



7. Source Reduction and Reuse

7.1 Purpose

The purpose of this chapter is to explain the principles of source reduction and reuse. This chapter also reviews the 1994 ISWMP, summarizes what the County has done to implement the plan, and provides alternatives for the County moving forward. Then, the chapter will review the Plan that the County has chosen with a timeline for implementation.

This chapter also views source reduction as a County-wide activity and recommends the initiation of a program that lowers the local stress on energy and the emission of greenhouse gasses. As Chapter 12 discusses, energy costs are high in the County, and this ISWMP looks at waste as an option for new sources from which to generate energy.

7.2 Background

Source reduction is waste prevention. It is the practice of designing, manufacturing, purchasing, or using items (such as products and packaging) in ways that reduce the quantity or toxicity¹ of trash created. Engineers and architects, such as William McDonough, design products and production systems with a cradle-to-cradle design philosophy.² This is an innovative approach to sustainability that models productive development on the integrated processes of nature's productive ecosystems. In such a system, products can be developed for closed-loop systems in which every ingredient is safe and beneficial -- either to biodegrade naturally and restore the soil, or to be fully recycled into high-quality materials for subsequent product generations, again and again. By taking a biological approach to technical development, a company can reduce the amount of waste that is acceptable and recover value rather than creating a future solid waste problem.

Source Reduction refers to the reuse of products and the change in the design, manufacture, purchase, or use of materials or products to reduce their amount or toxicity before they become municipal solid waste. Source reduction also refers to the **reuse** of products or materials.

The USEPA lists source reduction as its first priority in combating municipal solid waste issues as shown in the USEPA waste hierarchy in Chapter 1. The National Recycling Coalition (NRC) and the Environmental Defense Fund (EDF) also view source reduction as a viable means to reduce municipal solid waste. Recently, the NRC broadened its mission statement to include source reduction. It states that "ton for ton, source reduction is more valuable to society than recycling." The EDF has stated that eliminating excessive layers of packaging is one of the most obvious and important forms of source reduction, and that source reduction has the potential to alleviate natural resource depletion.

¹ Toxicity is the degree to which a particular item may produce a chemically and/or biologically produced illness to an exposed organism due to the use of some ingredient. For example, mercury levels in dry cell batteries.

² McDonough, Will and Braungart, Michael. Cradle to Cradle: Remaking the Way We Make Things, Farrar, Straus and Giroux, 2002.



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Within the strict confines of a single company's micro-economy, source reduction is measurable; it is definable, quantifiable, and valued. The reduction in the weight of packaging is under the company's control and measured by lower material purchases. Within a macro environment, such as a County's jurisdiction where no physical product may be manufactured for profit, source reduction is very difficult to measure. When the County conducts a source reduction information program, what is the performance measure for success? People may consume less during this time, but it may be for other reasons. This level of difficulty in quantifying the results of a program causes people to lose interest in maintaining consistent support and promotion of the strategy. It is also difficult to sustain the promotion of source reduction because it is such a qualitative shift in mindset and habits of both the public and the managers of integrated solid waste systems.

Source reduction is often thought of in terms of mass, the amount of volume reduced at the source. Source reduction, however, is also the activity that reduces, substitutes, or eliminates the generation of harmful products or components that become hazardous waste at the source.

Source reduction also includes the evaluation of a product through its entire life. Life-cycle methodologies are available that look at a product not as the sum of its parts but the parts themselves to see the balance of materials and energy used or discharged during the entire life of the product/package.

And, finally, source reduction includes the elimination of products that, once used, fall into the post-consumer waste stream. Replacing plastic grocery bags with a reusable cloth bag would be an example.

Source reduction, including reuse, can help reduce waste disposal and handling costs, because it avoids the costs of recycling, municipal composting, landfilling, and combustion. Source reduction also conserves resources and reduces pollution, including greenhouse gases that contribute to global warming.

7.2.1 Source Reduction and Reuse Facts

The USEPA provides some facts on reducing and reusing:

- 55 million tons of MSW were source-reduced in the United States in 2000.
- 28 percent of the materials source-reduced in 2000 were containers and packaging.
- In 1983, one pound of aluminum made 21.75 12-ounce cans; in 2007, one pound of aluminum made 31.92 cans.
- There are more than 6,000 reuse centers around the country.
- Between 2 and 5 percent of the waste stream is potentially reusable according to local studies in Berkeley, California, and Leverett, Massachusetts.
- Since 1977, the weight of 2-liter plastic soft drink bottles has been reduced from 68 grams each to 51 grams. That means that 250 million pounds of



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plastic per year has been kept out of the waste stream and were not transported around the country with the products they contained.

7.2.2 Source Reduction and Reuse Benefits

Three major benefits can be derived from the application of source reduction and reuse, as follows:

- **Saves natural resources.** Waste is not just created when consumers throw items away. Throughout the life-cycle of a product—from extraction of raw materials to transportation, processing and manufacturing facilities and end use—waste is generated. Reusing items or making them with less material decreases waste dramatically. Ultimately, fewer materials will need to be recycled or sent to landfills or waste combustion facilities.
- **Reduces toxicity of waste.** Selecting nonhazardous or less hazardous items is another important component of source reduction. Using less hazardous alternatives for certain items (e.g., cleaning products and pesticides), sharing products that contain hazardous chemicals instead of throwing out leftovers, reading label directions carefully, and using the smallest amount necessary are ways to reduce waste toxicity.
- **Reduces costs.** The benefits of preventing waste go beyond reducing reliance on other forms of waste disposal. Preventing waste also can mean economic savings for communities, businesses, schools, and individual consumers. For example, reducing the weight of a product or its packaging will result in lower shipping and transportation costs.

7.3 Legislative

Source reduction is the County's and the State's preferred method for managing solid waste. See Sections 7.7.2 and 7.7.3 for possible changes to the Maui County Code.

The State is promoting source reduction in the form of preference for recycled products (Section 103D-105 and Chapter 3-129) and energy efficiency as stated in state code [§196-9]: Energy efficiency and environmental standards for state facilities, motor vehicles, and transportation fuel. Each agency is directed to implement, to the extent possible, a number of goals during planning and budget preparation and program implementation. The goals that could impact the Maui program include:

1. Incorporate principles of waste minimization and pollution prevention, such as reducing, revising, and recycling as a standard operating practice in programs, including programs for waste management in construction and demolition projects and office paper and packaging recycling programs;
2. Procure environmentally preferable products, including recycled and recycled-content, bio-based, and other resource-efficient products and materials complying with the state preference regulations.



7.4 Review of 1994 ISWMP

The 1994 ISWMP focused on education to change consumer habit. The 1994 ISWMP called for roadside signs, flyers, bill inserts, videos, and discussion on radio shows. The 1994 ISWMP also focused on backyard composting and mulching as a way of reducing the material going to the landfill.

7.5 Implementation of 1994 ISWMP

The Division carried through on the 1994's ISWMP and educated people on reduction and reuse, expanded in-house reduction efforts by getting County offices to reuse its office paper, and developed a County procurement policy that gave evaluation points to products made with post-consumer grade material.

The County attempted to create a price incentive for people to recycle by placing a fee on self-haulers at the County's landfills. However, this policy was revoked. The process of collecting money at the Landfill was believed to be too slow and, therefore, traffic backed up on Pulehu Road. Yet, this is a procedure practiced by public and private landfills around the world. There are a number of solutions in general practice: locate the scales in a manner to allow for adequate queuing; provide additional scales to handle traffic; electronically scan commercial vehicles to reduce time on scales; charge a flat fee for pick-up trucks and cars and trailers so that the line keeps moving.

Where the plan had a major effect, however, was in implementing a government in-house campaign to double-side photocopy paper and reuse photocopy paper. Office after office of the County is practicing this procedure 13 years later.

7.6 Current Activities

7.6.1 In-house Actions

The current activities regarding in-house actions are described in Sections 7.4 and 7.5.

7.6.2 Residential and Commercial Actions

The County's grants have helped to pay for programs by volunteers to reuse computers and other electronics for both residential and commercial entities. The County also provides grants for volunteer groups to reuse paint, and educate and support the effort to create and maintain the habit of shopping with reusable shopping bags.

7.6.3 Education

The County has continued to educate the public on resource reduction and reuse especially through face-to-face education at community events and festivals and the efforts of the volunteer activities referenced in Subsection 7.6.2.

The County has implemented a public education program around an anti-litter theme and a well-known local comedian, Tita. The program, "Listen to Tita, NO LITTAH," includes illegal dumping, old appliance pick-up and recycling hotlines, as well as a



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number of outreach activities. The program ties in with the State's Adopt-a-Highway program, as well.

7.7 Alternatives

7.7.1 County Purchasing

The County can use its purchasing power to influence change. The County can advance its 1994 decision to have the Division of Purchasing and other departments implement a County Energy and Environmental Program for energy conservation and environmental stewardship. Among other things, this would place the purchasing of goods under a life-cycle analysis, as well as costs and other variables per the individual purchasing need.³

This new scale of purchasing would help entice the private sector to reduce the environmental impact of a product because of the way the item was manufactured, transported, stored, and packaged. This would advance the purchasing scope to look for products that do not harm human health, are less polluting, and that minimize waste, maximize use of bio-based or recycled materials, conserve energy and water, and reduce the consumption or disposal of hazardous materials. This new purchasing guideline will favor durable and long-lasting goods; oblige suppliers of electronic equipment to take back equipment for reuse or recycling; and to encourage the use of recycled packaging when possible. A net value cost evaluation will take into account energy savings. The purchase price and operational cost over the life of the product will be evaluated so that a net cost to the County is more accurate.

The Purchasing evaluation should take into account toxins and pollutants when estimating value for the County and its workers. Chemicals listed by the EPA or the National Institute for Occupational Safety and Health on the Toxics Release Inventory should not be purchased by the County. Material used to maintain buildings should use the lowest amount of volatile organic compounds, the highest recycled content, and little to no formaldehyde. This should include carpet, adhesives, and furniture.⁴

The SWRAC research tour met with the Department of Environment for the City of San Francisco and spoke with officials who led the City to implement green purchasing procedures as well as diminish the toxins the City purchases. In 2005, the City passed legislation that established green purchasing procedures including an "approved alternative product list" to eliminate toxins and waste. This can be viewed at the following website:

<http://orf.od.nih.gov/Environmental+Protection/Green+Purchasing/GreenPurchasingFAQ.htm>.

³ There is a growing number of Green Purchasing training for purchasing agents. <http://www.ofee.gov/gp/training.asp>; <http://www.federal sustainability.org/initiatives/eps.htm>; <http://www.federalelectronicschallenge.net/>

⁴ For further information on Green Purchasing and toxic management please see the following: <http://www.epa.gov/tribalcompliance/prevandpurch/pppreventiondrill.html>; http://www.ci.nyc.ny.us/html/nycwasteless/html/at_agencies/green_purchasing.shtml; <http://www.ofee.gov/gp/greenjanitorial.html>; <http://orf.od.nih.gov/Environmental+Protection/Green+Purchasing/GreenPurchasingFAQ.htm>



7.7.2 Reuse Facilities

A reuse facility would be sited at solid waste campus, to be located near the Central Maui Landfill, as discussed in Chapter 5. A MRF for both recyclables and C&D would be operating; bulk, white good, and HHW materials would be processed at this site as well. The reuse facility would receive materials and items that can be sold at a reduced cost to the public or donated to charities to take to sell or give away. In addition, the expanded facilities at Hana, Lahaina, and on the Islands of Lanai and Molokai will provide additional reuse potential.

The SWRAC tour made a visit to the Last Chance Mercantile in Monterey, California, which is operated by the Monterey Regional Waste District. The district services a population in size and scope similar to the County. Such a facility is a viable option for the County.

The facility could be contracted out to a non-profit organization to manage and work the facility each operating day of the week. The facility can provide building material, material segregated from the HHW facility, white goods, and bulky items. Perfectly good material heading into the landfill, such as furniture, would be directed to the reuse facility by the employees of the landfill.



Photo 7-1. County of Hawaii's reuse center in Keani. It has construction materials for people to purchase



Photo 7-2. General store in County of Hawaii's reuse center in Keani

The County of Hawaii has a similar program with a non-profit group. It has one large and well used facility and several smaller locations around the island. The photos (Photos 7-1 & 7-2) show a customer purchasing sliding glass doors for a chicken coup he is building and a type of general store area of the same facility.

Hawaii County provides a grant to the Hawaii Recycle Group to operate this facility and it also received funding from EPA and other entities. The group sells the material cheaply. The pictures are of the staffed facility near Hilo called Keani. The facility has a Reuse Book Library, a bulky item reuse area, paint reuse area, and a soon-to-be formed C&D area.

On the Island of Maui in Puunene, Friends of the Library have operated a used book store for the last ten years. The book store is in the old Puunene school and accepts donations of \$0.10 for most of its books, see Photo 7-3.



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In addition to the book store, there are several non-profit organizations that operate reuse centers and stores. Further, there are some for-profit businesses, including thrift stores and consignment shops, which contribute to the level of reuse in the County and divert potential wastes from disposal. The County assists these organizations with a program of grants. Some of these are listed in Table 7-1, along with some descriptive elements.



Photo 7-3. Friends of the Library Used Book Store

Table 7-1 - Reuse Options in Maui

Organization	Location	Reuse Services
Aloha Shares Network	On line and by phone	All items, matches donors with organizations in need
A-1 Recycled Appliances		Working appliances
Friends of the Library	Puunene	Used book store
Community Work Day	Puunene	Paint recycling Computer recycling
Habitat For Humanity	Wailuku	Restore, building materials
Buyers Paradise		Building materials
Big Brother/Big Sister		Clothing
Kidney Clothes		Clothing
Puaa Food Waste	Liana and Haiku	Collects food waste to feed pigs

7.7.3 Public Education and Messaging

In its public education and messaging, the County should also promote combined messaging to residents and visitors that address reduce, reuse, recycle anti-litter along with energy and water conservation encouragements. This would be most efficient in an integrated campaign where common themes, colors, music, markets, etc., are employed. The County should also encourage similar approaches by others and could offer tie-ins that would multiply effectiveness.

7.8 Possible Programs

The County could establish a similar consumer waste reduction campaign. With the cooperation of area grocery retailers, the County could distribute informational materials in the County's grocery stores that promote:

- Bulk purchase;
- Purchasing concentrates;
- Purchasing only the perishable items that will be consumed before spoilage;
- Minimizing purchases in single-serving containers;
- Considering recyclability of purchases;



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- Purchasing nontoxic alternatives to common household chemicals; and
- Buying reusables versus disposables.

The County could also develop a series of waste reduction demonstrations using common grocery store items (larger packages of potato chips versus single-serving bags, large boxes of raisins versus individual mini-boxes, etc.). The demonstrations would be designed to show the value associated with purchases that generate less waste. (In the potato chip example, chips in the larger bags tend to have less breakage and frequently taste fresher. This can be demonstrated through "blind" taste tests by volunteers from the audience.)

Depending on the retailer, grocery stores may be willing to allow such demonstrations in their stores; however, the needs of grocers to satisfy the demands of their suppliers should not be overlooked. If grocery stores are not willing to allow in-store displays or materials that favor one product over another, they may be willing to assist waste reduction efforts in other ways, such as providing a discount to customers who use reusable grocery sacks or bring their own bags/boxes.

It is important to remember many consumers are more concerned with value for their money than the environmental impacts of their purchasing decisions. Therefore, messages that promote value may be more effective in encouraging waste reduction than messages that focus on waste concerns. For example, when Procter & Gamble began marketing Downy fabric softener in concentrate form, they used an advertising strategy that emphasized a "cut down on packaging" message. The campaign was not deemed successful. Subsequently, a follow-up campaign was initiated that featured a "Less Money, Less Waste" theme. This message was effective.

The County could also develop seasonal promotions to support waste-conscious consumer purchases. Examples include:

- Spring messages could emphasize nontoxic alternatives to "Spring Cleaning" products;
- Summer messages could promote reusables for picnics and other summer activities;
- Fall messages could promote cloth lunch bags instead of disposables and other Back to School waste reduction tips; and
- Winter messages could focus on alternatives to wasteful gift wrapping and disposable household batteries for the holiday season.

As mentioned in Section 7.7.3, commercial tie-ins with merchants would increase the effectiveness of these measures.

One way that the County can help de-toxify the waste stream and help reduce the amount of hazardous waste generated in the County is through continued promotion of alternatives to toxic products. For example, the County currently distributes a fact sheet describing substitutes for commercial cleaners. This publication could be expanded into a consumer guide, with helpful hints for using nontoxic approaches to solving common household cleaning and pest problems. If specific approaches were readily available on the County website, a resident with a difficult clean-up problem could find an effective



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and environmentally friendly solution rapidly. In addition, the County could work with the maintenance departments at area schools and colleges, hospitals, health centers, and other institutional settings to promote environmentally friendly cleaning products.

Division can provide technical assistance to businesses in evaluating existing waste practices and developing waste reduction strategies. The technical assistance could include:

- Waste audits for businesses and institutional establishments. These waste stream audits would identify current waste generation rates (as a baseline) and identify waste reduction methods that could be employed within the basic operation of the firm or organization;
- Examination of existing procurement practices, including encouraging life-cycle cost strategies when evaluating product purchases that take into account replacement costs and processing and disposal costs; and
- Suggestions for changes to operational practices to reduce waste and increase recyclability of the waste stream.

7.8.1 Plastic Bags

The major source reduction program the County is currently promoting is the "Reuse Your Bag" program. Approximately 15,000 thousand reusable shopping bags have been purchased in the past two years, with more to come. With input from SWRAC members, each island - Maui, Molokai and Lanai - has its own individual design, based upon the flower for that island. Educational information is printed on one side of the bag. The bags are made available, one per person, to all who sign a pledge designed to educate the public about plastic bag reduction, reuse, and proper disposal, "knot your bag," to prevent the bags from blowing out to sea.

Citizens have taken up the campaign and worked with members of the County Council to draft a "ban the bag" ordinance for consideration. The State legislature is also considering plastic bag legislation.

Paia became the first town in the County to go "bag free." Most businesses in Paia Town do not provide plastic bags to customers anymore.

7.9 Plan Recommendations

7.9.1 In-house

The Division will continue to reuse its materials, such as double-siding copy paper, and reusing paper for note pads.

7.9.1.1 Actions

The Division will develop and/or enhance education material on items to substitute for toxic materials. It will utilize the new HHW program recommended in this ISWMP as a focal point for educating citizens on using substitutes for toxic material.



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7.9.1.2 Environmental Purchasing

The Division will continue to urge the County to require material purchased by the County to be “green.” It can require that all suppliers that provide documents or other materials to the County have a high recycled content level. For example, all documents, such as proposals, use paper with a minimum of 50 percent recycled material.

7.9.2 Residential and Commercial Actions

The County will continue to support and motivate private reuse ventures through the use of its grants. These monies can be distributed to non-profit as well as profit-making organizations that wish to use the material the County or the private concerns make available for reuse. The HHW facility will provide material for reuse.

7.9.3 Education

The Division will enhance its website and education material to promote reduction and reuse activities. It will provide forums for toxic material substitution so that the public can learn about products. It will motivate children in kindergarten through twelfth grade on the benefit of reducing and reusing, and will have curriculum materials available for use by schools.

7.10 Implementation

7.10.1 Short-term

In the short-term, the Recycling Section will work to develop an educational strategy targeting source reduction and reuse through the use of research data gained from focus groups as described in Chapter 6. Educational material will be based off of this research and developed into brochures, advertisements, and storylines.

7.10.2 Long-term

Through the use of grant monies and materials diverted from the Division’s operations, such as the C&D MRF, facilities will develop whereby people can purchase, at a low cost, materials to reuse.

7.11 Summary

This chapter reviewed the concept of source reduction and the Division’s long history of implementing reduction habits within the County agencies. The chapter calls for using grant monies, which must be secured through the annual budget, to foster private-sector reuse programs that will ultimately reduce the amount going into the landfill and provide used products to citizens at a reduced cost. Finally, the chapter will build upon the implementation of an HHW program to both reuse material and substitute non-toxic for toxic material.