DATE ISSUED: January 8, 2003 REPORT NO: 03-006

ATTENTION: Natural Resources & Culture Committee
Agenda of 7January 15, 2003

SUBJECT: Electronic Waste

SUMMARY

Issues

1) Should the Natural Resources & Culture Committee direct City staff to develop: a) guidelines, in conjunction with San Diego Data Processing Corporation, for the procurement, use, and end-of-life management for electronic equipment purchased by the City; and b) a pilot project for the collection, dismantling, and recycling of computer monitors and televisions?

2) Should the Natural Resources & Culture Committee direct the Governmental Relations Department to support legislative and regulatory solutions which encourage comprehensive and innovative solutions to address electronic waste issues?

Manager's Recommendations

1) Direct City staff to develop: a) guidelines, in conjunction with San Diego Data Processing Corporation, for procurement, use, and end-of-life management for electronic equipment purchased by the City; and b) a pilot project for the collection, dismantling, and recycling of computer monitors and televisions.

2) Direct the Governmental Relations Department to support legislative and regulatory solutions which encourage comprehensive and innovative solutions to address electronic waste issues.

Other Recommendation – None

Fiscal Impact – Collection and recycling services will initially be funded via a $300,000 California Integrated Waste Management Board grant awarded to the City. New funding sources will be needed for the long-term management of electronic wastes.

BACKGROUND

New regulations are being adopted to classify certain types of high volume, low risk hazardous waste as universal waste. Universal wastes are items commonly found in business and household use and include computer monitors and televisions containing cathode ray tubes (CRTs), some consumer electronic devices (CEDs), consumer type batteries, mercury containing products, and lighting devices. Regulators believe relaxed controls will facilitate collection, encourage more recycling and reuse, and protect the environment.

Attached is a Universal Waste Fact Sheet containing examples of each universal waste type, statewide estimates of annual tonnage for recycling or disposal, proposed regulations, and compliance deadlines. While the fact sheet pertains to all items considered as universal waste, this report will focus only on a subset of universal waste, namely electronic wastes. As necessary, staff will return with information regarding the management of other universal wastes such as mercury containing products or fluorescent lights.

DISCUSSION

When tested, most CRTs exceed the regulatory threshold for lead and are identified as hazardous waste when discarded and not recycled. Waste CRTs are subject to regulations which went into effect August 3, 2001. Disposing of CRTs in the trash or to a municipal landfill is prohibited.

The diversion of CRTs from the municipal solid waste system for reuse and recycling will have multiple impacts. Diversion will reduce the amount of waste being disposed of in landfills and help protect the environment. However, the infrastructure to reuse and recycle CRTs along with the sources of funding to cover these costs is still poorly defined or not developed. The quantity of electronic wastes being generated is rapidly increasing and is creating several issues for the City as a business and as a provider of waste disposal services to its residents. Those issues include developing:

- State legislation to ensure funding is available to local governments;
- City policy for the procurement, use, and end of life management of electronic equipment; and
- The infrastructure for residential and business collection, recycling, and reuse.

1. Regulatory Changes

Last session, the California Legislature attempted to address the increasing cost to local governments associated with recycling discarded electronic equipment. Senate Bill 1523 (Sher), vetoed by Governor Davis, proposed an advanced disposal fee (ADF) on CRTs to help fund local government's electronic waste recycling costs. In his veto message, Governor Davis directed the California Environmental Protection Agency (Cal/EPA) Secretary to "take a leadership role in working with the Legislature, government, industry, and stakeholders to create a successful California electronic waste program."

In response to Governor Davis' challenge, Cal/EPA, the Department of Toxic Substances Control, and the California Integrated Waste Management Board (CIWMB) conducted a public workshop on November 25, 2002 to devise an innovative solution that challenged industry to assume greater responsibility for managing electronic wastes. To further this effort, Senator Sher recently introduced SB 20, declaring the Legislative intent "to ensure that funds are available to assist cities, counties, and recyclers of electronic wastes in developing programs to safely collect and recycle the hazardous materials contained in electronic wastes and to promote the refurbishment and reuse of electronic equipment for use by schools and nonprofit agencies."

Staff will monitor the progress of and provide input as the legislation is amended to identify the expected role for local government versus the role of industry in providing the services to safely collect, reuse, and recycle electronic wastes. Governor Davis stated in his veto message that he did not view the establishment of a state program to manage an ADF program for electronic equipment as "the most efficient or cost effective approach for California." Staff views an ADF as a potentially important part of the program to ensure that local government costs are covered.

2. Existing City Operations Electronic Waste Management System

Computers used in City operations are upgraded or replaced on an average of every three to five years. Used computers are turned over to Central Stores for internal redistribution or for sale at auction as surplus property. Central Stores received approximately 1,200 surplus computers from City departments last fiscal year. Surplus computer systems are also redistributed directly between City departments through the City Auditors Fixed Asset Management System (FAMIS).

Used City computers that are not reused internally are sold in bulk as surplus City property at public auction, or are donated. A total of approximately 1,300 used computer systems were sold at auction by the City last fiscal year. The City realized $32,000 from the sale of these computers. Central Stores maintains an inventory of higher end computer systems, Pentium II, 500mhz, 128mb of ram or above, for internal redistribution. The average system being sold at auction was a Pentium 166mhz, 8mb of ram, with a 15" monitor and no software or modem. Donations are dealt with on a case by case basis and are initiated/approved by City Council offices and the City Manager's Office.

The Information Technology Asset Lifecycle Management Process Focus Group, comprised of information management staff from various City departments, is evaluating a process to formalize the end-of-life management (i.e., redistribution, donation, auction, or recycling) of computers used by the City.

In the past, City Council stated its intent for the City to take a leadership role to promote recycling and gave its direction on the procurement and use of recycled products in Council Policy 100-14 Procurement: Recycling Products. Given the broad issues associated with electronic equipment, it seems prudent to develop a new policy to specifically address the City's management of electronic equipment. Any adopted policy or guideline would need to consider energy efficiency, materials efficiency, and toxics reduction issues. Like Council Policy 100-14, the new policy could direct that the standards used in City guidelines follow the more stringent of any State or Federal guidelines.

A useful template for consideration as a guideline is a document being developed by the State of California entitled "Guidelines for the Procurement, Use and End-of-Life Management of Electronic Equipment" (Guidelines). The October 7, 2002 draft is currently under review and the State anticipates finalizing the Guidelines in the Spring of 2003. The City could choose to adopt or adapt these Guidelines when they are finalized. Using these guidelines would help standardize the state-wide management of electronic equipment, minimize costs due to economy of scale, and minimize vendor confusion over multiple procedures.

3. Existing Residential and Business Electronic Waste Management System

a. Residential Drop-off

Limited infrastructure is currently available for households and businesses to recycle CRTs or other electronic waste. Although electronic waste is reported to be recyclable, only four locations within the City of San Diego accept CRTs for recycling at a cost of $0.40 to $0.60 per pound to the customer. CRTs from these recyclers are sent to one of two San Diego electronic scrap processors (IMS Recycling and RMD Technologies).

As shown on the table below, the estimated cost to recycle CRTs generated by households within the City of San Diego alone could be as much as $1.8 million per year, if the cost were $0.40 per pound.

Type of CRT	San Diego City Housing Units	% of population with one CRT	Lifespan of CRT	# of CRTs/yr	Tons of CRTs/yr (40 lbs/CRT)	Disposal Cost/yr @ $.40/lb
Computer Monitor	470,000	70%	5 years	65,800	1,316	$1,052,800
Television	470,000	98%	10 years	46,060	921	$736,800

Some thrift shops throughout San Diego accept a limited number of newer, used electronic equipment if they feel there is a suitable opportunity for resale. Otherwise, these potential donations are rejected, as thrift shops cannot afford the cost to recycle electronic waste.

CRTs are ultimately recycled through a glass-to-glass recovery process or at a lead smelter. The glass-to-glass recovery process takes CRT glass and prepares it to be made into CRTs again. The two U.S. glass-to-glass recovery facilities are located in Ohio and Pennsylvania. Two of the five lead smelters in North America that recycle CRTs are located in the U.S. (Minnesota and Missouri) and three are located in Canada (Quebec, Ontario, and British Columbia).

b. Community Collection Events

From January 2001 to January 2002, the City of San Diego held three electronic waste recycling events. These events were free to the participants and funded by the Environmental Services Recycling Fund. Environmental Services Department (ESD) staff and its contractor organized and supervised these events, and volunteers and City staff collected and packaged the waste for transportation.

The participation levels, tonnages, types of electronic waste collected, and costs have increased dramatically since the first event. Participation increased from 1,030 to 2,900 vehicles, and the total tonnage increased from 68 to 162 tons while the volume of CRTs collected increased from 29% to 47% of the total tonnage. Costs for recycling the CRTs collected fluctuated from $0.25 to $0.60 per pound.

Cost at future events will continue to fluctuate as the market continues to rapidly change. Since the last City event, the City's event vendor, Nxtcycle, has entered into agreements with a few manufacturers to subsidize some of the costs of collection and recycling of their products. To date, Nxtcycle has agreements with Sony, Panasonic and Sharp. However, with increased awareness and interest in recycling electronic waste, the overall funding needs will likely increase.

c. Abandoned Electronic Waste

Environmental Services Department collects approximately 60 CRTs each month from illegal dumps. Currently, these CRTs are being collected, palletized, and shipped to a recycler at a cost of $0.16 per pound, plus shipping charges of $250 per load. To date, the Environmental Services Department has incurred costs to recycle CRTs of $5,000 for CRTs abandoned at the Miramar Landfill (March to October 2002) and $17,000 for CRTs abandoned on the City rights-of-way (April to October 2002). Any electronic waste illegally disposed of on City property or within public rights-of-way is currently the financial responsibility of individual City departments.

4. Future Electronic Waste Management Using Grant Funding

Continuing to provide electronic waste collection services will require a new revenue source. In August 2002, the City, in partnership with the County of San Diego, received a one-time $300,000 CIWMB grant to provide cost-effective collection of electronic waste recycling from the residential sector. The City's application addressed several CIWMB priorities. The application proposed to establish a new program for the collection of electronic waste and to target underserved populations. This 30-month grant will be used for the recycling or disposal of CRTs collected at community cleanup events. These events provide service to residents in economically disadvantaged areas where the average annual income is generally below $25,000. To provide some economic relief to residents at large, the City will continue offering community collection services for all residents. With the changing regulations related to the permitting and operating of these services, City staff will continue to work with regulatory agencies to ensure the City and its vendors remain in compliance with new requirements.

Because the cost of recycling is extremely variable and its true cost is not known, the Environmental Services Department proposes to use a portion of the grant funds to evaluate various venues to manage electronic wastes by developing pilot projects to evaluate the feasibility of:

- Collecting and disassembling computer monitors and televisions to quantify the cost of disassembly and recycling and to determine the feasibility of recycling of CRT non-glass components;
- Conducting community cleanup events to include CRT pickup; and
- Conducting community collection event(s).

The first action the City will take with its CIWMB grant is to evaluate what type of collection and disposal contractual agreement will be the most economical. In addition, City staff proposes to collect and disassemble computer monitors and televisions from community cleanup events. Staff will quantify the cost of disassembly and recycling and to determine the feasibility of recycling CRT components and compare these costs to the costs to recycle intact units.

CONCLUSION

Adoption of the recommendations will encourage comprehensive and innovative solutions to address electronic wastes issues which create:

- Product stewardship
- Incentives to design products that are more environmentally responsible (i.e., less toxic and more recyclable)
- Defined roles and responsibilities of local governments, electronic and technology manufacturers, and consumers
- Financial capacity for local government responsibility
- Sustainable infrastructure to provide more cost-effective, environmentally and socially responsible services.

ALTERNATIVES

1. Do not direct the Governmental Relations Department to support legislative and regulatory solutions which encourage comprehensive and innovative solutions to address electronic waste issues.
2. Do not direct City staff to develop guidelines, in conjunction with San Diego Data Processing Corporation, for the procurement, use, and end-of-life management for electronic equipment purchased by the City.
3. Do not direct City staff to develop a pilot project for the collection, dismantling, and recycling of computer monitors and televisions.

Respectfully Submitted,

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Environmental Services Department

Approved: George I. Loveland
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Attachment: Universal Waste Fact Sheet

Universal Waste Fact Sheet

Type	Cathode Ray Tubes (CRTs)	Consumer Electronic Devices (CEDs)	Consumer Batteries	Lighting Devices	Mercury Containing Devices	Mercury Containing Devices (Proposed)
Examples	Equipment that displays electronic information such as computer monitors, televisions, and lab equipment	Telephones, answering machines; radios; stereo equipment; tape, cassette and compact disc players/recorders, phonographs, calculators, and some appliances	Alkaline, nickel-cadmium, lithium, and mercury batteries found in products such as watches, toys, CDs, phones, and parking meters	Fluorescent lights tubes, high pressure sodium, mercury vapor, and metal halide lamps including office building lighting and street lights	Lighting devices, switches used in vehicles or home appliances, and thermostats	Thermometers; medical dilator devices; gas-powered appliance flame sensors; natural gas flow regulators; 1970 era rubber flooring; dampers, pressure gauges, and counterweights; and dental amalgam
Compliance Deadlines by Group *Large Business* *Small Business (<220 lbs waste/mo)* *Residents*	Currently regulated for all groups	Currently regulated February 8, 2006 February 8, 2006	Currently regulated February 8, 2006 February 8, 2006	Currently regulated February 8, 2004 February 8, 2006	Each type has the same deadline for all groups Novelty Items January 1, 2004 Appliance and building switches February 8, 2004 Vehicle switches January 1, 2005	To be required of all groups with the adoptions of the proposed regulation.
Dept. of Toxic Substances Control (DTSC) Regulation	Proposal No. R-01-06 (120 pages)	Proposal No. R-01-06 (120 pages)	No. R-97-08, Finalized 2/2002 (66 pages)	No. R-97-08, Finalized 2/2002 (66 pages)	Proposal No. R-02-04 (116 pages)	Proposal No. R-02-04 (116 pages)
(DTSC) Tonnage Estimates	121,400 tons	1,800,000 tons	Not determined	Not determined	Not determined	Not determined

Management Requirements

Cathode Ray Tubes (CRTs), consumer batteries lighting devices, mercury containing products
By actual or proposed compliance deadlines, separate from trash, label, package, and recycle at an approved recycling facility or manage as hazardous waste within one year of the collection start date. Retain management records.

Consumer Electronic Devices (CEDs)
As proposed, the person disposing of CEDs will be required to determine if they are universal wastes. If so, address as other universal wastes.

Reference

California Code of Regulation, Title 22, Chapter 23, Section 66261.9 and Sections 666273.1 – 66273.90, Standards for Universal Waste Management