 24 hours after arriving at the Recyclights facility. The materials recovered from the process include purified liquid mercury, aluminum, metals, soda-lime glass and a calcium/iron-based powder. Following processing, Recyclights provides the customer with a certificate of conversion, a formal record of disposal in accordance with regulatory requirements.

The price of the services provided by Recyclights depends upon the type and quantity of the lamps and transportation requirements. Generally, Recyclights charges 40 to 60 cents per 4 foot lamp. Lamps measuring longer than 4 feet cost between 60 and 83 cents per lamp and HIDs cost between $2.50 and $5.00 per lamp.

Mercury Refining Company
1218 Central Avenue
Albany, NY 12205
(518) 459-0820

The Mercury Refining Company provides fluorescent lighting tube recycling services on a nationwide basis. The company does not accept ballasts.

Mercury Refining Company can arrange for pick up of the spent lamps. The company, a permitted treatment, storage and disposal facility, processes the lamps, recovers the metals for reuse and processes the mercury using a thermal distillation process, called retorting, for future commercial use. The glass is disposed of in a hazardous waste landfill, even though the glass is not considered hazardous. According to Steve Graves, this option avoids future liability concerns.

The prices of the recycling services, which do not include transportation, are: 8 cents per linear foot for whole tubes; and $650 per 55 gallon drum containing crushed lamps. The price of processing HIDs received in 55 gallon drums are: $15 per gallon for HIDs with a diameter larger than 1.5 inches; and $20 per gallon for HIDs with a diameter of less than 1.5 inches.

Bethlehem Apparatus Company, Inc.
890 Front Street
P.O. Box Y
Hellerton, PA 18055
(610) 838-7034

The Bethlehem Apparatus Company, Inc. provides fluorescent lighting tube recycling services on a nationwide basis. The company does not accept ballasts.

Bethlehem Apparatus does not provide or arrange for any transportation/pick up services. The customer may ship whole tubes in their original box or another appropriate box, or ship crushed lamps in 55 gallon drums. The company processes the lamps, recovers the mercury and disposes of all other materials including the glass and metals.

Bethlehem Apparatus charges the following for various volumes and types of lamps:

Quantity	Whole 4 ft Fluorescent Lamps	Whole 8 ft Fluorescent Lamps
1-3000 Lamps	$3.00 each	$4.50 each
3000-6000 Lamps	$2.25 each	$3.50 each
> 6000 lamps	$1.50 each	$2.25 each

Number of 55 Gallon Steel Drums	Crushed Fluorescent Lamps
1 - 5 Drums	$1235 each
6 - 10 Drums	$910 each
> 10 Drums	$650 each

USA Lights Environmental Inc.
2007 Country Road C-2
Roseville, MN 55113
(612) 628-9370

USA Lights provides complete fluorescent lighting tube recycling services on a nationwide basis. The company claims that it is the only fluorescent lamps recycling company that owns and operates its own transportation system, which services only facilities located in Minnesota and Wisconsin. USA Lights would arrange for pick up and transportation services from facilities located in other states.

USA Lights requests that the customer pack the spent lamps in the original box and secure the box with tape, if necessary. The customer should record the number of lamps on the box.

USA Lights processes the materials using the USA Lights Model 2000 system, which is a self-contained, continuous flow process. The glass, metals and mercury all are recovered for reuse. The lamps are processed within 24 hours of receipt and the company issues a certificate of recycling to document that lamp processing has been completed.

The company has $6 million Pollution Liability Insurance coverage, which protects the customer from financial responsibility should an accident occur either during transport or at the facility.

USA Lights' prices for recycling services, excluding transportation, are: 44 cents per 4 foot lamp; 62 cents per 8 foot lamp; and $2.29 per HID lamp.

USA Lights does not accept ballasts.

APPENDIX E.

POLLUTION PREVENTION INFORMATION SOURCES

CLEARINGHOUSES AND ASSOCIATIONS

1. **Pollution Prevention Information Clearinghouse** (PPIC)

   Pollution Prevention Information Clearinghouse
   U.S. EPA
   PM 211-A
   401 M Street, SW
   Washington, DC 20460
   Phone: 202-260-1023
   Fax: 202-260-0178

   The Pollution Prevention Information Clearinghouse (PPIC) is dedicated to reducing or eliminating industrial pollutants through technology transfer, education, and public awareness. It is a free, nonregulatory service of the U.S. EPA and consists of a repository of pollution prevention information, a telephone reference and referral service and a computerized information exchange system.

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   Industry and Environment Program Activity Center
   United Nations Environment Programme
   39-43 quai Andre Citroen
   75739 Paris CEDEX 15
   France
   Phone: 33-1-30-58-88-50
   Fax: 33-1-40-58-88-74

   The International Cleaner Production Information Clearinghouse (ICPIC) is a clearinghouse operated by the United Nations Environment Programme (UNEP). The ICPIC provides information to the international community on all aspects of low- and non-waste technologies and methods.

3. **OzonAction**

   Industry and Environment Program Activity Center
   United Nations Environment Programme
   OzonAction
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   OzonAction relays technical and programmatic information on alternatives to all ozone depleting substances identified by the Interim Multilateral Ozone Fund of the Montreal Protocol Agreements.

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   Thomas R. Hauser, Ph.D., Executive Director
   American Institute for Pollution Prevention
   Department of Civil and Environmental Engineering
   University of Cincinnati
   Cincinnati, OH 45221-0071
   Phone: 513-556-3693

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5. **Center for Environmental Research Information (CERI)**

   Dorothy Williams
   U.S. Environmental Protection Agency
   Center for Environmental Research Information (CERI)
   26 West Martin Luther King Drive
   Cincinnati, OH 45268
   Phone: 513-569-7562
   Fax: 513-569-7566

   CERI serves as the exchange of scientific and technical environmental information produced by EPA by publishing brochures,

capsule and summary reports, handbooks, newsletters, project reports, and manuals.

6. **Center for Waste Reduction Technologies (CWRT)**

Center for Waste Reduction Technologies (CWRT)
American Institute of Chemical Engineers
345 East 47th Street
New York, NY 10017
Phone: 212-705-7407
Fax: 212-752-3297

CWRT was established in 1989 by the American Institute of Chemical Engineers to support industry efforts in meeting the challenges of waste reduction through a partnership between industry, academia, and government.

7. **Hazardous Waste Research and Information Center (HWRIC)**

Allsa Wickliff
Hazardous Waste Research and Information Center
One East Hazlewood Drive
Champaign, IL 61820
Phone: 217-244-8905
Fax: 217-333-8944

HWRIC is a division of the Illinois Department of Energy and Natural Resources. HWRIC combines research, education, and technical assistance in a multidisciplinary approach to manage and reduce hazardous waste in Illinois. HWRIC collects and shares this information through its library/clearinghouse and several computerized waste management tools.

8. **The National Roundtable of State Pollution Prevention Programs (Roundtable)**

David Thomas
National Roundtable of Pollution Prevention Programs
One East Hazlewood Drive
Champaign, IL 61820
Phone: 217-333-8940
Fax: 217-333-8944

The Roundtable is a group of pollution prevention program at the State and local level in both the public and academic sectors. The member programs are engaged in activities including multi-audience training and primary to post-secondary pollution prevention education.

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Terri Goldberg, Program Manager
Northeast States Pollution Prevention Roundtable / Northeast Waste Management Officials' Association
85 Merrimac Street
Boston, MA 02114
Phone: 617-367-8558
Fax: 617-367-2127

The NE Roundtable was initiated in 1989 by the Northeast Waste Management Officials' Association to assist State programs, industry, and the public implement effective source reduction programs.

10. **Pacific Northwest Pollution Prevention Research Center**

Madeline Grulich, Director
Pacific Northwest Pollution Prevention Research Center
411 University Street, Suite 1252
Seattle, WA 98101
Phone: 206-223-1151
Fax: 206-467-0212

The Pacific Northwest Pollution Prevention Research Center is a non-profit public-private partnership dedicated to the goal of furthering pollution prevention in the Pacific Northwest.

11. **Solid Waste Information Clearinghouse (SWICH)**

Lori Swain, Manager
Solid Waste Information Clearinghouse
Solid Waste Association of North America
P.O. Box 7219
Silver Spring, MD 20910
Phone: 1-800-677-9424
Fax: 301-585-0297

SWICH is an information clearinghouse covering a wide range of solid waste issues. SWICH components include an electronic bulletin board, a library and a hotline.

12. **Waste Reduction Institute for Training and Applications Research, Inc. (WRITAR)**

    Terry Foecke or Al Innes
    Waste Reduction Institute for Training and Applications Research
    1313 5th Street, SE
    Minneapolis, MN 55414-4502
    Phone: 612-379-5995
    Fax: 612-379-5996

    WRITAR is designed to identify waste reduction problems, held find their solutions, and facilitate the dissemination of this information to a variety of public and private organizations.

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    Raleigh, NC 27611-6787

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FACILITY PLANNING AND GENERAL POLLUTION PREVENTION MANUALS

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    Cost: Contact UNEP for cost and availability information

    The manual addresses the following topics: introduction to waste auditing, the audit procedure, pre-assessment, material balance, process inputs and outputs, and synthesis, and three technical case studies.

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    Center for Environmental Research Information
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    Cincinnati, OH 45268
    Phone: 513-569-7562
    Cost: Free

    The manual describes how to conduct a waste assessment, from the planning/organization stage through the assessment and feasibility analysis to final implementation of pollution prevention options.

3. **Industrial Waste Minimization Manual**

    Center for Hazardous Materials Research
    University of Pittsburgh Applied Research Center
    320 William Pitt Way
    Pittsburgh, PA 15238
    Phone: 412-826-5320
    800-334-CHMR
    Cost: $40

    This manual provides information and guidance to all industrial waste generators

on pollution prevention practices and suggested compliance requirements for RCRA and other related Federal acts.

4. **Industrial Waste Prevention**

Waste Advantage, Inc. 1988
17117 West Nine Mile Road, Suite 902
Southfield, MI 48075
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This practical guide provides step-by-step instructions for developing an effective waste minimization program.

5. **Pollution Prevention Case Studies Compendium**

U.S. EPA
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Risk Reduction Engineering Laboratory
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The studies are a collection of summaries of pollution prevention demonstrations, assessments, and research projects conducted with the Risk Reduction Engineering Laboratory.

6. **Pollution Prevention Pays Instruction Manual**

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This manual concentrates on (1) current legal and environmental issues that create the need for an industrial pollution prevention program and (2) an innovative systems approach to industrial-resource management that can reduce pollution.

7. **Pollution Prevention Resource Manual**

Chemical Manufacturers Association
2501 M Street, NW
Washington, DC 20037
Phone: 202-887-1100
Cost: $75

This manual was designed for use by personnel of all levels who are involved with planning or implementing a pollution prevention program.

8. **Waste Minimization Training Manuals**

Department of Toxic Substances Control
Attention: Robert Ludwig
Alternative Technology Division
714/744 P Street
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Sacramento, CA 95512-0806
Phone: 916-324-1807
916-322-3670

This includes three pollution prevention modules on waste minimization. Each manual consists of a workbook and video.

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George Smelcer
Center for Industrial Services
University of Tennessee
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This manual includes information on waste reduction awareness and incentives, Federal safety standards, State and Federal regulations, how to establish a waste reduction program and conduct a waste assessment and waste reduction approaches for specific industries and waste types.

POLLUTION PREVENTION VIDEOS

1. **1990 Clean Air Act Overview**
(20 min.)

Sylvia Gordon
WRATT Case Studies
University of Tennessee, 1991
Center for Telecommunications and Video
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Knoxville, TN 37996-0312
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Cost: $25 (available only from the producer)

The new Clean Air Act is reviewed, especially Title 1,3,4, and 6. Pollution prevention implications are discussed.

2. **Beyond Business as Usual: Meeting the Challenge of Hazardous Waste**
(28:30 min.)

U.S. EPA Region VIII
999 18th Street, Suite 500
Denver, CO 80202-2405
Phone: 303-293-1603
Cost: Contact EPA Region VIII for cost and availability information

This video promotes source reduction and recycling as the best hazardous waste management options and includes success stories from industry, Federal agencies, and state and local government programs.

3. **The Competitive Edge**
(17:50 min.)

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2 Bloor Street West, 11th Floor
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4. **Pollution Prevention: The Bottom Line**
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The video presents EPA's waste management hierarchy, led by source reduction and recycling, to handle the current municipal solid waste crisis.

7. **Waste Reduction Assessment Opportunities**
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University of North Carolina Asheville-EQI, 1989
Attention: Carroll Duggan
Waste Technology Program
2F 71B Old City Hall Building
Knoxville, TN 37902
Phone: 615-632-3160
Cost: $25

This video summarizes the multimedia waste reduction assessment procedure and its application at several businesses.

8. **Why Waste? Waste Minimization for Today's Businesses**
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Attention: Kathy Varwick
Alternative TEchnolgy Division
Technology Clearinghouse Unit
P.O. Box 806
Sacramento, CA 95812-0806
Phone: 916-324-1807
Cost: $15

The video defines waste minimization and illustrates waste reduction successes in several different types if businesses.

POLLUTION PREVENTION ASSISTANCE

CLEARINGHOUSES AND ASSOCIATIONS

1. **Pollution Prevention Information Clearinghouse (PPIC)**

   Pollution Prevention Information Clearinghouse
   U.S. EPA
   PM 211-A
   401 M Street, SW
   Washington, DC 20460
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The video defines waste minimization and illustrates waste reduction successes in several different types if businesses.

PROJECT SUMMARY

POLLUTION PREVENTION OPPORTUNITY ASSESSMENT UNITED STATES POSTAL SERVICE BULK MAIL CENTER, DALLAS, TX

Abstract

As part of its Waste Reduction Evaluation at Federal Sites (WREAFS) Program, the U.S. Environmental Protection Agency (USEPA) National Risk Management Research Laboratory (NRMRL) worked cooperatively with the U.S. Postal Service (USPS) to integrate waste prevention and recycling activities into the waste management programs at various Postal facilities through the conduct of pollution prevention opportunity assessments (PPOA). The Pollution Prevention Opportunity Assessment (PPOA) summarized here was conducted at the USPS Bulk Mail Center (BMC) located in Dallas, TX.

The report describes the mission of the BMC including operations performed, processes and materials employed and the wastes and emissions generated. The report makes recommendations concerning the procurement of office supplies, maintenance supplies and hazardous materials; management of hazardous materials and wastes; purchase of chemicals on USEPA's 33/50 list; improvement of source separation and recycling of paper and paper products, metals and plastics; management of unwanted equipment; and other options for reducing or eliminating pollution.

This Project Summary was developed by USEPA's National Risk Management Research Laboratory, Cincinnati, OH to announce key findings of the research project that is fully documented in a separate report of the same title.

INTRODUCTION

Since 1988, EPA's National Risk Management Research Laboratory (NRMRL) has managed a technical support effort known as the Waste Reduction Evaluations At Federal Sites (WREAFS) Program. WREAFS was established to provide pollution prevention solutions to environmental issues through research, development and demonstration of pollution prevention techniques and technologies, and transferring lessons learned within the Federal community and related private sector industries.

The United States Postal Service (USPS), in cooperation with NRMRL's WREAFS program is engaged in an effort to integrate pollution prevention and recycling activities into the waste management programs at postal facilities. The purpose of this project was to perform pollution prevention opportunity assessments (PPOAs) at Postal Service facilities, recommend implementation strategies, and develop facility guidance that can be incorporated into a revision of the USPS *Waste Reduction Guide*. The project was funded by the U.S. Postal Service through an interagency agreement (IAG) with EPA NRMRL.

This report describes the findings of the PPOA conducted for the United States Postal Service Bulk Mail Center (BMC) located in Dallas, TX. The site assessment was conducted during the week of May 15, 1995.

FACILITY DESCRIPTION

The BMC facility in Dallas, TX performs the sorting and routing of packages and bulk business mail for Texas, Oklahoma and parts of Kansas, Arkansas, and Louisiana as part of a national network of mechanized bulk mail centers that process third and fourth class mail. The facility employs approximately 1,600 individuals and operates three eight-hour shifts per day, six days per week and two shifts on Sunday. An additional 300 workers are hired during the Christmas holiday season.

The BMC facility occupies 75 acres; the main building contains approximately 452,000 square feet of space. In addition, the facility houses a 2,000 sq. ft. lubrication storage area; a 2,048 sq. ft. former vehicle repair shop that is now used to repair "over-the-road" aluminum mail-transport equipment (OTRs) and as a fuel and oil dispensing area for postal vehicles; and a 1,000 sq. ft. shed that houses groundskeeping equipment and miscellaneous machinery. The BMC also has two remote sites: a USPS-owned warehouse, which is shared with the Dallas General Mail Facility (GMF), and a leased facility of 59,000 sq. ft. that houses the Crossdock Pallet Facility (CPF).

WASTE MANAGEMENT

Wastes generated by BMC operations include excess and obsolete equipment and supplies; corrugated cardboard; computer paper; white paper; mixed office paper, including forms and envelopes; magazines and newsprint; undeliverable bulk business mail (UBBM) and "loose-in-mail" pieces (LIMs); employee wastes, including cans, bottles, wrappers, and food; pallets; shrink and stretch wrap; aluminum and other metals; wood; fluorescent tubes and lighting ballasts; batteries; plastic and metal strapping; rags; and oil filters and waste oil. Additionally, the BMC facility generates small quantities of hazardous wastes from aerosol cans, primarily paints and oils. In 1994, one 55-gallon drum of F003 and F005 waste was generated. Exhibit 1 presents the composition of the solid waste stream, the current management practice for each component, and a summary of pollution prevention opportunities. Exhibit 2 summarizes the current costs of waste collection.

Exhibit 1. BMC Solid Waste Generation and Pollution Prevention Opportunities

Waste	Current Management	Opportunities
Obsolete, damaged or defective equipment	Disposed or sold as scrap	Repair at USPS Computer Repair Facility (CRF) in Topeka, KS, reuse
Corrugated cardboard	Some reused, gaylords recycled, other cardboard disposed	Reduce use of gaylords, increase use of OTRs, reduce incoming boxes, reuse boxes, improve diversion for recycling
Computer print-out	Discarded as waste	Reduce generation, divert for recycling
White paper	Some recycled	Reduce generation, improve diversion for recycling
Mixed paper	Discarded as waste	Reduce generation, divert for recycling
Magazines	Discarded as waste	Reduce generation, divert for recycling
Toner cartridges	Returned for recycling	Continue recycling
Pallets	USPS pallets sent to Arlington facility for redistribution. Pine pallets sold as scrap for mulch	Reduce variety, reuse pine pallets, establish recycling options for pine pallets
Plastic stretch wrap	Discarded as waste	Reduce generation, divert for recycling
Rags	Discarded as waste	Investigate rag service feasibility
Fluorescent tubes	Discarded as waste	Improve ambient light, install motion sensitive lighting, divert for recycling
Strapping	Discarded as waste	Divert for recycling
Oil	Rerefined	Purchase rerefined oil
Alkaline Batteries	Recycled	Use rechargeable batteries
Lighting Ballasts	PCB ballasts managed as hazardous, non PCB ballasts recycled	Improve ambient light, install motion sensitive lighting, turn lights off

Exhibit 2. Current Cost of Waste Collection

Material	Container size	Collection frequency	Monthly fee	Annual Cost
Mixed Waste at BMC	40 cu yd	12 per month	$147.50 per pull or $1,770 per month	$21,240
Mixed Waste at CPF	6 cu yd	26 per month	$3,145	$37,740
Oily Rags	55-gallon drum	3-4 drums per month	$400 per drum or $1,200 to $1,600 per month	$14,400 to $19,200
Total			$73,380 - $78,180	

POLLUTION PREVENTION OPPORTUNITIES

Exhibit 3 presents the pollution prevention opportunities that offer the USPS significant cost reductions in addition to reducing pollution. The primary pollution prevention opportunities identified by the PPOA are addressed in the sections below.

Environmental Oversight

- Appoint an Environmental Coordinator to monitor environmental issues and implement opportunities to reduce waste and prevent pollution at the facility.

Reuse and Recycling

The BMC presently receives approximately $100,000 in annual revenue from its old corregated cardboard (OCC) recycling program (recycled gaylord boxes), approximately $9,600 in annual revenue from scrap metal recycling, and in 1995, to date, the BMC has received $7,929 in revenue from scrap aluminum recycling. Postal employees use metal "over-the-road" (OTR) containers to move mail between facilities, although this was not their intended use, and facilities hoard OTRs for the holiday season. The BMCs have no control over the OTR inventory, thus OTRs are not readily available to move the mail in the BMC service area. To solve the problem of access to mail transport equipment, the USPS has designed the Integrated Mail Handling System, which would substitute cardboard gaylord boxes for the reusable OTRs and require modifying existing mail handling equipment to accommodate the gaylords. Recommendations are:

- Cancel the Integrated Mail Handling System, (IMHS) and use OTRs instead of cardboard gaylord boxes.

- Purchase enough additional OTRs or other permanent mail transport equipment for the nationwide movement of non-peak period mail volume and design and implement a nationwide bar-code labeling and tracking system for the OTRs.

- Reuse cardboard gaylord boxes that enter facility, rather than recycling them after one use. One reuse of each gaylord will reduce costs by $500,000.

- Reuse cardboard boxes in other processing operations

- Segregate for recycling the OCC that cannot be reused

- Improve the office paper recycling system

- Reduce the quantity of undeliverable bulk busines mail (UBBM) and recycle rather than dispose of "loose-in-mail" pieces (LIMs).

Pallets

- Establish a formal recycling system for pine pallets. Recyclers will repair or rebuild pallets for resale. Several pallet recycling services are available in the Dallas area.

Fluorescent Lights

- Establish a fluorescent tube recycling program for the 1,500 fluroescent tubes used at this facility.

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Exhibit 3. Cost-Saving Pollution Prevention Opportunities

Item(s) of Concern	Current Practice	Pollution Prevention Opportunity	Summary of Estimated Potential
Gaylords/OTRs	Use disposable gaylords in place of durable aluminum OTRs.	Purchase sufficient quantity of reusable OTRs and maintain for 10 years	**Cost Per Trip:** Aluminum OTR[1]: $1.40 (150 trips/ yr for 10 yrs) Cardboard Gaylord: $5.41 (single use) After 39 trips/year, OTRs are more cost effect Potential savings of $4.01 per trip. [1] $1,138 purchase cost and $1,000 lifetime mai
Cardboard Gaylords	Recycle after single use.	Reuse gaylords	Based on annual purchase costs of $1,000,000, reuse of each gaylord equal $500,000.
Old Corrugated Cardboard	Recycle cardboard gaylords Dispose remaining 30 percent of OCC stream as waste.	Continue current recycling practices. Utilize baler and recycle remaining OCC.	Approximately $100,000 revenue (at 60 tons/ gaylords. Approximately $100 to $140 per ton in revenu corrugated cardboard recycled.
Rags	Purchase new rags Dispose rags via incineration	Launder rags Dispose 25 percent of rags annually	**Year 1** Laundering $2.17/lb; New $2.23/lb; Cost Saving $414 **Year 2** Laundering $2.06/lb; New $2.23/lb; Cost Saving $1,173 * Purchase of new rags costs approximately $1 disposal costs are $14,400. * Cost of laundering rags is approximately $10 disposal costs with laundering are $3,600.

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- Establish a formal recycling system for pine pallets. Recyclers will repair or rebuild pallets for resale. Several pallet recycling services are available in the Dallas area.

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Rechargeable Batteries

- Purchase rechargeable batteries and a charging unit to recharge the batteries. GSA has available rechargeable alkaline batteries that offer the high performance attributes of regular alkaline batteries along with the cost and environmental benefits of a reusable system.

Affirmative Procurement

- Establish preference programs and adopt specifications for the purchase of products made with the percentages of recovered materials specified in USEPA Guidelines.

Lighting

- Increase the use of motion sensitive lighting
- Install motion sensitive lighting in infrequently used areas.
- Establish a "lights out" policy
- Establish a policy of turning off lights and equipment when leaving an area. Where machine design permits, turn photocopiers to low power when not in use.
- Increase the use of ambient lighting
- Become a Federal Partner in the Green Lights Program

Computers

- Procure computers that meet Energy Star requirements

Battery Charging

- Review procedures on the proper charging of batteries to prevent accidental acid overflows.

Dedicated Oil Containers

The Dallas BMC has a bulk distribution system which stores several types of oil and a solvent called Pro-Power, an oil emulsifier, but the facility uses one container to transfer the products. This process generates unnecessary waste because excess oil is disposed, instead of

being reused, and because the containers must be cleaned with solvent after each use. Therefore, dedicated containers should be purchased and used for each specific material.

CONCLUSIONS AND RECOMMENDATIONS

The BMC facility has taken admirable steps in terms of implementing a relatively aggressive recycling and reuse program for many commodities, such as OCC, metal, and pallets. In terms of OCC, the BMC should focus on reusing cardboard gaylord boxes, replacing these with durable aluminum OTRs, and capturing for recycling the 20- to 30-percent of the OCC stream that is disposed. The BMC should investigate a rag laundering service and also should implement more aggressive policies to reduce the amount of paper waste generated and disposed, most notably UBBM and LIMs. Facility staff showed an openness to pollution prevention ideas and should continue to explore new options such as energy savings through daylighting, the Green Lights program, and procurement of Energy Star computers, as well as more simple options such as lights out policies, double-sided copying, and adopting an affirmative procurement policy.

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