United States
Environmental Protection
Agency

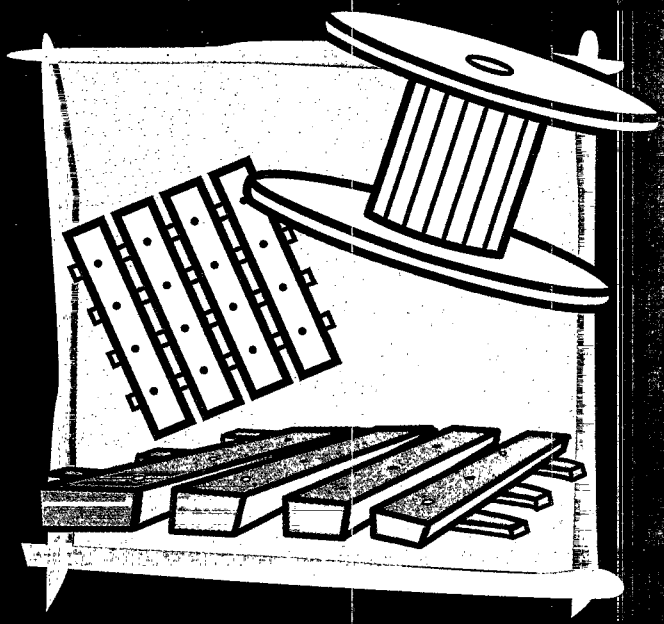
Solid Waste
and Emergency Response
(5306W)

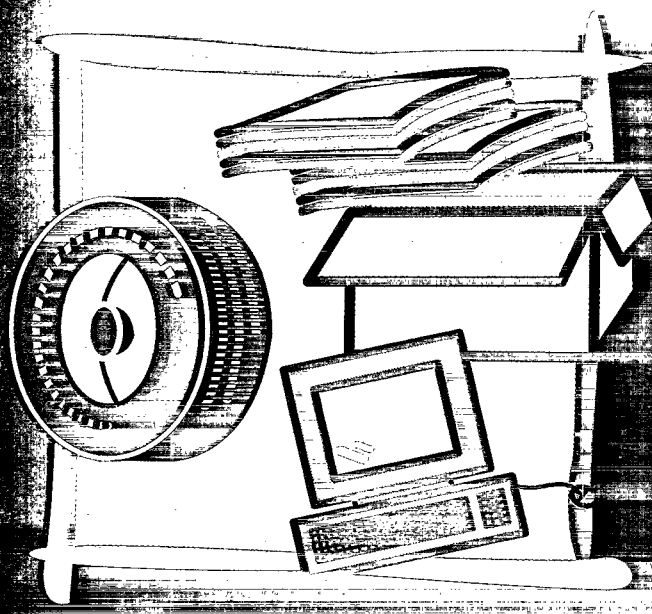
EPA530-R-97-017
August 1997

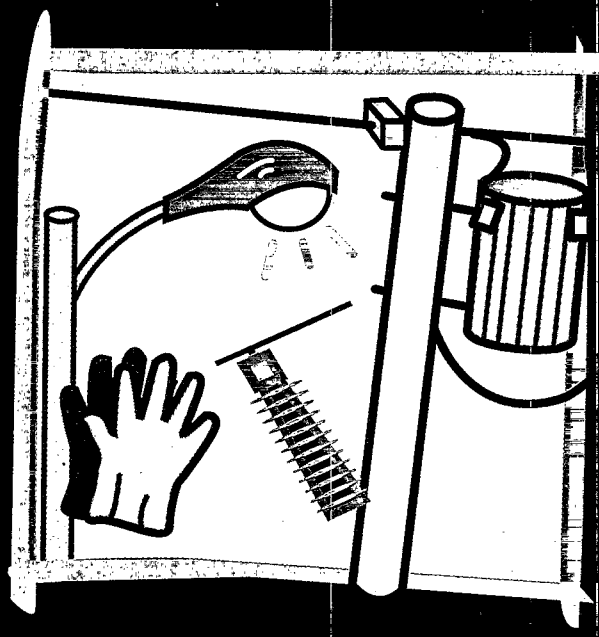
EPA

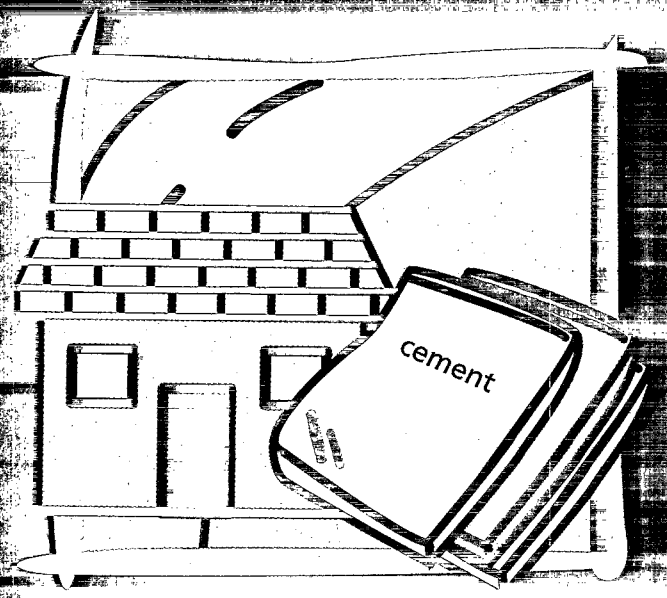
Waste Reduction Activities of Selected WasteWi$e Partners

Electric Power Industry









FOREWORD

WasteWi$e is a voluntary partnership program aimed at reducing municipal solid waste. Partners set waste prevention and recycling goals, as well as goals for buying or manufacturing products with recycled content. Each year, partners report on their progress in meeting waste reduction goals to the U.S. Environmental Protection Agency (EPA).

In 1996, WasteWi$e began a study of solid waste reduction practices within the electric utility industry, through a combination of site visits, interviews, and literature reviews. This report highlights some of the most effective and innovative solid waste reduction activities implemented by the industry. While EPA considers coal ash to be an industrial waste as opposed to municipal solid waste, this report also documents ways utility partners are reducing coal ash. EPA included this waste stream in the report because partners have undertaken innovative waste reduction efforts in this area and because coal ash constitutes such a large portion of the utility waste stream.

During the study, WasteWi$e worked with the following partner utilities: Baltimore Gas & Electric, Commonwealth Edison, Florida Power Corporation, Florida Power & Light, Illinois Power, Northeast Utilities, Northern States Power, Pacific Gas & Electric, Pennsylvania Power & Light, and Public Service Electric & Gas.

This report was compiled with the assistance of the Edison Electric Institute, a WasteWi$e endorser. Edison Electric Institute helped select the utilities profiled and reviewed the content of this report prior to publication.

TABLE OF CONTENTS

Foreword i

Chapter 1
Making Waste Reduction a Success 2

Chapter 2
Waste Reduction Opportunities:
Generating Stations 4

Chapter 3
Waste Reduction Opportunities:
Distribution and Transmission 7

Chapter 4
Waste Reduction Opportunities: Investment
Recovery and Warehouse Operations 11

Chapter 5
Additional Opportunities for
Waste Reduction 14

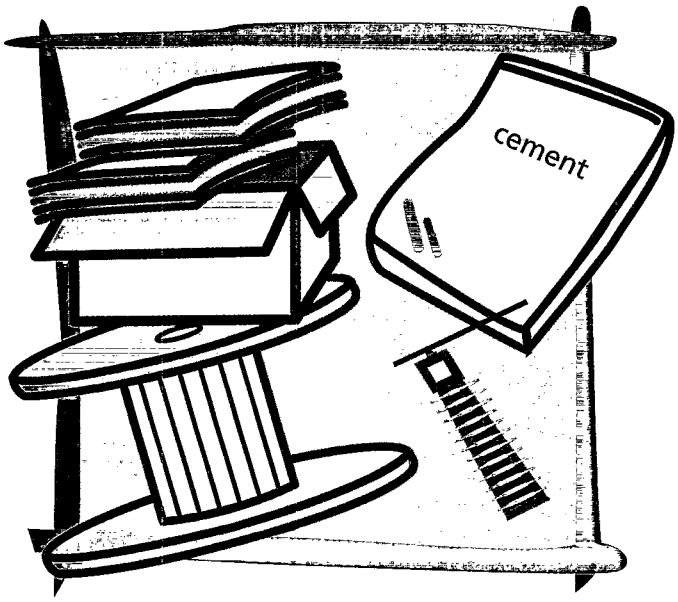
Conclusion 16

Appendix: WasteWi$e Utility Partner Profiles

CHAPTER 1

MAKING WASTE REDUCTION A SUCCESS

The U.S. electric power industry is undergoing a series of changes fueled, in part, by the move toward deregulation. Traditionally, utilities have been heavily regulated, but impending deregulation is prompting these utilities to closely examine their operations and seek opportunities to improve efficiency. Utilities are merging, consolidating vendors, reducing their labor and compliance costs, and seeking new profit centers to remain competitive.



Solid waste management is an area many utilities are examining. Waste reduction initiatives are helping utilities to reduce purchasing, transportation, and disposal costs, as well as to conserve resources. Many utilities have been recycling scrap metal and other materials for years; however, the more ambitious programs covered in this report emphasize waste prevention activities such as reconditioning and reuse of materials. In fact, waste prevention programs are now integral to many utilities' strategic business plans.

Waste prevention—eliminating waste before it is created—is the hallmark of the WasteWi$e program. Partner organizations, including utilities, assess their current operations to identify areas where waste can be prevented, establish waste prevention goals, and then take action to achieve those goals.

Based on the experiences of WasteWi$e partners, including utilities, manufacturers, and service providers, three key elements are necessary for a successful solid waste reduction program:

- **Obtaining corporate support.** Solid waste and recycling program managers all agree: the biggest savings and efficiencies are achieved when management asks all employees across all operations to commit to waste reduction.
- **Involving company employees in all phases of the waste reduction campaign.** Several partners achieve a high level of employee participation by offering innovative incentives and rewards for employees who contribute to the success of company waste reduction efforts.
- **Tracking and measuring waste reduction progress.** Many partners discovered that tracking progress helps to justify their program to senior management and stockholders and enhances productivity among utility employees.

Solid Waste Management and Utilities

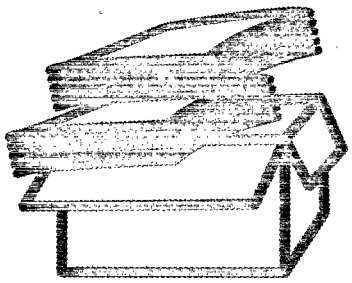
Before developing or expanding a waste reduction program, solid waste and recycling managers should first assess their operations to identify unique opportunities for waste prevention. While some waste prevention techniques are applicable to all utilities, opportunities are often unique to specific utilities, operations, or geographic regions. To uncover some of these unique opportunities, solid waste and recycling managers should examine the following questions:

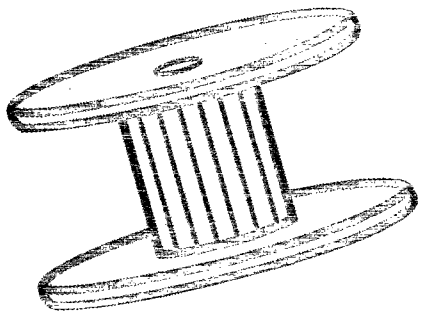
- **How are waste management costs currently being allocated?** What corporate, division, or facility incentives are in place to encourage waste reduction? Utilities that allocate waste disposal costs to individual divisions or facilities, as opposed to general overhead or environmental affairs accounts, create an incentive for employees of that division to reduce waste.
- **What level of involvement can be offered to the service area?** Can a cost-effective centralized collection system for recyclables be established? If recycling is part of the corporate philosophy, having a mechanism in place to frequently drop off and pick up materials from power plants, substations, and other field offices helps determine the profitability of recycling and reuse programs. Centralized collection systems are often more successful in smaller service areas.
- **Do local markets exist for selling reusable materials or recyclables?** Strong local markets are often rich with customers interested in either purchasing, or hauling away at no cost, materials a utility previously paid to dispose of.

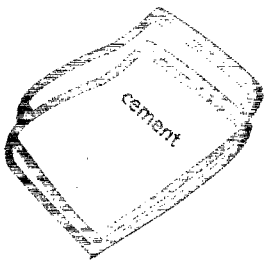
Report Overview

This report details the numerous waste prevention, recycling, and buying recycled programs many utilities have already implemented. Also highlighted are factors influencing the decision-making process within the utility industry, approaches utility solid waste and recycling managers are taking to overcome barriers and obstacles, and efforts being undertaken to find waste reduction solutions for several difficult solid waste streams. The success stories featured here can help other utilities develop programs to reduce their solid waste costs through waste prevention, reuse and refurbishment activities, recycling efforts, and by donating materials to outside groups and organizations.

The remainder of this report is organized according to the functional areas in which waste is generated at utilities. These areas include generation, distribution and transmission, warehouse, fleet, and administrative offices.





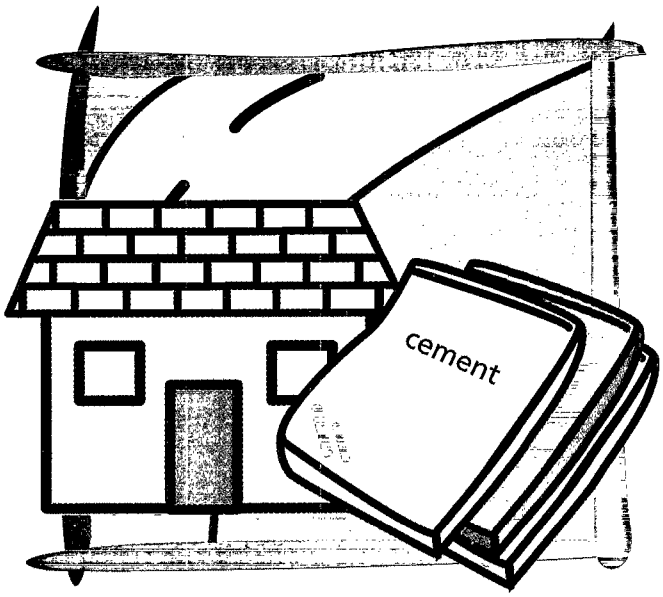


CHAPTER 2

WASTE REDUCTION OPPORTUNITIES:

GENERATING STATIONS

The type and quantity of waste generated by an electric utility depends on station configuration, size, and age, as well as the type of fuel used to generate power. For coal-fired power plants, the largest and most costly solid waste stream to manage is ash. Each year, nearly 90 million tons of bottom and fly ash, flue gas desulfurization sludge, and boiler slag are generated at coal-fired plants. To understand the magnitude of this waste stream, picture filling the Houston Astrodome nearly 369 times!



With an average management cost of $12 per ton[1], handling ash waste is an expensive operation. Yearly ash management costs can run as high as $20 million, especially for large utilities such as Pennsylvania Power and Light (PP&L), which generates more than 1 million tons of ash per year.

One method for managing ash is to mix it with water to create a resulting slurry that is then pumped to a de-watering impoundment. This management method is very expensive, particularly when new impoundments are required. Taking into account the costs for labor, land, and regulatory requirements, a new de-watering impoundment can cost upwards of several million dollars. In addition, this wet management method limits the reuse potential of the ash. One way utilities are addressing the costs of wet management is by switching to dry ash handling systems, which use air to vacuum the ash and blow it into storage silos. By converting to dry ash handling systems, PP&L avoided building new wet ash disposal units, for a net savings of $14 million. PP&L anticipates additional savings through the sale of

the ash since dry ash is a more marketable commodity and can be readily sold as an alternative to Portland cement, flowable fill, and blasting grit.

Ash reuse programs do not need to generate large amounts of revenue to be both environmentally beneficial and financially sound corporate investments. Avoiding ash management costs is incentive enough to establish a reuse program. Utilities that choose to aggressively seek markets and opportunities for reusing their ash avoid significant ash management costs and can often generate revenue from the sale of ash.

Coal Ash Reuse Opportunities

There are numerous uses for coal fly ash, including as an alternative to Portland cement, as blasting grit, or as structural and flowable fill. Most of the utility companies interviewed in this report market fly ash as an alternative to Portland cement in the production of concrete. Another common practice implemented by utility companies, such as Northeast Utilities and Illinois Power (IP), is to market bottom ash for the production of asphalt pavement, roofing, and roofing shingles. Other common uses for ash include roadway antiskid material (road deicer), drainage materials, and sand for onsite septic systems. In 1995, Northeast Utilities reused thousands of tons of fly ash, generating $579,000 in avoided disposal and purchasing costs. Florida Power Corporation (FPC) facilitates the reuse of nearly all of its fly ash for the construction of concrete products. In 1995, FPC reduced 430,000 tons of fly ash waste by putting it in these products.

Several companies use or sell bottom ash as blasting grit for cleaning metal and other items. Northeast Utilities saves $2.6 million annually in avoided disposal costs by bagging bottom ash on site and selling it to end-users as a blasting grit for paint and rust removal. In 1994, one Baltimore Gas & Electric (BGE) power plant marketed 21,000 tons of bottom ash for reuse as blasting grit.

BGE found a way to reuse its fly and bottom ash for structural fill. In 1995, the utility sold and reused more than 3 million tons of ash in a variety of highway, office and industrial park, and utility projects. With numerous road and bridge construction projects currently underway in the state of Maryland, BGE is expanding its marketing effort to find uses for ash in road embankments.

BGE also uses ash as a component in flowable fill. By combining ash with other elements, the company creates a controlled low-strength material. In addition to using the fill for nonstructural applications, such as backfilling around gas lines, BGE sells it as a replacement for compacted soil. This material has been used in projects to fill underground storage tanks and missile silos.

PP&L generated more than 1 million tons of coal ash in 1995—enough to cover a football field to a depth of 400 feet. As a disposal alternative, PP&L mixes hydrated lime with its fly ash to create a new chemically stable alternative to soil-based fill. The resulting product, Stabil-Fill, initially was used for onsite construction during renovation and expansion to build a coal pile liner and to raise storage areas and roads to prevent stormwater flooding. PP&L estimates that one of its facilities saved $700,000 in avoided purchasing costs by using Stabil-Fill for construction purposes rather than purchasing material from an outside source. Stabil-Fill is also marketed outside the company and has been used to backfill coal mines, in the construction of airport runways and roads, in industrial sites, and as a base for ready-mix concrete.

New markets for ash reuse are constantly being developed. Ash use is being evaluated for a number of products, such as sports equipment, insulation, automobile bodies, marine craft bodies, paints, coatings, and fire and heat protection devices. Ash use also shows promise in mine reclamation, as a soil amendment, and in the manufacture of tires and wallboard.

Factors That Impact Ash Reuse Efforts

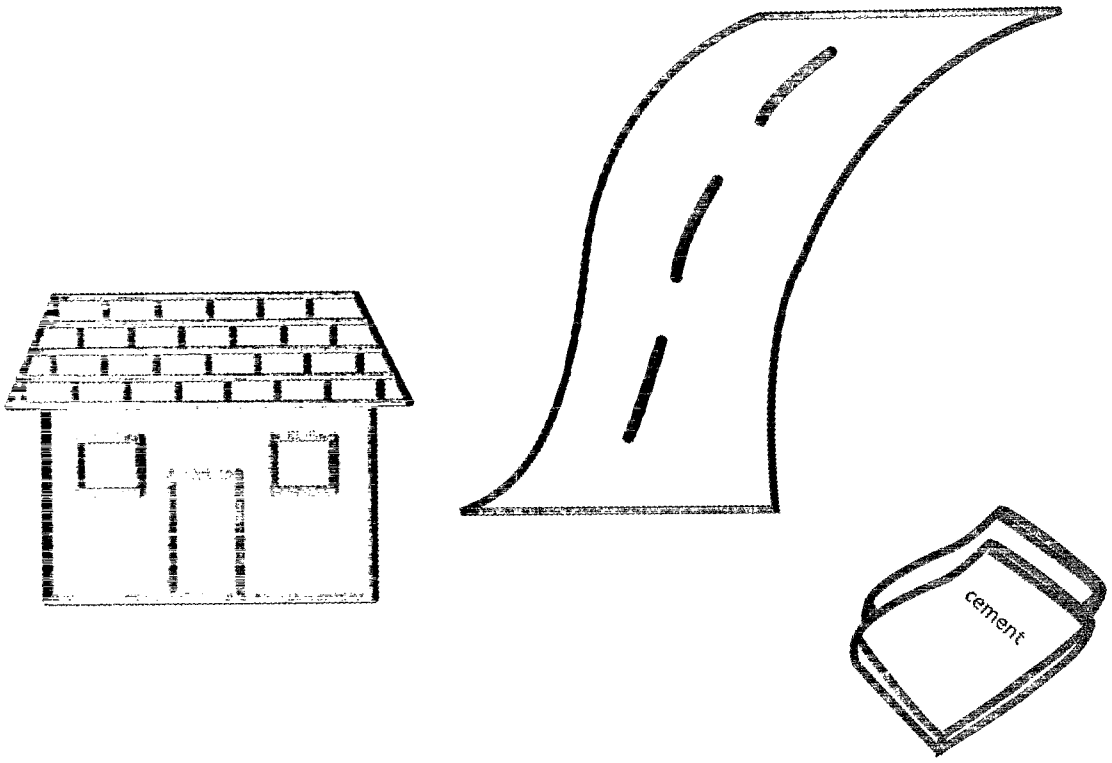
Utilities considering creating or expanding an ash reuse program should take into account the following factors:

- **How much ash is generated?** The goal of ash reuse programs is to avoid disposal costs; however, it is usually not cost-effective to transport and manage the third-party costs associated with handling small amounts of ash. Utilities generating modest amounts of ash should consider onsite reuse opportunities or other ways to break even. Public Service Electric & Gas (PSE&G), for example, generates a relatively small amount of coal ash—60,000 tons annually. The utility breaks even on its ash reuse

program by working with several contractors to find external markets for its ash.

- **What type of coal is being burned?** The more homogeneous the coal, the higher quality of ash produced. High-quality ash is often required for many reuse applications. Ash quality, however, is a secondary concern when compared to the economics of purchasing coal and complying with air quality regulations. The ash reuse market also presents numerous opportunities for ash created from the burning of nonhomogeneous coal.
- **What marketing resources are available?** Significant effort may be required to determine acceptable uses for ash and to locate potential users. Marketing firms can often help utilities market ash and locate customers. For example, Commonwealth Edison (ComEd) attributes its ash reuse success to an arrangement that provides vendors with incentives to find applications for ComEd's coal ash. These outside marketers found reuse opportunities for 90 percent of ComEd's coal ash—780,000 tons in 1995 —saving more than $8 million in avoided landfill disposal costs.
- **What state regulatory constraints exist with respect to ash reuse?** Some states have restrictions on ash reuse. Illinois, for example, required utilities to obtain a solid waste determination prior to starting an ash reuse project. Given the time required for the state to make this determination, IP would often lose opportunities to market its ash. The utility worked with the state legislature, and in July 1995, Illinois passed a law to enable utilities to market ash as a revenue-generating commodity. This law reduced the need for Illinois utilities to construct new onsite disposal facilities.

The economics of coal ash reuse are largely dependent on local or regional factors including production rates, processing and handling costs, availability of markets, transportation costs, price and availability of competing materials, and seasonal adjustments.[2]



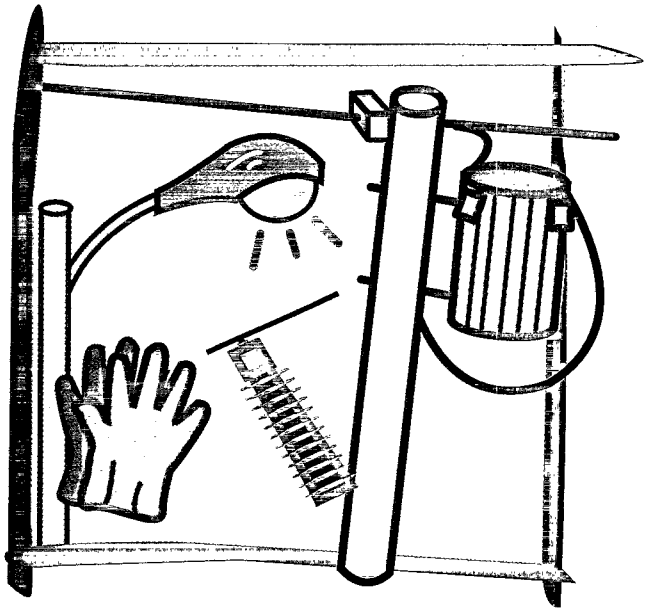
[1]1995 industry average. Source: Public Service Electric & Gas.

[2]American Coal Ash Association, "Coal Ash: Local Materials for Local Development."

CHAPTER 3

WASTE REDUCTION OPPORTUNITIES: DISTRIBUTION AND TRANSMISSION

Significant and varied opportunities exist for utilities to reduce solid waste in their distribution and transmission processes, particularly with respect to utility poles, porcelain brushings and insulators, street lamp units, transformers, protective equipment, and rags. These opportunities can increase if a utility develops an effective materials collection system.



Reusing Utility Poles

The utilities participating in this report indicated that disposing of an increasingly large number of used utility poles motivated them to find cost-effective disposal alternatives.

The most common type of utility pole is made of wood and has an average useful life of between 25 and 30 years. To prevent underground rotting, these poles are often treated with creosote, pentachlorophenol, or other wood preservatives. Some states have disposal restrictions on treated poles, such as prohibiting their incineration. As always, companies should always follow all applicable federal, state, and local regulations for managing these materials.

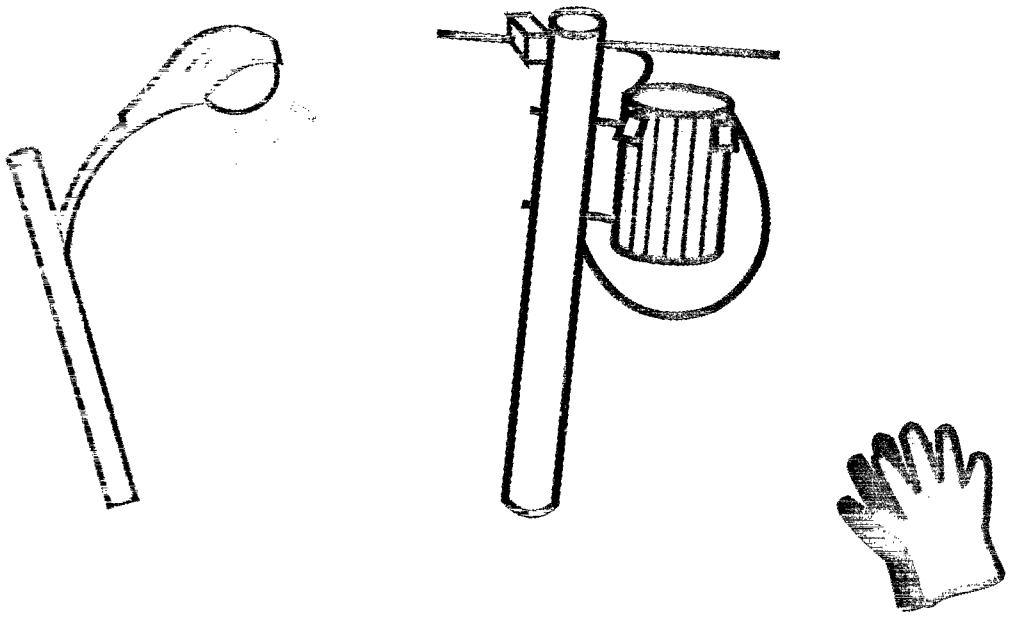
When properly managed, these poles present a variety of reuse opportunities, such as in landscaping, for constructing gates and barriers, as fencing, in the construction of playground equipment, and for hiking trails. Some utilities encourage line workers to give away used utility poles near takedown sites to avoid transportation and disposal costs. For example, utilities with rural service areas often give farmers the poles to use for fencing.

Mote Marine Laboratory, the Florida Aquarium, and the Suncoast Seabird Sanctuary for use in handling fish and birds. FPC's worn rubber blankets found a home at the Wildlife Rescue Rehabilitation Center, where they now serve as lounging mats for Bengal tigers.

Cloth, once thought of as cheap disposable items for cleaning gas meters, can pile up quickly for large utilities—as can their disposal costs. Several utilities now are purchasing durable rags that can be laundered and reused several times prior to disposal. BGE found a local company to launder its rags. This practice saved one BGE facility over 50 percent on new rag purchases in 1994. FPC washes and reuses shop rags on site, which enabled the utility to cut its rag consumption in half over a period of 3 years.

Some Additional Ideas to Help Increase Waste Reduction Opportunities

- **Thoroughly explore all potential onsite and offsite reuse opportunities.** All utilities should investigate nonprofit organizations or local businesses in their area that may be able to reuse or recycle wood, porcelain, or other materials. Sometimes simply publicizing the availability of a material for reuse or recycling will generate a long list of individuals and groups who are not only interested in the material but will come and haul it away.
- **Consider partnering with other organizations or donating materials to nonprofits.** For small waste streams or where preparing material for recycling is labor intensive, consider partnering with another organization to reduce costs or donating the material to a nonprofit organization.

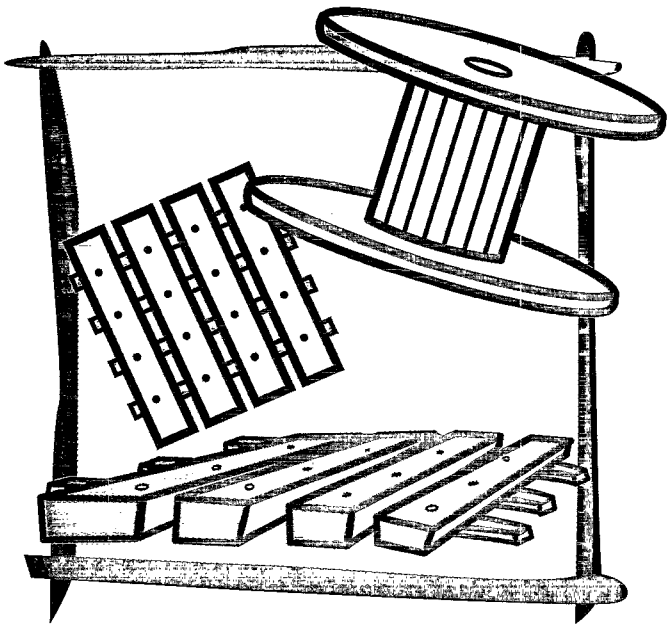


CHAPTER 4

WASTE REDUCTION OPPORTUNITIES:

INVESTMENT RECOVERY AND WAREHOUSE OPERATIONS

At most utilities, several operational groups often share the responsibility for waste reduction. For example, materials collected through an office recycling program, such as paper, corrugated, and glass bottles, may fall under the responsibility of an environmental division. The environmental division arranges for the collection of these materials, tracks the volume of material collected, and calculates any associated revenue or cost savings attributable to this recycling. Many utilities also frequently dedicate staff to "investment recovery" activities. These individuals identify revenue-generating options for readily marketable retired, obsolete, or surplus equipment and material.



While each utility may choose to concentrate its efforts in different markets, the most common materials being marketed by investment recovery groups include scrap metals, electrical hardware, computers, office furniture, and fleet vehicles. Utility partners have also identified innovative opportunities to reduce waste in their warehouse operations.

Scrap Metal Recycling and Reuse

Scrap metal, particularly used aluminum, copper and lead cable, ferrous steel, and old appliances, is routinely collected and recycled by most utilities. Scrap metal sales can be quite profitable, especially for large utilities like PG&E, which in 1995 recycled almost 24 million pounds of scrap metal from electrical conductors, transformers, and other equipment.

FP&L, after analyzing the amount and associated value of the metal it scrapped, began exploring ways to increase the value of the utility's metal recovery operations. FP&L purchased equipment to clean and polish

metal and established more efficient metal sorting processes. A piece of pole hardware that would traditionally have been scrapped at a value of $7, for example, is now being cleaned and put back in service for a purchase cost savings of $60 per unit.

Options for Reducing Wood Waste

Old or broken wood pallets and reels often represent a significant part of a utility's solid waste stream. In an effort to reduce the disposal costs associated with wood waste, utilities are either trying to find ways to extend the life of their pallets or looking for new uses for this wood waste.

Many utilities refurbish their pallets on site or with the help of an outside vendor. BGE, for example, currently uses a vendor to recondition its pallets, allowing the utility to cut new pallet purchases by approximately 50 percent a year.

PP&L also saves money from pallet repair and reuse. PP&L marks pallets that are not damaged or only slightly damaged to facilitate their reuse. To encourage reuse, PP&L also published a list of pallet refurbishers and mulching facilities and distributed this list to its service centers. In addition, PP&L has successfully worked with its vendors to encourage the use of durable pallets. Employees are encouraged to take excess pallets home and construct home compost bins. Through these programs, PP&L reduced wood purchases by 193,000 pounds in 1995 alone.

BGE and Northeast Utilities have additional uses for pallets that cannot be reconditioned. The wood is shredded either on site or off site by a vendor and turned into wood chips. Both companies use these wood chips for energy recovery and landscaping mulch.

At FPC and PG&E, unusable pallets are picked up by local furniture makers for conversion into chairs, tables, and lounges. There is a growing trend among utilities to standardize pallet size, encouraging greater reuse. In addition, several utilities are exploring or already purchasing reusable plastic pallets for certain uses.

Refurbishing and rebuilding wood cable reels offer additional opportunities for reducing wood waste. Some refurbishing vendors come directly to a utility's facility and disassemble the reels on site. FP&L has refurbished nearly 4,500 reels using this method. BGE uses a contractor that removes the reels at no charge. This contractor then refurbishes the reels and sells them back to cable manufacturers. This activity helped BGE divert 750,000 pounds of wood reels from its landfill waste stream in 1995.

Seeking further solutions to reduce wood waste, PG&E is investigating the use of plastic reels that are more durable and longer lasting than their wood counterparts.

"Just in Time" Inventory Systems

Some utilities are moving to a "just in time" inventory system in order to control losses. Many utilities store large equipment, such as generators, transformers, meters, and piping, in outside supply yards until it is needed. Often, this equipment rusts, is damaged, or deteriorates before it can be used. Using "just in time" inventory, some utilities are storing less equipment on site and ordering replacements only when current inventory is used. In some cases, items that can be obtained quickly (within 24 hours) from vendors are not kept in inventory at all. FP&L has taken "just in time" inventory one step further. The utility has entered into agreements with some of its vendors to allow them to store equipment in FP&L's supply yards. The vendors are responsible for the upkeep of the equipment, and FP&L takes ownership only when the equipment is needed.

Centralized Collection Systems Improve Efficiency for Some Utilities

Utilities with small service areas can improve the efficiency of their investment recovery operations by developing centralized collection systems for salvaged materials. FP&L, for example, developed a central reclamation and salvage program to manage the materials collected from the utility's service centers. Materials are collected daily and sent to the centralized recovery facility next to FP&L's supply warehouse. Materials are then sorted; those that can be refurbished, such as pole line hardware, are cleaned and redistributed to service centers. Leftover paint is consolidated and used to paint warehouses and storage facilities. Recyclable materials, such as scrap metal and plastic conduits, are allowed to accumulate at the recovery facility until enough materials have been collected to sell.

Several factors contribute to the success of FP&L's centralized investment recovery system:

- **Service area size and demography.** Utilities like PG&E, with numerous service centers (1,600) and

large service areas (75,000 square miles), may find that the high transportation costs involved in supporting a centralized collection system make it unprofitable to consolidate their investment recovery operations. FP&L's relatively small service area, 65 service centers spanning 27,650 square miles, enables the utility to keep transportation costs down.

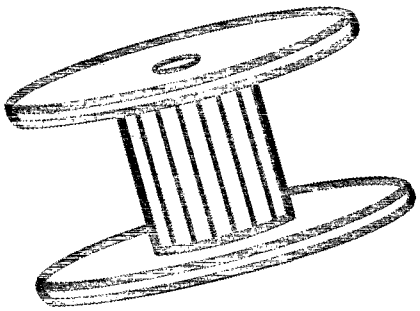
- **Property.** FP&L has enough property surrounding its supply warehouse to operate a centralized recovery facility large enough to collect, process, and store substantial amounts of recovered materials. Having the recovery facility next to its supply warehouse allows FP&L to use its service center delivery fleet to backhaul recyclables to the recovery facility each day after delivering new supplies. This method saves FP&L money since the utility incurs no additional costs to transport materials from the recovery facility to the supply warehouse for distribution.

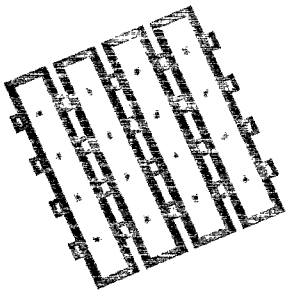
One additional factor that can facilitate a successful centralized collection program is the purchase of recycling equipment such as bailers and grinders. Companies using a payback period longer than one year to guide capital purchases often can make such purchases and reap the benefits over the long term.

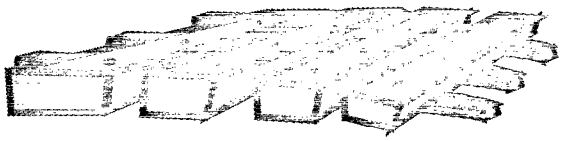
Factors That Impact Investment Recovery and Warehouse Waste Reduction

Utilities may want to consider the following issues when considering investment recovery and warehouse waste reduction programs:

- **Will an investment recovery program make the best use of available staff time and resources?** Some utilities do not invest a great deal of staff time or capital resources in recovery activities. These utilities believe their primary focus should be to produce and distribute electric power, not create inhouse recycling and refurbishment businesses. On the other hand, some utilities ask their environmental departments to develop and maintain ways to sell utility "waste" materials. Utilities interested in aggressively pursuing investment recovery activities should first make sure they have adequate staff and equipment resources to dedicate to this activity. A successful investment-recovery program requires staff to manage investment recovery activities, prepare the materials for reuse and recycling, and transport the materials to facilities for processing and final distribution. A successful program may also require purchasing equipment to bale, grind, polish, shred, or crush recovered material.
- **Is adequate space available to store and process recovered materials?** Many utilities have limited warehouse and yard storage space. For these utilities, even collecting a few pallets for repair can be a problem. Utilities lacking adequate space to store waste for reuse or recycling may want to consider partnering with vendors, other businesses in their service territory, or even other utilities. These other organizations may be willing to transport and store materials for a share of the proceeds. These utilities may also want to explore other avenues for waste reduction, such as requesting that vendors use and collect durable transport packaging, pallets, and reels.



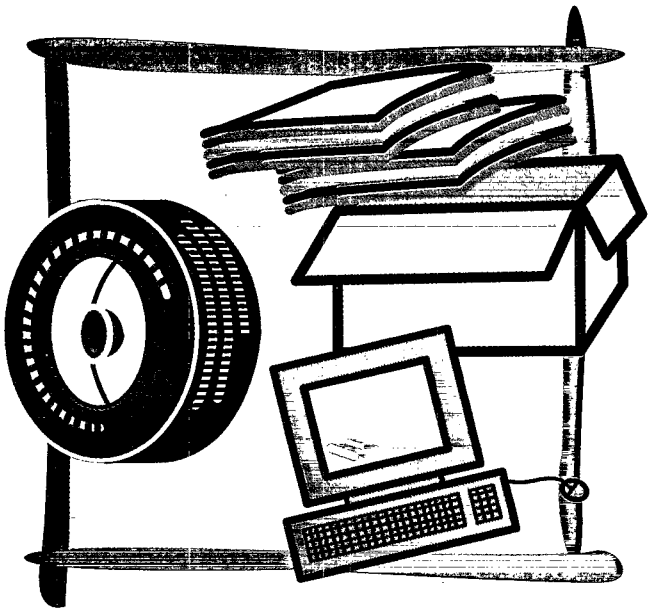




CHAPTER 5

ADDITIONAL OPPORTUNITIES FOR WASTE REDUCTION

In addition to the waste reduction opportunities associated with power generation, distribution, transmission, and storage, many utilities are discovering ways to reduce waste in their fleet maintenance operations and administrative offices. Investigating new computer technologies and innovative practices highlighted in this chapter can help your company conserve materials such as antifreeze, tires, oil, and paper.



FLEET MAINTENANCE
Recycling Fleet Products

A number of utilities achieve significant cost savings by recycling and reusing various fleet products, such as antifreeze. IP, for example, reclaimed nearly 30 55-gallon drums of antifreeze used in its maintenance vehicles in 1995. The reclaimed antifreeze was then reused in heat exchangers, saving the utility more than $12,000 in antifreeze disposal and purchasing costs.

Several utilities are also recycling large quantities of lead-acid batteries. In 1995 alone, FP&L shipped 186,000 pounds of batteries for recycling.

Retreading can extend the usable life of a tire several times, at a savings of between one-third and one-half the cost of a new tire. Some utilities are exploring the use of retread tires for their fleets, and others recycle their damaged tires. BGE collected more than 85 tons of tires for retreading in 1995, saving several million dollars in avoided disposal and purchasing costs.

Changing Fleet Maintenance Practices

Some utilities have found that by simply changing some of their traditional fleet maintenance practices, they are able to reduce their waste disposal and purchasing costs as well. Most utilities, for example, change the oil in their maintenance and service vehicles at prescribed vehicle mileage levels. Northeast Utilities followed this practice but recently began to test the oil quality in its vehicles prior to changing it. The utility discovered that, in most vehicles, the oil did not require changing every 3,000 miles but rather somewhere between 5,000 and 6,000 miles. By waiting until this additional mileage has accrued, Northeast Utilities essentially doubles the mileage between servicing. In 1995, Northeast Utilities conserved 1,000 gallons of oil by making this change, saving $54,000 in purchasing and disposal costs. The utility also located a vendor that rerefines Northeast Utilities' used oil and sells it back to the utility for reuse.

ADMINISTRATIVE OFFICES
Eliminating Paper Waste

Many utilities are working diligently to reduce their office paper use. For example, BGE's use of electronic mail, double-sided copying, and electronic filing reduced paper use to approximately 0.5 pounds per employee per day in 1995, down from 1.5 pounds per employee per day in 1991. In addition, most utilities have been very proactive with respect to recycling mixed paper, corrugated, and aluminum in their administrative offices. PP&L recycled 1,800,000 pounds of high-grade, mixed office paper, corrugated, magazines, and newspaper in 1995. In 1994, PG&E reduced 60,000 pounds of corrugated by asking one of its suppliers to reuse corrugated boxes up to three times.

Northeast Utilities developed a program to eliminate unwanted bulk mail, which is a significant component of the company's office waste. By instituting an employee education campaign and providing employees with cards to send to vendors requesting that their names be removed from mailing lists, Northeast Utilities reduced third-class (bulk) mail by 39,000 pounds and advertising by 3,000 pounds in 1994 alone.

Several utilities found an additional way to reduce paper usage by moving to electronic purchasing and billing systems. The Southern Company, for example, electronically obtains price quotes from vendors, saving the utility $120,000 per year in avoided administrative costs. This paperless system shortens the purchasing process and helps The Southern Company conserve over 600 pounds of paper per year. PSE&G reduced paper consumption by establishing an electronic data interchange system to receive supplier invoices electronically. Other WasteWi$e partners including Illinois Power, Detroit Edison, and The Southern Company are also exploring ways to bill their customers electronically.

Vendor Consolidation

In an effort to streamline operations, improve efficiency, reduce waste, and lower operating costs, several utilities are consolidating the number of vendors with whom they work. PSE&G, for example, was accustomed to using over 85 suppliers. Working with this number of vendors increased the incidence of waste caused from expired products, duplicate items, and oversupply. The utility now uses only six suppliers.

Factors That Impact Waste Reduction

Utilities may want to consider the following issues when considering fleet maintenance and administrative office waste reduction programs:

- **Have all means of recycling and reuse for fleet maintenance supplies been explored?** Remember, oil and antifreeze can be recycled, and tires can be retreaded. Recycled, rather than virgin, fleet materials can be purchased from vendors and suppliers. Look for other innovative ways to help extend the life of fleet materials while not jeopardizing fleet safety.
- **Look for ways to reduce or eliminate paper waste streams, even if they are currently being recycled.** Even if utilities have an active office paper recycling program, they can still find ways to reduce the amount of paper that ends up in their recycling bins. They can promote the use of electronic mail and electronic data interchange systems within the utility. They can also institute a double-sided copying policy and help employees reduce the amount of junk mail they receive and ultimately throw away.

CONCLUSION

Many factors impact the success of solid waste reduction campaigns, many of which have little or nothing to do with a utility's investment in these programs. Utility solid waste and recycling coordinators often have little control over factors:

- Size and geographic location of the utility's service area.
- Existence of local recycling and reuse markets.
- Organizational structure of the utility.
- Amount of staffing support dedicated to waste reduction efforts.
- Capital investment resources available to assist with solid waste reduction.
- Warehouse and storage space constraints.

Though all the utilities studied in this report took different approaches to reducing their solid waste, many faced some of the same constraints listed above. In spite of the constraints, all had at least one success story to tell. The most successful solid waste programs shared several components. They:

- **Used a comprehensive approach to solid waste reduction.** While beginning with, and expending the most resources on, managing their largest or most profitable waste streams, successful utilities looked for ways to reduce waste in all of their function areas: production, distribution, transmission, warehouse, and administrative offices.
- **Included both large and small waste streams.** No waste stream is too small. Waste reduction opportunities exist for transformers, as well as gloves, spray cans, or junk mail.
- **Made waste reduction profitable.** Sometimes this means donating materials and/or finding outside groups to partner with to reduce costs.
- **Included employees in waste reduction campaigns.** Many of the utilities developed "green teams" comprised of employees from different function areas. These employees not only help identify areas where waste reduction is needed, but they also help implement the programs. Utilities engaged employees through signage, contests, special events, newsletters, personalized recycling boxes, or promotional items like reusable coffee mugs. They also provided training and/or tools to assist employees with their waste reduction efforts. Recognizing employees for their waste reduction achievements and notifying them of campaign successes can help ensure that employees stay involved.
- **Tracked and measured results.** Not all of the utilities established sophisticated data collection systems to track waste reduction efforts, but all of them made a conscious effort to record reductions and to equate these reductions to either landfill cost savings or recycling and reuse income.
- **Shared solid waste reduction success with management and shareholders.** Solid waste and recycling achievements should always be a component of utility shareholder reports.
- **Engaged top management support.** Sometimes this support comes in the form of additional dollars to invest in staff or equipment to facilitate waste reduction. Most of the time, however, management support is expressed in the authorization to aggressively pursue ways to reduce utility solid waste and its associated disposal and purchasing costs.
- **Consolidated or centralized supplies and recyclables where possible.** The greatest efficiencies and reductions are achieved in those utilities where it is cost effective to centralize storage and collection activities.
- **Looked first for in-house reuse opportunities before selling, donating, or landfilling material.** Employees appreciate the offer of valuable materials that would otherwise be thrown away. Such giveaway programs have the dual benefit of boosting employee morale in addition to waste reduction.
- **Tried various approaches to make waste reduction profitable.** Persistence helps make waste reduction successful even if initial efforts achieved limited success.

APPENDIX

WASTEWI$E UTILITY PARTNER PROFILES

Baltimore Gas & Electric Company (BGE)

Fuel source: BGE's fuel mix is 39 percent nuclear, 58 percent fossil, and 3 percent hydro.

Facilities: BGE operates 10 electric power plants.

Generating capacity: 5,938 megawatts installed.

Service area: BGE's electrical service area covers 2,300 square miles. Its natural gas lines cover 617 square miles.

Customers: BGE serves approximately one million residential, commercial, and industrial customers. It provides natural gas service to more than 500,000 customers.

Employees: Approximately 7,000.

Environmental policy: To have a business environment where environmental issues are routinely considered in the strategic decision-making, business planning, and day-to-day operations of the company.

To prevent pollution and reduce waste through integration of cost-effective programs into planning and daily operations.

To have effective environmental performance measurement and feedback directed toward continuous improvement of environmental management systems and results.

To have more effective two-way communications with BGE stakeholders regarding environmental management and performance.

Innovative Waste Reduction Activities

Education and Measurement

Employee recognition. BGE has a corporate commitment to pollution prevention and waste reduction efforts. One of the company's environmental pledges is to encourage employee awareness. To support this pledge and recognize employees' contributions to environmental efforts, BGE established two award programs: an Employee Recognition Award Program (ERAP) to reward employees for identifying cost saving efforts, and a Results Incentive Awards (RIA) program. Both programs incorporate environmental efforts into their screening criteria. BGE also implemented a corporate pollution prevention plan to increase employee awareness.

In 1995, for example, at the C.P. Crane power plant, the Plant Labor Group received an RIA program goal to reduce solid waste disposal costs from 1994 levels. By reducing costs by 7½ percent, or about $3,000, the Plant Labor Group would earn an award equal to ½ percent of their salary. The payout would double if the group reduced waste disposal costs by 15 percent, or about $6,000. The facility general supervisor created a spreadsheet to track the goal and reported progress to the group monthly. The station labor group reduced solid waste by 36 percent and saved the station nearly $13,000 in disposal costs. The group achieved this goal by waste reduction and recycling activities. The incentive program brought results, since certain individuals had responsibility and ownership of the goal.

Measurement. In an effort to better manage its environmental programs, BGE began to measure its solid waste reduction progress in 1994. Toward this end, BGE decided to use the Electric Power Research Institute's Accounting Software Application for Pollution Prevention (ASAPP) to better track waste generation and management. BGE began using

ASAPP as a tool to help establish a centralized, systematic way to collect and maintain waste reduction data. The waste accounting software integrates waste management information from plant and support personnel, manifests, shipping papers, and invoices. As a result, BGE is able to identify waste streams and management costs with the most room for improvement.

Generating Stations and Distribution

Coal ash recycling. BGE does not landfill any ash because they are able to find reuse alternatives, such as using ash as a replacement for ready-mix cement. BGE has used ash for structural fill in highway projects and for the construction of a light industrial park. BGE uses ash for flowable fill, such as backfill around gas lines. BGE also sells slag for sand blasting material.

Porcelain. BGE strips the metals from porcelain insulators, reuses a portion of the metals in their operations, and uses the porcelain for aggregate. By reusing metal in their operations, BGE saves $2 million per year.

For More Information, Contact:

Greg Gunzelman, Environmental Scientist
Air & Waste Management Unit
Environmental Section
Baltimore Gas & Electric Company
7609 Energy Parkway, Suite 101
Baltimore, MD 21226
410 787-5195 (Phone)
410 787-5199 (Fax)

Concrete and soils. BGE recycles concrete from construction and demolition operations, and concrete curbs from gas pipe installations. A contractor turns the concrete into aggregate for road bed construction purposes. Soils excavated from gas pipeline expansion and repair projects are screened and reused for backfill. BGE's Gas Engineering saves approximately $400,000 annually from soil reuse.

Florida Power Corporation (FPC)

Fuel source: Coal, oil, nuclear, and natural gas.

Facilities: FPC operates more than 50 facilities, business offices, and plants.

Generating capacity: 7.3 million kilowatts.

Service area: FPC's electrical service area covers more than 20,000 square miles.

Customers: FPC serves more than 4 million customers in 32 counties.

Employees: Approximately 4,600.

Environmental policy: Florida Power believes that environmental responsibility goes beyond compliance with laws and regulations. The utility is committed to providing energy as efficiently as possible, while reducing waste and conserving resources.

Innovative Waste Reduction Activities

Education and Measurement

Community education efforts. FPC participates in a variety of county and city-sponsored functions that feature environmental education. On Earth Day, employee volunteers educated school children and their families on the company's environmental philosophy and best management practices.

Solid waste consulting. FPC has performed waste audits and trained more than 50 retail customers and schools on the company's paper recycling program. FPC also provides waste disposal services for local governments and stresses the importance of recycling to its vendors and contractors.

Generating Stations and Distribution

Coal ash recycling. FPC facilitiates the reuse of nearly all of its fly ash into various concrete products. More than 400,000 tons of fly ash were reused in 1996.

Poles. FPC donates concrete poles to the Pinellas County artificial reef program. Since the program began, more than 500 tons of concrete have found new life in the Gulf of Mexico. The artificial reef program provides habitat for many species of fish and vegetation.

Streetlight refurbishment. FPC began remanufacturing luminaries in January 1996. The company contracted with a local nonprofit organization to clean, test, and replace bulbs, photo cells, globes, and light starters where feasible. Approximately 5,000 luminaries were remanufactured in 1996. With each remanufactured luminary used, the company saves between $40 and $100 depending on the type replaced.

Donation of materials. FPC donates used rubber lineman gloves to the Mote Marine Lab, the Florida Aquarium, and the Suncoast Seabird Sanctuary. The company also donates used rubber blankets to the Wildlife Rescue Rehabilitation Center and used three-ring binders to underprivileged kids and their teachers at Project Headstart.

Reuse of shop rags. FPC washes and reuses shop rags on site, which cuts rag consumption in half over a 3-year period.

Investment Recovery and Recycling

Wood Reuse Program. At FPC, broken pallets that are no longer usable are picked up by local wood recyclers and converted into new, reusable pallets. In addition, wood reels are stripped of wire, dismantled, and reassembled for sale as new reels.

As a result, the company conserved approximately 197,000 pounds in one year.

Steel recycling. FPC recycles over 2 million pounds of steel annually.

Recycling used wire. FPC sends all of its used wire and nonperforming transformers to a metal recovery facility where a cable chopper and burner processes materials into high grade marketable metals.

For More Information, Contact:

Jennifer Waggoner
Florida Power Corporation
3201 34th Street
P.O. Box 14042-H2G
St. Petersburg, FL 33733
813 866-5395 (Phone)
813 866-4926 (Fax)

Fleet Maintenance

Antifreeze reuse. Purchase of antifreeze has been reduced by filtering contaminants from used antifreeze and returning it back to service.

General Office

Buying recycled products. FPC has implemented a closed-loop buy-recycled policy. Office paper collected is recycled into janitorial products and office paper purchased by the company. Whenever possible, FPC purchases items made from recycled materials and stresses the importance of take-back programs with vendors.

Buying remanufactured products. FPC purchases toner cartridges remanufactured from its used cartridges.

Paper recycling. FPC recycles nearly 1 million pounds of paper annually. This saves the utility approximately $60,000 in avoided disposal costs each year and generates revenue from the sale of paper and cardboard.

Florida Power & Light (FP&L)

Fuel source: FP&L's energy mix is 31 percent gas, 25 percent nuclear, 19 percent oil, 18 percent purchased power, and 7 percent coal.

Facilities: FP&L generates power at 34 major generating units and non-utility sources.

Generating capacity: 18,608 megawatts.

Service area: FP&L's service area covers 27,650 square miles.

Customers: FP&L provides service to more than 3.5 million customers.

Employees: Approximately 11,000.

Environmental policy: FP&L pledges to comply with the spirit and intent as well as the letter of environmental laws, regulations, and standards; incorporate environmental protection and stewardship as an integral part of the design, construction, operation, and maintenance of their facilities; encourage the wise use of energy to minimize the impact on the environment; communicate effectively on environmental issues; conduct periodic self-evaluations, report performance, and take appropriate actions.

Innovative Waste Reduction Activities

Education and Measurement

Incentive programs. FP&L builds environmental goals and incentives into employee performance evaluations.

Employee education. FP&L communicates recycling statistics to employees via e-mail and other internal communication media. The utility also posts recycling awareness signs in its service centers.

Generating Stations and Distribution

Remanufacture of luminaries. FP&L examines luminaries for defective bulbs, photo cells, and loose wiring. If the bulbs and photo cells are still under warranty, then the manufacturer credits FP&L for the defective parts. If bulbs still have some useful life, the company sells them through an investment recovery program to developing countries at a reduced price. Refurbished luminaries are put back into the inventory system for reuse. With the luminary recovery program, FP&L has generated $145,000 in revenues from fixtures which failed under warranty and $26,000 through items sold in the investment recovery program.

Transformers. FP&L evaluates and refurbishes transformers. For those not salvageable, FP&L dismantles them and sells the scrap metal. FP&L refurbishes more than 4,000 transformers annually.

Investment Recovery & Recycling

Centralized collection for recyclables. FP&L developed a centralized collection system for recyclables, netting more than $7 million in revenues in 1995. Materials are collected daily from FP&L's service centers and sent to a centralized recovery facility for separation and storage. Materials that can be refurbished, such as pole line hardware, fuses, and porcelain insulators, are cleaned and redistributed to service centers. Recyclables, such as scrap metals and plastic conduits, are allowed to accumulate in the recovery facility until there is enough of a product to sell.

Metal recycling. In 1995, FP&L collected over 10.5 million pounds of reclaimed metals.

Refurbishing. FP&L refurbishes materials, such as pole line hardware, fuses, and porcelain insulators. By refurbishing pole line hardware, FP&L saved $218,492.

Wood reuse and recycling. FP&L returned nearly 4,500 reels for refurbishment. In addition, FP&L collected over 5 million pounds of scrap wood in 1995. The company has a chipper on site to turn the scrap wood into mulch.

Shrink wrap recycling. FP&L recycled 21,500 pounds of shrink wrap in 1995. It collects and bales the shrink wrap.

Scrap wire processing. FP&L processed over 3.7 million pounds of wire and cable in 1995. Aluminum and copper are separated from the wire insulation and ferrous metals.

Aerosol cans. FP&L processed over 18,000 aerosol cans in 1995. It purchased a can crusher, and within 2 months the avoided disposal costs paid off the investment.

For More Information, Contact:

Scott Freeburn, Recycling Coordinator
Florida Power & Light
2455 Port West Boulevard
Riviera Beach, FL 33407
561 845-4924 (Phone)
561 845-3308 (Fax)

Fleet Maintenance

Lead acid battery recycling. In 1995, FP&L shipped 186,000 pounds of lead acid batteries for recycling.

General Office

Working with suppliers. FP&L is piloting "take-back" and "just-in-time" inventory programs with its suppliers. FP&L also received a National Leadership award from the U.S. Conference of Mayors for collecting and recycling 982 tons of office waste material.

Illinois Power Company (IP)

Fuel source: Coal generates 81 percent of the electricity supplied by IP. Nuclear energy accounts for an additional 18 percent. The remaining fuel sources include natural gas and oil.

Facilities: Illinois Power operates six generating facilities.

Net Generating capacity: 4,146 megawatts.

Service area: IP supplies 16 separate service areas.

Customers: IP supplies electricity to 550,000 customers and natural gas to 390,000 customers.

Employees: Approximately 3,635.

Environmental policy: IP's environmental policy states that all operations are to be in compliance with environmental regulations and laws. Operating within compliance is the responsibility of all employees.

Innovative Waste Reduction Activities

Education and Measurement

Employee education and recognition. IP developed an environmental awards program to both increase corporate environmental awareness and recognize individuals or teams that contributed to the fulfillment of the company's environmental goals. The company determines awards based on the merit of the activities presented and does not limit the number of awards given in any one year.

Generating Stations and Distribution

Coal ash recycling. IP recycles ash at the Baldwin power plant, its largest facility. A recycling company (Gran-Grit, Inc.) processes the bottom ash on site. The company uses the ash as filler in cement, roofing shingles, blasting grit, and ice control on road surfaces. The company recycles 500,000 tons of coal ash annually. IP has not found a market for ash generated at other sites. A key issue for the company is avoiding the cost of building a new ash storage pond.

Remanufacture of transformers, meters, and luminaries. IP rebuilds transformers, meters, and luminaries to extend their useful life. A contractor routinely visits all 16 service areas to rebuild transformers until they are no longer usable. When it is no longer cost-effective to rebuild the transformers, the contractor sells the metal for scrap. This process saves money, since IP does not have to purchase all new equipment. In addition, the company rebuilds all meters on site. The company sends out luminaries to be rebuilt and buys back "new" luminaries from the same company. In 1995, IP shipped 258 containers of street lamps for remanufacture.

Require suppliers to use reusable transport packaging. In suppliers' contracts, the company requires that materials be delivered in recyclable or returnable containers. For example, boiler treatment chemicals are now delivered in reusable aluminum tote bins instead of 55-gallon plastic drums. The practice eliminated the use of 30 plastic drums per year.

Composting organics caught in intake valves. Each winter, small fish dieoff as a result of cold stress and flow into the Clinton Power Station's intake screens. Rather than discard the fish in a landfill, IP began composting trapped organics with wood chips. The company composted 450,000 pounds of organic material in 1994.

Concrete and asphalt recycling. IP reuses or recycles concrete and asphalt resulting from the installation and replacement of new electric and gas lines. The company used the recycled concrete to build a driveway at one station. Whenever the company cannot use the materials internally, it gives the material to other recyclers.

Investment Recovery and Recycling

Centralized collection for recyclables. IP recently moved to a centralized collection system for many recyclables. After delivering supplies to service centers, the company's fleet backhauls certain recyclables (such as aluminum, copper, iron, and steel) to a centralized facility for separation and storage. IP recycled a total of 1.23 million pounds of nonferrous metals, generating $350,000 in 1995. Paper, wood, and other materials are usually recycled on a local basis.

For More Information, Contact:

Roger Cruse,
Environmental Professional Illinois Power
500 South 27th Street
Decatur, IL 62525-1805
217 424-7376 (Phone)
217 362-7649 (Fax)

Fleet Maintenance

Antifreeze reuse. The Wood River Power Plant recycled and reused nearly 30 55-gallon drums of antifreeze from maintenance vehicles for use in heat exchangers, saving more than $12,000 in disposal and drum purchasing costs.

Northeast Utilities Service Company (NU)

Fuel source: Nuclear, hydropower, natural gas, and coal.

Generating capacity: 7,800 megawatts.

Service area: NU, serves three states, covering 11,000 square miles stretching from the Long Island Sound to the Canadian border.

Customers: NU companies serve more than 1.6 million customers.

Employees: Approximately 10,000.

Environmental policy: In conducting its business and operating its facilities, NU is committed to protecting the environment. Achievement of this objective requires that employees at all levels in the organization understand and comply with environmental regulations related to their areas of responsibility. This means strict adherence to both the letter and spirit of state and federal laws for the protection of the environment.

Innovative Waste Reduction Activities

Generating Stations and Distribution

Fly ash and bottom ash recycling. NU sold 93 percent (27,500 tons) of its fly ash for reuse as concrete filler, saving $579,000 in 1995. The bottom ash (sand blasting grit) is bagged on site; then it is sold and used to clean paint and rust off of antique furniture. In 1995, NU reused more than 58,000 tons of this material, saving $2.6 million in avoided disposal costs.

Transformers. NU works with a company that takes apart the transformers, cleans the parts, and remanufactures the product. When the transformers reach the end of their useful life, the scrap materials are recycled.

Poles. NU sold more than 6,000 feet of wood poles for lumber. The buyer uses the poles to create beams and posts. This action saved NU $5,000 in avoided disposal costs. NU is exploring a joint effort with Southern New England Telephone to increase reuse of wood poles.

Organics. NU is researching the use of fish weirs to help fish safely bypass hydroelectric dams. The company hopes that the project will dramatically increase the safe passage of shad and salmon downstream around NU dams. If successful, the project could be replicated at other utilities.

Investment Recovery and Warehouse

Metal recycling. NU generated $500,000 by recycling 4 million pounds of metals in 1995.

Wood pallets. While some pallets are refurbished on a local basis, many pallets are chipped for recycling. In 1995, NU recycled 120,000 pounds of wood pallets saving more than $2,000.

Cable reels. NU refurbished 240,000 pounds of cable reels in 1995, saving $12,000 in avoided disposal costs.

Fleet Maintenance

Conditional maintenance program. NU routinely tests oil from maintenance and service vehicles prior to changing it. The company has found that, for most vehicles, the oil does not require changing until 5,000 or 6,000 miles. This activity has enabled the company to essentially double the mileage

between servicing. In 1995, the company conserved 1,000 gallons of oil through this practice and saved $54,000 in purchasing and disposal costs. A single vendor recycles the oil, and NU purchases back the oil from the same vendor.

General Office

Unwanted mail reduction. NU developed an aggressive program to combat unwanted bulk mail, estimated at 35 to 50 percent of all mail received. The company supplies employees with kits to remove their names from mailing lists and returns bulk shipments if they are not wanted. In 1995, these actions resulted in reductions of 42,000 pounds (a 50 percent reduction) and saved $2,000 in avoided disposal costs.

Working with suppliers to reduce waste. NU is consolidating the number of vendors they work with, thereby streamlining operations and reducing waste.

Buy-recycled measurement. NU, in conjunction with its supplier, developed a system to track recycled-content purchases. This system is available to all the suppliers' customers.

Donation programs. NU donates office furniture and equipment (such as computers), that are no longer needed, to nonprofit groups or schools. In addition, participants indicated that old furniture or equipment might be sold to employees and/or the public. Unusable computers are sold to a scrap vendor, who is able to resell some circuit boards.

For More Information, Contact:

Rick Larsen
Senior Scientist, Environmental Programs
P.O. Box 270
Hartford, CT 06141-0270
860 665-5326 (Phone)
860 665-3777 (Fax)
larsera@nu.com (Email)

Pacific Gas and Electric (PG&E)

Fuel source: Natural gas, hydro power, nuclear, and geothermal.

Facilities: PG&E operates 1,500 facilities.

Generating capacity: 102 billion kilowatt hours.

Service area: PG&E's service area covers 75,000 square miles.

Customers: Approximately 4,463,000.

Employees: Approximately 22,000.

Environmental policy: PG&E's environmental policy states that "PG&E is committed to a clean, healthy environment. We will provide our customers with safe, reliable, and responsive utility service in an environmentally sensitive and responsible manner. We believe that sound environmental policy contributes to our competitive strength and benefits our customers, shareholders, and employees by contributing to the overall well-being and economic health of the communities we serve."

Innovative Waste Reduction Activities

Education and Measurement

Life cycle cost-analysis. For 1997, PG&E is conducting a facility-scale life cycle cost-analysis (LCCA) at a medium-sized customer service center in Contra Costa County. The assessment is examining all material inputs and solid waste stream outputs with the goal of using LCCA techniques to reduce waste disposal costs.

Solid waste consulting. PG&E works with some of its customers on paper recycling and was also one of seven founding members of the Recycled Paper Coalition, a voluntary effort to reduce waste by purchasing recycled content paper and encouraging corporate paper recycling.

Employee education. PG&E's Environmental Quality Statement and other environmental materials are now included throughout the company's core curriculum training. In 1995, more than 3,500 employees attended these courses.

Environmental report. PG&E produced its 7th corporate environmental report in 1996, which was distributed to the Board of Directors, managers, employees, and external groups.

Measurement. PG&E is working with its haulers to collect baseline data on its solid waste streams. The company plans to reduce solid waste generation by 10 percent in 1997 at 10 pilot facilities. PG&E is developing management systems to track progress.

Generating Stations and Distribution

Transformer remanufacture and recycling. PG&E built a dedicated facility for its transformer remanufacture and recycling program. In 1996, PG&E processed nearly 30,000 transformers. Of these, more than 8,000 were remanufactured and placed back in service. Nearly 20,000 were recycled, yielding 4,400 tons of metals worth nearly $500,000. The avoided disposal costs were approximately $4.4 million.

Poles. PG&E experimented with fiberglass poles due to damage caused by woodpeckers. While wood poles last only 6 months due to woodpecker damage, fiberglass poles are guaranteed to last for 80 years. PG&E expects that each fiberglass pole used will replace 160 wood poles (2 poles per year over 80 years). To date, PG&E has installed approximately 100 fiberglass poles, potentially conserving 16,000 wood poles. Given that wood poles cost $400 each and fiberglass poles cost $900 each, PG&E could potentially save more than $6,000,000 in avoided purchasing costs over 80 years. When fiberglass poles meet the company's performance requirements, PG&E will regularly use them wherever woodpecker problems exist. Fiberglass poles are also two-thirds lighter than wood poles, making them particularly valuable for manual installation in remote areas.

Reuse of insulators. PG&E attempts first to reuse insulators in-house. Unusable insulators are then listed with CALMAX, an area materials exchange.

Soils. PG&E processes and reuses 65 to 75 percent of its trenching soil in a backfill recycling plant.

Investment Recovery and Warehouse

Wood reuse and reduction. At PG&E, pallets that are no longer usable are picked up by local furniture makers. In addition, PG&E is investigating the use of plastic reels. The plastic reels would be more durable and would last longer than their wood counterparts, allowing them to be reused more often.

Miscellaneous. PG&E's Investment Recovery Team salvaged and recycled $4.1 million in materials in 1996. The volume recycled increased 22 percent from 1995 for a total of 15,500 tons, while the dollar value increased 7.6 percent. PG&E replaced 1,300 miles of power line, 18,000 electrical transformers, 46,000 gas meters, 37,000 electric meters, hundreds of miles of plastic natural gas distribution piping, and thousands of computers.

Aerosol containers. A new handling process, emphasizing sorting and returning usable materials and investigating alternative point delivery systems, should reduce disposal costs of the 40-ton waste stream by 25 percent, or $35,000 annually.

Dry-cell batteries. Increased use of rechargeable alkaline batteries will reduce disposal costs for the half-million battery waste stream by $40,000 annually.

Fleet Maintenance

Recycling used motor oil. PG&E recycles its used motor oil, rerefines it, and uses it in its fleet. This activity saves the utility $20,000 and conserves 800,000 pounds of waste annually. More than 4,700 barrels were reprocessed in 1996, a 6 percent increase over 1995.

For More Information, Contact:

Peter Melhus, Director
Corporate Environmental Quality
Pacific Gas & Electric Company
123 Mission Street, H21A
P.O. Box 770000
San Francisco, CA 94177
415 973-5782 (Phone)

Antifreeze reuse. The 80 tons generated annually in the 80 maintenance garages will be recycled onsite and will reduce the waste stream by 90 percent (72-ton reduction), resulting in an annual savings of $30,000 to $40,000.

General Office

Working with suppliers. PG&E has formulated supplier evaluation criteria that include environmental factors among those considered when selecting suppliers of products and services. In addition, in 1994 the utility requested that its largest supplier of envelopes begin reusing the shipping cartons for billing envelopes an average of three times before they are too worn for use. This action reduced the amount of packaging each year by two-thirds, or 60,000 pounds.

Buying recycled products. PG&E uses recycled content paper for bill inserts, employee newsletters, environmental reports, billing envelopes, annual reports, proxy statements, monthly bills, stationery, and business cards. In 1995, the company purchased over 140,000 tons of recycled content paper. More than 86 percent of all paper products purchased by the utility contain at least 10 percent postconsumer recycled fibers. In 1996, the company increased dollars spent on the purchase of recycled office products by 5 percent.

Pennsylvania Power and Light Company (PP&L)

Fuel source: Nearly two-thirds of electrical energy comes from burning coal.

Facilities: PP&L operates five coal-fired plants with 14 units, one nuclear plant with two units, two hydroelectric units, and one unit that has the capacity to burn either oil or natural gas.

Generating capacity: 6,600 megawatts.

Service area: PP&L provides electrical service throughout a 10,000 square mile area.

Customers: PP&L supplies electricity to 1,200,000 customers.

Employees: Approximately 6,500.

Environmental policy: One of PP&L's corporate objectives for 1996 is to achieve at least $1 million in savings through waste prevention activities. To help achieve this goal, PP&L launched a "Taking Care of the Future Today" campaign with the message that good corporate environmental performance comes from the actions and decisions made each day by employees.

Innovative Waste Reduction Activities

Education and Measurement

Obtaining management support. Obtaining top management support is a key to a successful waste reduction program. PP&L's Corporate Environmental Policy Committee consists of management representatives that review their company's environmental direction and set policy. The goal is to develop a cultural attitude for environmental responsibility equivalent to that of safety, quality, and productivity.

Employee Incentive Award Program. PP&L's employee incentive award program pays cash bonuses to all employees for achievement of annual corporate goals, including an environmental goal from 1993-1995. The Environmental Goal, established by the Solid Waste Team, consisted of a number of waste prevention, reuse, and recycling targets. The overall goal was to achieve a combined average of 100 percent or higher on each of the individual targets by year end. The environmental goals for 1995 included reduce paper use by 15 percent, reduce trash disposal by 10 percent, recycle 1,000 tons of paper and cardboard, and recycle 2,500 tons of wood. Performance on the corporate environmental goal was measured and reported to employees monthly. To promote competition between facilities, waste generation and recycling totals were reported. PP&L replaced these individual targets with a 1996 goal of at least $1 million in savings through waste prevention activities.

Generating Stations and Distribution

Coal ash recycling. PP&L mixes hydrated lime with its fly ash to create Stabil-Fill. PP&L uses Stabil-Fill to backfill former coal mines, as ready-mix concrete, and as fill for construction projects. At one PP&L facility, the use of Stabil-Fill saved an estimated $700,000 in avoided costs for purchasing fill material and reduced the need to build new ash disposal units, which would have cost over $50 million. For offsite construction projects, Stabil-Fill has been used for the expansion of an airport runway and backfill at industrial sites. In the near future, it will be used for local road construction.

Wood Reuse Program. In 1995, PP&L reused or donated 1,852,000 pounds of poles. PP&L encourages the reuse and recycling of poles by the

company, employees, and customers. A company incentive program encouraged employees to find ways to reuse, donate, and recycle poles, and track giveaways. Wooden poles may be used for gates, barriers, fencing, and landscape purposes. Used poles that cannot be reused or recycled are chipped and burned for energy purposes.

In 1995, PP&L reduced pallet purchases by 193,300 pounds and sold almost 300,000 pounds of cable reels for refurbishing. The company works with vendors on the quality of their pallets to improve the potential for reuse (e.g., requesting standard sizes and hardwood materials). It discourages the use of "junk" or "one-time use" pallets. PP&L attempts to reuse pallets wherever feasible and allows employees to take home excess pallets to create compost bins. It publishes a listing of pallet and reel refurbishers and mulching facilities.

For More Information, Contact:

Larry LaBuz, Project Engineer
Environmental Management
Pennsylvania Power & Light Company
2 North Ninth Street
Allentown, PA 18101
610 498-6238 (Phone)
610 498-6204 (Fax)

Fleet Maintenance

Antifreeze reuse. Employees developed a filter to purify antifreeze. They collect antifreeze in drums, filter off oil and contaminants, and reuse it. Any unusable antifreeze is recycled by a vendor.

Public Service Electric and Gas Company (PSE&G)

Fuel source: Coal and natural gas.

Facilities: 16 fossil (PJM facilities).

Generating capacity: 8,015 megawatts.

Customers: Approximately 1,900,000.

Employees: Approximately 11,000.

Environmental policy: PSE&G is committed to 12 environmental principles to foster a cleaner, healthier environment. These principles include conducting all operations to: meet and/or exceed all applicable environmental laws and regulations; promote environmental awareness; prevent pollution at the source, minimize waste generation, and recycle materials; and commit resources to support these principles.

Innovative Waste Reduction Activities

Education and Measurement

Incentives in performance evaluations. PSE&G encourages managers and staff to achieve environmental goals by including such provisions in employee performance evaluations. Company officers must achieve environmental goals in their divisions to receive base raises. They receive incremental raises for exceeding the goals.

Waste accounting. PSE&G uses a database program to track waste management costs. The system enables PSE&G to track labor, transportation, rental, taxes, and disposal costs for all waste generated by the company. The system helps the company track waste reduction benefits and identify high-cost activities and cost savings.

Generating Stations and Distribution

Coal ash reuse. PSE&G established a goal of reusing 100 percent of its coal ash. The company contracts with firms who find markets for both low- and high-quality ash. Some uses for the ash include anti-skid material, landfill cover, backfill material, buffering agents, and concrete construction material.

Investment Recovery and Warehouse

New technology for wood pole reuse. PSE&G initiated a pilot program with a Louisiana firm to convert utility poles into useful building materials using a combination of chemical and biological processes. If successful, the process will enable PSE&G to reuse between 6,000 and 8,000 tons of wood poles annually (approximately 10,000 poles).

Commingled recycling. To achieve its ambitious recycling goal, PSE&G uses a materials recovery facility that processes recyclable materials, such as paper, wood, glass, and construction debris. The company finds that commingled recycling collection saves time devoted to separating materials. Not only does this process help PSE&G exceed state recycling targets (PSE&G recycled 94.5 percent of its nonhazardous waste); it also helps save money in avoided disposal costs. In 1995, PSE&G saved $500,000 in avoided disposal costs through the commingled recycling program.

General Office

Streamline suppliers. PSE&G consolidated the number of suppliers it uses from 85 companies to only six. Doing so enabled the company to eliminate several problems, such as oversupply, duplication, and

waste stemming from expired product. PSE&G requires remaining suppliers to meet a 10 percent waste reduction target. The utility is also piloting "take-back" and "just-in-time" inventory programs with these suppliers.

Solid waste consulting. PSE&G has offered its waste management expertise to one of its customers, Liberty State Park (a waste-to-energy facility), in New York. PSE&G helped the company to develop purchasing specifications for waste management services. PSE&G is also establishing a computer demanufacturing program at the PSE&G resource recovery facility.

Electronic purchasing and billing. PSE&G is pilot-testing an electronic data interchange system to electronically bill both its commercial and residential customers. This action would eliminate return envelopes and checks. PSE&G has implemented an electronic purchasing program with its suppliers.

For More Information, Contact:

Donald McCloskey, Manager
Coal Ash and Solid Waste Business
80 Park Plaza, MC 23C
Newark, NJ 07102-4194
609 599-7018 (Phone)
609 394-5980 (Fax)

WASTE WI$E

REGISTRATION FORM

☐ My company is ready to become a WasteWi$e Member.
(Please complete section A and B)

☐ I would like more information about the program.
(Please complete section A.)

SECTION A

Company Name: _____

Company SIC Code: _____

Check if a ☐ subsidiary or
☐ division. Name of parent company (if applicable): _____

Principal Contact: _____ Title: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone Number: _____ Fax: _____

SECTION B

My company is ready to become a Waste Wise member!
Please send a membership packet.

Facilities to be included in initial waste reduction efforts:
(e.g., corporate headquarters only, regional facilities, all plants)

_____

Approximate total number of employees in these facilities: _____

How did you hear about the WasteWi$e program?

- ☐ Periodical/Publication (Name)
- ☐ Workshop (Sponsor)
- ☐ Trade Association (Name)
- ☐ Other EPA Program (Name)
- ☐ PSA/Advertisement
- ☐ Another Company (Name)
- ☐ Other (Specify)

Signature of Senior Official: _____

Print Name: _____ Title: _____

Date: _____

Email address: ww@cais.net
Or, fax to WasteWi$e at 703-308-8686
For more information call the WasteWi$e helpline at 1-800-EPA-WISE

WASTE
WI$E

PLEASE
PUT
STAMP
HERE

WasteWi$e (5306W)
U.S. Environmental Protection Agency
401 M Street, SW.
Washington, DC 20460