

Section 9

County of Kaua'i Materials Marketing and Procurement Issue Paper

9.1 Purpose

Hawai'i Statutes (HRS 342G) require that county integrated solid waste management plans include a *marketing and procurement of materials* element. This issue paper provides a foundation for the element by presenting information and options for consideration by County officials and stakeholders.

The paper broadly covers recycling market development practices and options. The overriding goals of recycling market development are to:

- Promote the long-term vitality of recycling programs by increasing demand for recovered materials, increasing market revenue, and/or improving marketing practices; and
- Provide additional benefits such as creating local jobs, strengthening local businesses, and increasing waste diversion levels and associated environmental benefits.

The following sections provide background on current and past market development efforts, summarize current markets and marketing practices, and evaluate options.

9.2 Background

This section provides background on recycling market development efforts in the County, including a synopsis of the relevant section of the 1994 plan, and an overview of County and State efforts.

9.2.1 The 1994 Kaua'i Marketing and Materials Procurement Element

In the 1994 County of Kaua'i Solid Waste Management Plan, the *Marketing and Materials Procurement* Chapter included:

- A summary of available information, current market conditions and marketing activities for newspaper, corrugated containers, office paper, glass containers, aluminum cans and green waste;
- Identification of key challenges; and

- A market development strategy, including generic market development steps and commodity-specific recommendations.

Most of the challenges identified in the 1994 plan are related to the County's remote location, small population and low recycling volume, and will consequently remain unavoidable barriers for the foreseeable future. The result of these challenges is chronically low net revenue from recyclable sales and an inability to build on-island markets for most recyclable materials. These challenges are discussed further in subsequent sections.

In contrast, one key challenge identified in 1994 has dissipated, as national and global recycling markets have matured. The 1994 Plan identified the "biggest challenge to recycling in Hawai'i today" as the increase in material supply resulting from hundreds of new recycling programs on the West Coast. Since 1994, off-island demand for many recycled commodities has soared, including scrap paper, plastics, metals and color-sorted glass. While in 1994 there was widespread concern over a potential massive glut of recycled materials generated in rapidly growing municipal recycling programs, today industries have retooled and now rely on these recycled raw materials for their survival. In fact, several industry trade associations have identified concerns over the quantity and/or quality of recyclable material supply as a critical issue, and are actively seeking to strengthen recycling supplies through a range of public-private partnerships.

The 1994 Plan grouped market development techniques into two broad categories:

- Off-island marketing techniques, including:
 - Cooperative marketing;
 - Quality control in materials collection and processing; and
 - Backhauling and shipping rate structuring.
- On-island marketing, including:
 - Coordination with local economic organizations;
 - Research potential uses and industries;
 - Incentives to private sector businesses; and
 - Define user requirements.

The Plan next evaluated each recyclable commodity and recommended specific approaches, along with a program for monitoring, researching and re-evaluating options for each commodity. The recommendations emphasized the above off-island techniques for all scrap paper grades and aluminum, and the above on-island techniques for recycled glass and green waste.

Finally, the Plan summarized recycled product procurement activities at the local, state and national level, and listed 12 "imperative recommendations" for County implementation, along with seven "secondary recommendations".

Since 1994, the County has achieved some successes consistent with the 1994 recommendations, including development of on-island uses for glass and

compost/mulch produced from green waste. However, resources have generally been insufficient for the County to fully implement the aggressive and challenging program recommendations in the 1994 plan.

9.2.2 Current Practices in Kaua'i

As a result of both public and private sector efforts, the County has generally managed to overcome the important marketing barriers that make recycling so challenging in a low-population, remote, island community. However, these market barriers continue to threaten the sustained viability of the County's recycling programs. Following is a brief synopsis of market development related practices in the County.

9.2.2.1 County Activities

The County is responsible for funding much of the island's recycling collection and processing infrastructure, as described in Section 4 – Recycling Issue Paper. As a materials processing and marketing facility, the Kaua'i Resource Center (KRC) is a vital component of the County's marketing infrastructure. The closure of the KRC in January 2006 has dealt a severe blow to this infrastructure. Without the processing and marketing capacity the facility provided, for example, the recycling collection programs operated by the Kaua'i Community Recycling Service were left without a local outlet for processing and marketing their materials, and the program has been suspended until the facility reopens.

The County administers the Glass Recycling Program with funding and authorization from the State of Hawai'i's advance disposal fee (ADF) program. The program has previously provided up to \$200 per ton of non-deposit glass recycled and reused (with a share going to generators of waste glass). On-island glass markets are essential due to the prohibitively high cost of transportation to mainland markets. For this reason, this program is very important to continued successful glass recovery and use. The FY 2006 funds offered by the State were reduced, resulting in the County issuing a grant program that offered six cents per pound, or \$120 per ton for glass processing. Unfortunately, no firms in the County are taking advantage of this program. One local recycler raised concerns regarding the program, including an insufficient payment rate, reduction in total funds available, time consuming and costly administrative requirements; and the fact that not allowing payment for containers covered under the deposit beverage container system makes the scope too narrow and not worth the effort. State regulations do allow the County to use funds for both deposit and non-deposit containers; however, because the 1.5¢ ADF is not paid on deposit containers, program funding has decreased in recent years. While funding to the County under this program in FY 2006 was approximately \$134,000, only about \$25,000 is available for FY 2007.

During development of the KRC, the County actively explored its potential role as a reuse market, and used about \$10,000 provided by the federally funded Clean Hawai'i Center to promote the new center. The County also funded an evaluation of potential recycling-based business enterprises which could potentially be profitable in the

County. This study was used as a basis for efforts which ultimately culminated in founding of the Recycling for the Arts organization (described below).

Finally, the County has promoted recycled product procurement through adoption of a local policy, testing of recycled glass as road base and in paving operations as glassphalt, and testing of compost and mulch produced from local green waste. The County also is currently using recycled glass in an educational display at the KRC, and has previously sought (unsuccessfully) to incorporate recycled glass into a bike route paving project. To date, however, the County has not used recycled products in great quantities, nor has it purchased locally produced products like glass aggregate or green waste compost or mulch on an ongoing basis.

9.2.2.2 Private Sector Activities

Several Kaua'i businesses are involved in processing and marketing recyclable materials off-island, including: Abe's Auto Recycling (ferrous metals, propane tanks and appliances), Garden Isle Disposal (scrap paper, glass and plastics), Unitek (scrap tires, solvents and oil filters) and PS&D (scrap tires and auto batteries). Once a firm is awarded a contract to operate the KRC, the processing and marketing of recyclable materials at this facility will resume.

Kaua'i also has several on-island users of recycled materials and products that provide a local market for materials that are not economically feasible to be shipped to off-island markets. These local markets are described below.

- Green waste is processed into compost and mulch by two local businesses - Kaua'i Nursery & Landscaping and Heart & Soul Organics, and sold to landscapers and residents.
- Kaua'i Recycling for the Arts (KRA) provides a local market for approximately 24 tons of recycled glass per year, and undertakes a variety of educational and promotional activities designed to encourage artistic entrepreneurship using recycled glass as a raw material. KRA has a five year contract with the County that runs through November 2009. The County has supplied KRA with approximately \$70,000 worth of equipment, as well as studio space at KRC. KRA, however, is responsible for raising funds to cover its ongoing expenses, including significant monthly electricity bills. KRA offers classes and provides demonstrations on casting, glass blowing, sculpture, jewelry making, and more. Their finished products such as tiles, ornaments, jewelry, etc. are available for purchase at local retail stores or directly from KRA.
- JC Sandblasting collects glass from commercial businesses and accepts glass from other Kaua'i recyclers, and processes the glass to 3/8 inch mesh for use in its sandblasting projects, or distributes it (at or near cost) to businesses and residents for use as drainage medium, road base and other applications.
- Several pig farmers collect food waste from a number of on-island restaurants for use as feed. The County conducted a brief study on these activities in 2004 and tracked approximately 670 tons of food waste per year being diverted in this

manner. It is probable that more food waste is being diverted than what was tracked in that study.

- Several thrift stores provide a market for reusable items including household and building products.
- Habitat for Humanity reuses building materials to build low income housing. They also operate a thrift store at their facility in Hanapepe.

County marketing practices and current market conditions are described more fully later in this issue paper, including identification of challenges and opportunities to strengthen current efforts.

9.2.3 Current State Practices

The State of Hawai'i has some recycling market development activities underway. The Clean Hawai'i Center is a program of the Department of Business, Economic Development and Tourism (DBEDT), which was originally established through a grant from the U.S. EPA's Jobs Through Recycling Program. The Center has previously researched and assisted in the development of facilities and businesses involved in marketing and/or using recyclable or reusable products, including providing approximately \$10,000 to help promote the KRC.

The State administers an environmentally preferable product procurement program that is intended to promote the use of recycled content products, along with other products that provide comparative environmental benefits. The Center's web site includes a *Buying Recycled Products in Hawai'i* fact sheet, a *Final EPP Management Action Plan* prepared in February 2006, and an *Environmental Product Guide* prepared in 2005. The Center is currently conducting a survey to evaluate the results of its program. The State has adopted a specification for using recycled glass in asphalt products, though no actual use has been verified.

The State Department of Health (DOH) administers the deposit beverage container program, which was implemented in 2004 and provides incentives for collection of source separated glass, plastic and aluminum at redemption centers. The program also includes a State-administered fund used to make redemption payments to consumers and to pay participating redemption centers a 2 to 3¢ handling fee. While there are currently no specific market development components of the program, State staff indicate that they may undertake a market development analysis in coming years that could lead to exploration of such activities as backhauling of recyclable materials by firms shipping product to Hawai'i and/or enhanced development of on-island infrastructure for recycled glass product applications.

As described above under County Activities, the State's glass ADF program provides funds for an incentive system for non-deposit glass recycling collection, processing and reuse. The program is administered through each County separately, which has a degree of flexibility in structuring how the program is run in each County. Since the adoption of the deposit beverage container program, only glass beverage containers not included in the deposit are covered by the ADF. Moreover, a portion of funds

were recently allocated to other uses by the Hawai'i Legislature; and consequently, overall program funds have declined markedly in recent years.

9.3 Summary of Current Markets

9.3.1 Market Overview

Table 9-1 summarizes marketing practices, market trends, barriers and opportunities within the County for several categories of recyclable materials.

Most recyclable materials are transported to off-island markets on the mainland or to the Pacific Rim. Some, including paper, tires, solvents, used oil and oil filters, are barged to O'ahu for handling and/or shipment by brokers or dealers. Others, including scrap plastics, are typically shipped directly to markets from Kaua'i, although shipments may be arranged through a broker or dealer on the mainland. Because of the low volume and high transportation costs (especially those materials that currently require inter-island barging,) prices received for the County's recyclable materials are systematically low. As identified in Section 4, currently private sector firms are responsible for all marketing of recyclable materials in the County, and they retain all market revenue received.

On-island uses are limited to glass, green waste and food waste, each of which is processed and distributed by private sector firms. Each of these materials is typically either sold at a very low value or given away to County residents and businesses.

As mentioned above, the key barriers to strengthening recycling markets involve the County's remoteness, low population and low volume of recyclable materials, and will remain fundamental challenges for the foreseeable future. These barriers result in chronically low market revenues and difficulty in developing on-island markets.

The key opportunities for market development include enhancing on-island use of glass and green waste, and exploring reduction of shipment costs through backhauling or improved market relationships.

The following sections summarize the information presented in Table 9-1 for each recyclable category.

Table 9-1
County of Kaua'i Summary of Markets for Recyclable Materials

Material Category	Current Marketing Practices	Market Outlook	Barriers	Opportunities
Paper (old newspapers, corrugated containers, white office paper, and mixed paper)	Barged to brokers/dealers in O'ahu who market to Pacific Rim and Mainland. Net price received typically much less than West Coast average due to transportation costs.	Generally sustained strong demand with periodic price swings. Periodic delays marketing mixed paper.	Low volume/remoteness result in high shipping cost and low net revenue. Insufficient volume for on-island development.	Improved transportation through cooperative marketing, backhauling and market negotiation.
Glass (deposit beverage containers, non-deposit containers and plate/window glass)	Used on-island in sandblasting, road base, arts and other applications. Typically very low or no value.	Tenuous. Future on-island demand uncertain. Mainland markets strong for color-sorted cullet.	Lack of capacity for producing fine ground glass. Lack of acceptance in roads and other glass aggregate applications.	Increase County use of glass aggregate. Enhance ADF funding program. Facilitate and promote all on-island uses.
Plastics (PET and HDPE containers)	Shipped directly to Pacific Rim and Mainland markets by arrangement of broker on mainland.	Sustained good demand with periodic price swings. Possible long-term reduction in demand.	Insufficient volume for on-island uses.	Improved transportation through cooperative marketing, backhauling and market negotiation.
Green Waste (yard, leaf and woody debris)	Marketed on-island as compost and mulch products.	Steady.	Lack of acceptance by County and other potential large-quantity users.	Cooperative marketing initiative. Increase County use. Promote State and/or national compost standards.
Food Waste	Used on-island by several pig farmers. Low value application.	Steady.	Farmers not being reimbursed for pickup and can be unreliable.	Improved pricing and availability.
Used Oil and Oil Filters	Barged to O'ahu and used as boiler fuel. Cleaned filters sold as scrap.	Steady.	Permit restrictions limit O'ahu fuel market.	Expansion of permitted capacity at O'ahu boiler.
Metals (aluminum cans, ferrous and nonferrous scrap, appliances)	Some metals from Puhī Metals are shipped to Oahu for processing, other are directly marketing the mainland.	Strong demand. Prices currently at all time high.	Insufficient volume for on-island use.	Improved transportation through cooperative marketing, backhauling and market negotiation.
Tires	Barged to O'ahu for use as tire-derived-fuel in utility boiler.	Steady.	Permit limits on fuel use. Supply quality, low volume and lack of acceptance limit engineering uses.	Expand permitted capacity at utility boiler. Fund State processing facility and promote sound uses in engineering applications.
Electronics	Not currently recycled on Kaua'i.	Strong processor demand	Low volume and	State electronics law to fund

Table 9-1
County of Kaua'i Summary of Markets for Recyclable Materials

(TVs, computers, monitors, other consumer electronics)		on mainland and strong Pacific Rim markets.	processing cost retard collection and processing. No recyclers on island.	collection and processing program.
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9.3.2 Paper

In the County, scrap paper is currently marketed by Garden Isle Disposal (GID), and will also be marketed by the new operator of the Kaua'i Resource Center, once a new operator is selected. In fiscal year 2005, over 2,200 tons of scrap paper were marketed, nearly 75 percent of which was old corrugated containers (OCC). Some OCC and office paper may also be marketed by certain commercial firms such as home supply stores or institutions. GID ships old newspapers, OCC, white office paper and mixed paper by barge to brokers in O'ahu, who then ship the materials to markets in the Pacific Rim and on the mainland. Prices received by GID are significantly lower than average prices published by Waste News for the west coast region of the U.S. due to the high cost of inter-island shipping and the low market leverage afforded such a small supplier. For example, recent receipts from one Kaua'i recycler indicated between \$19 and \$30 per ton for old newspapers, whereas the west coast average price was \$67.50 per ton; OCC pricing of \$40 per ton compared to west coast average price of \$82.50 per ton; and mixed paper pricing of \$24 per ton compared to a west coast average of \$65 per ton.

Currently scrap paper markets are generally quite strong, and the outlook is for continued strong demand for the foreseeable future. However, scrap paper prices are notoriously volatile and can be expected to fluctuate as they have historically.

The key barriers to enhancing scrap paper marketing are related to the County's remoteness and small population. On-island market development of paper manufacturing facilities is not an option. Although some quantity of scrap paper may be used in innovative, cottage scale uses such as old newspaper in animal bedding and shipping applications, such uses are not likely to use large quantities and may never reach as high a price as the open market, notwithstanding high transportation costs. Opportunities to enhance scrap paper marketing include identifying lower cost transportation alternatives (e.g., through backhauling) and increased cooperation among recycling in the County and on other Hawaiian islands to strengthen the negotiating position in the market place.

9.3.3 Glass

Over one thousand tons of recycled glass is currently used annually in on-island applications. Currently, both JC Sandblasting and GID process recycled glass for reuse. These firms are able to crush glass into a course 3/8 inch cullet, but are unable to produce large quantities of fine glass, as is needed in certain applications like glasphalt or some glass art products. JC Sandblasting uses recycled glass in sandblasting and distributes glass to firms and residents who use it in road base, drainage, backfill and other applications, generally as a substitute for rock aggregate. These uses typically have no or very low value. Kaua'i Recycling for the Arts uses recycled glass to produce a wide range of pressed and blown glass products.

Currently no recycled glass from Kaua'i is shipped off-island. Some recycled glass from O'ahu is shipped to glass container manufacturers on the mainland. Use of

recycled glass in glass container manufacturing has increased significantly over the past 15 years. Demand for clean, color-sorted glass is strong, especially as the rise of single-stream recycling collection programs on the mainland has resulted in recycled glass supplies of decreasing quality. Prices however have remained stable, albeit weak, and are presently approximately \$6 per ton for green, \$18 per ton for brown, and \$28 per ton for clear glass on the west coast.

The key barriers to strengthening on-island recycled glass markets are the lack of acceptance of recycled glass in aggregate applications (e.g., drainage medium, road base or in glasphalt), the lack of processing capacity for consistently high quality supplies of finely ground glass, and the difficulty of marketing large quantities of fine recycled glass art products as produced by Kaua'i Recycling for the Arts. The main barrier to enhancing off-island marketing of recycled glass is the high cost of transportation, along with the lack of an on-island processing infrastructure. A threat to the long-term vitality of on-island glass recycling is the small number of firms involved in processing and using glass. As with the loss of the KRC, any disruption in glass recycling infrastructure could result in the loss of fragile on-island markets. Another barrier is the apparent lack of interest among County recyclers in the Recycled Glass Program funding, possibly due to the reduction in payment amount (compared to historical values), funding levels and administrative requirements.

The main opportunities to enhance recycled glass markets are to work jointly with suppliers and end-users to increase on-island demand, especially by the County and other potentially large users of recycled glass aggregate, and to generally promote and facilitate the consistent, long-term use of recycled glass. One particular opportunity is to work with a local concrete company, Glover, who conducts large-scale road paving projects. Glover had expressed an interest in crushing glass and using it as a base for new projects in the County, but has not been responsive to further contacts from the County.

9.3.4 Plastics

High density polyethylene (HDPE) and polyethylene terephthalate (PET) plastic containers are currently marketed by Garden Isle Disposal, which handles materials collected at the deposit beverage container redemption centers, as well as materials collected at the County drop bin locations. In FY 2005, about 54 tons were marketed, although this amount may increase with the new deposit beverage container program, which was only in place for approximately half of FY 2005. These materials are shipped directly to plastics re-processors in the Pacific Rim as well as on the mainland, under coordination with a mainland broker. Little or no revenue is received for these materials. Current west coast average prices are 14.5¢ per pound for baled, colored HDPE; 24.5¢ per pound for natural HDPE; and 16¢ per pound for PET.

Demand for recycled HDPE and PET containers by reclaimers in the U.S. and the Pacific Rim is very strong, although prices are subject to fluctuations. Many reclaimers are concerned that they are not able to secure sufficient supply, especially as national recycling rates for plastic containers have been falling and exports rising.

Due to the low volume of recovered plastic in the County, and even statewide, developing reclaiming capacity is not an option. The main barriers to enhancing off-island markets for recycled plastic involve the low volume and remoteness of Kaua'i.

Opportunities to enhance marketing include increasing cooperation among the Hawaiian Counties' recyclers to boost volume and strengthen market leverage. Market outlets for other grades of plastic, whether mixed or sorted, are available in the Pacific Rim and the mainland. However, given the very low quantity likely to be collected in the County, and the very low market value, marketing recycled plastics beyond PET and HDPE may incur a net cost, while not affecting the County's overall diversion rate appreciably.

9.3.5 Green Waste

Nearly 12,000 tons of green waste [number will change when we get information from the private sector] is currently processed at two facilities in the County: Kaua'i Nursery & Landscaping, and Heart & Soul Organics. These firms produce mulch and compost products, which they sell to landscapers and residents, and use in their own operations. Demand for their products is apparently adequate, though stronger demand and the ability to sell at a higher value would greatly benefit these operations and could lead to increased diversion of organics.

According to one producer, a barrier to strengthening on-island compost markets is the relatively low nutrient value of compost produced in the County. The woody green waste typically used does not contain high amounts of nitrogen, and other organic scrap materials that would improve their product, such as fishing waste, are not available in sufficient quantities. Furthermore, according to one producer, using food waste is difficult due to permitting and other Department of Health regulations. An additional barrier to strengthening on-island mulch and compost markets is the low demand by County agencies which could potentially provide a significant market. Although lack of product standards is often cited nationally as an impediment to compost market development, this may be less of an issue in the County since any national standard may not be applicable to the particular mix of feedstocks available on-island.

Opportunities to strengthen the organics market include assisting producers to enhance the quality of their product through use of additional nutrient-rich feedstocks and cooperative marketing and promotion efforts aimed at potential large quantity buyers such as County agencies and agricultural operations.

9.3.6 Used Oil

Used oil and oil filters are shipped by Unitek to their facility on O'ahu. There, the used oil is filtered and sold for use as fuel in a utility boiler, and the filters are cleaned and sold as scrap metal to a processor on the mainland. Demand is sufficiently strong for these materials.

Due to low volume, developing on-island uses in the County is not an option. Also, Unitek is already providing a consolidating service for used oil in Hawai'i.

Consequently, no additional opportunities to further strengthen these recycling markets were identified.

9.3.7 Metals

Puhi Metals, a county-owned facility operated by Abe's Auto Recycling in Lihue, is responsible for processing and marketing scrap metals, white goods and propane tanks. The company ships these materials directly to Oahu for processing, and ultimately to markets on the mainland. Prices for scrap metals are currently at an all time high. Although future swings in price and demand are inevitable, there is likely to continue to be sufficient off-island demand for all materials recovered. Even during an historic market low several years ago, Puhi Metals reports it was able to move all materials to market without a problem, though prices were relatively low. Markets for tin cans, as with ferrous metals, are generally strong, with market values at about \$150 per ton in the Pacific Rim, excluding transportation costs. According to the Steel Recycling Institute, tin cans also can simply be processed along with miscellaneous ferrous metals, at a current market value of about \$200 per ton. Due to the market for tin cans, the County should evaluate adding them to the drop-bin program.

No significant barriers exist to continued off-island marketing of metals, though as with other recyclable materials, recyclers would benefit from reduced transportation costs that may potentially be attainable through identification of backhaul or other opportunities.

9.3.8 Tires

Unitek Solvent Services and PS&D Tires (both in Lihue) are responsible for marketing scrap tires. Tires are barged to Unitek's facility in O'ahu where they are chipped for use as tire-derived-fuel at the AES power company. AES is limited to no more than 1 percent tires in their fuel mix, and consequently scrap tires must sometimes be shipped to processors on the mainland.

Barriers to strengthening scrap tire demand include permitted tire use restrictions at the AES power facility in O'ahu, the lack of sufficient infrastructure for producing tire-derived aggregate or ground rubber products, poor processing economics caused by low volume, and lack of demand for tire-derived-aggregate (TDA) in engineering applications.

Opportunities include exploring expansion of scrap tire processing capabilities in O'ahu and joint-island development of on-island demand for TDA in engineering applications or ground rubber in horticultural or equestrian applications.

9.3.9 Electronics

Since the closure of the KRC, there are no opportunities to recycle electronics in the County. Previously, Island Recycling accepted monitors and computer towers (central processing units or CPUs) from residents.

Nationally, electronics recycling is growing rapidly, especially in California where funding through a new state law is resulting in a very robust processing infrastructure. Processors typically dismantle computer monitors, CPUs and other accessories and sell the components to markets domestically and in the Pacific Rim. Separate streams include wires, glass, CPU units and mixed plastics. Electronics are also sometimes baled and shipped to the Pacific Rim without processing. However, this practice has been strongly criticized due to the potentially harmful impacts to communities abroad, where lax environmental standards have been documented and sometimes lead to significant exposure to harmful substances and pollution of water supplies.

Barriers to electronics market development in the County include the low volume and generally poor economics of electronics processing. Opportunities to enhance electronics recycling markets include adoption of a state program to provide funds to collectors and processors, and facilitation of electronics repair and reuse on-island. Discussion on the County's plans to manage used electronics will be discussed in the Plan's Section on household hazardous wastes.

9.3.10 Other Materials

Additional waste materials that could potentially be targeted in market development efforts include:

- Construction & Demolition (C&D) Debris - Some C&D materials such as gypsum and untreated wood could be used in compost or mulch, and pavement and stone can be crushed and reused as aggregate. Other C&D materials may be salvaged for reuse. It should be noted that Kaua'i attempted to obtain a permit from the State DOH to process gypsum as a compost amendment, but was denied.
- Plastic Film - According to the 2006 Kaua'i Waste Stream Characterization Study, over 5,200 tons of plastic film and bags are annually disposed. Currently no processors for these materials are located in Hawai'i. R. W. Beck is aware of Wal-Mart recycling plastic film in other parts of the United States. The County should work with Wal-Mart to explore the opportunity of backhaul at least some of the plastic film from Kaua'i.
- Pallets - There is currently no recycling opportunity for this material. Previously, Island Recycling accepted pallets at the KRC and collected as much as 18 tons per month. These pallets were repaired and shipped to Oahu where they were reused. Kauai Nursery and Landscape has been unsuccessful in obtaining a permit to accept pallets through the State DOH. If they were permitted to accept pallets, they would charge a tipping fee for this item.
- Universal Wastes - These include hazardous waste that is typically disposed by households and small businesses along with garbage, such as batteries, fluorescent tubes and solvents. These materials are already handled by businesses in the County such as Delco, PS&D and Unitek, and there is little opportunity to build on-island markets.

9.4 Market Development Options

9.4.1 Summary of Objectives and Options

The County has experimented with innovative approaches to recycling and market development for over 15 years. Even with a relatively low level of funding, there have been notable successes, including the use of recycled glass in art products by Kaua‘i Recycling for the Arts, use of recycled glass aggregate in a variety of applications, and on-island green waste compost production and use. Yet, the long-term vitality of these recycling markets in the County remains vulnerable to even small infrastructure disruptions.

As identified in Section 1, the overriding goals of market development are to:

- Promote the long-term vitality of recycling programs by increasing demand for recovered materials, increasing market revenue and/or improving marketing practices; and
- Provide additional benefits such as creating local jobs, strengthening local businesses, and increasing waste diversion levels and associated environmental benefits.

The County can make the most effective use of its scarce resources by targeting relatively narrowly-defined objectives that build on its past on-island market successes. This can be accomplished by strengthening demand for glass and organic materials, while striving to strengthen marketing infrastructure through cooperation with private firms and other counties throughout Hawai‘i, especially related to reducing transportation costs, increasing market revenue and expanding in-state markets for materials like tires and electronics. Finally, the County could also promote stronger recycling markets through adoption of County procurement and product stewardship policies. These three objectives and identified market development options are summarized in Table 9-2 below. The subsequent sections describe the options in greater detail.

**Table 9-2
County of Kaua'i
Summary of Market Development Objectives, Opportunities and Barriers**

Objective	Opportunities
1) Nurture existing on-island markets to maximize their long term sustainability.	1-1) Increase institutional capacity for promoting recycling market development and developing partnerships. 1-2) Increase county use of recycled glass and organic products. 1-3) Facilitate expanded range of materials used in on-island compost and mulch production, including gypsum, pallets, food waste and other organic materials 1-4) Seek to restructure the glass recycling program.
2) Work cooperatively with other Hawai'i counties and private sector partners to strengthen State recycling market infrastructure.	2-1) Evaluate opportunities to reduce transportation costs and increase market revenue through backhauling and cooperation among Hawai'i recyclers. 2-2) Promote expansion of Hawai'i processing capacity and end-use demand for scrap tires. 2-3) Promote expansion of Hawai'i processing capacity for scrap electronics.
3) Generally strengthen off-island recycling markets through County policies and support for appropriate State and national policies	3-1) Strengthen Kaua'i County's recycled product procurement policy and practices. 3-2) Promote enhanced State and federal market development efforts and funding. 3-3) Adopt a County product stewardship policy and support State and national product stewardship efforts.

9.4.2 Options to Maximize the Sustainability of On-Island Recycling Markets

Option 1-1: Increase institutional capacity for promoting market development and developing partnerships.

Estimated cost: \$5,000 - \$100,000 per year for expanded market development staff and funding resources, with possible payback through identification of new outside funding and partnerships.

The County's greatest recycling market development asset is the enthusiasm and commitment of its residents and businesses. Through perseverance, the Kaua'i business community has successfully found on-island uses for 1,843 tons per year of recycled glass and [waiting for information from private composters] tons per year of organic materials collected through County and private sector programs. However, these markets are vulnerable and tenuous. Even a single disruption, such as the temporary loss of the Kaua'i Resource Center, can have a ripple effect which may take months to rebound.

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Ideally, the County would increase its capacity to nurture on-island markets by providing coordination, facilitation, information and encouragement to on-island market players. This can be done through a variety of means, including:

- Hire a new County staff person or contracted entity (e.g., a non-profit organization or an on-island business operator) to work with collectors, processors and existing and potential users of recycled glass and compost/mulch;
- Seek funding and partnerships from the State, federal government, industry trade associations, foundations, and on-island private businesses;
- Provide funding through a grant solicitation to County agencies and firms interested in experimenting with the use of recycled glass or organics products;
- Assign County recycling interns to identify potential users of recycled glass and organics products and work with processors to encourage their use; and
- Encourage the Kaua'i Community College to evaluate and promote on-island glass and organics products.

Option 1-2: Increase County use of recycled glass and organic products.

Estimated Cost: \$2,000 - \$50,000 for initial evaluation to determine ongoing costs and benefits.

The County has experimented with the use of recycled glass aggregate products and mulch/compost, but has not become a steady user of these products. By expanding regular use, the County can both provide a steady outlet for these products and set an example for others on the island. Use of glass in road base and other applications requires a commitment of County staff to take the time and expense to re-evaluate current practices and test new products. Consequently, some level of funding or at least recognition of increased employee time should be expected. Ideally, the County would secure funding for a short-term test documenting benefits and costs, and establish a firm County policy based on the results regarding future use. As discussed further below, the most effective County procurement policy is one that explicitly requires recycled content products in bid specifications. By establishing a known and relatively predictable demand, on-island producers may be able to invest to grow their production levels.

Option 1-3: Facilitate expanding the range of materials used in on-island compost and mulch production.

Estimated Cost: \$100,000 - \$200,000 for a one-time study and technical assistance effort.

The two main producers of compost and mulch in the County use green waste collected at transfer stations and the KRC, as well as materials directly hauled to their facilities. Technically, these operations could make use of additional waste materials, potentially including food waste, pallets, non-treated wood debris from construction sites and gypsum. Each of these waste streams presents unique obstacles and/or concerns, principally related to permitting. Kaua'i Nursery & Landscaping recently submitted a permit application which would have allowed them to begin use of food

waste and gypsum. However, the application was denied due to concerns by the State Department of Health. These materials are currently used to produce compost products by other facilities in other states. Unlimited Construction, a local firm, also provided documentation to the County in an effort to document the ability to safely use gypsum and other construction products in mulch and composting operations.

The County could fund a feasibility study to better document all concerns and barriers related to increased use of all other organic waste materials, compile research results and precedents from Hawai'i and other states and, as determined to be appropriate, provide technical assistance to compost producers in the County seeking to expand use of other organic waste materials.

Option 1-4: Seek to restructure the glass recycling program.

Estimated Cost: \$0. Staff and elected official time to petition the State to restructure current program rules.

The County's Recycled Glass Program has historically provided 10¢ per pound (\$200 per ton) to support collection, processing and end-use of waste glass. In FY 2005, \$135,000 in funding was available. However, with the implementation of the deposit beverage container program, the pound per payment was reduced to 6¢ per pound (\$120 per ton). For 2007, only \$25,000 has been allocated by DOH, and the County will not even be able to continue paying 6¢ per pound. In addition, no businesses are currently taking advantage of the program, due to concerns that the administrative requirements are not justified by the relatively small amount of funding available.

This problem is not unique to Kaua'i. State staff acknowledges that the ADF funding program is in need of changes to retain its effectiveness. While only non-deposit glass containers are covered under the 1.5¢ funding mechanism, program funds can be used to support recycling of all glass containers (including those covered with a deposit).

As currently structured, even if recyclers in the County applied to the program, funding would only provide support for about one quarter of the County's glass recycling tonnage. However, this level of funding could potentially be used to support implementation of broader market development options as identified in this section.

The County could petition the State to revise the program's guidelines to allow a much greater level of discretion in how funds are used to promote glass recycling. For example, if approved, the County could use the funds to evaluate the costs and benefits of recycled glass aggregate use in County public works operations. The County could also request that the State increase the ADF amount and/or expand it to other types of materials to further increase the amount of funding available.

The County could also consider further streamlining the administrative requirements associated with the funding program. The insurance, reporting, and specific education and outreach requirements in the current solicitation are viewed by some as overly burdensome, especially given the relatively modest amount of funding available.

However, the County has minimal control over changing the ADF funding program, as it is prescribed by state statute. Thus, the potential for improving the effectiveness of this program may be limited unless there is state-wide support.

9.4.3 Options to Work Cooperatively with other Hawai'i Counties and Private Partners to Strengthen State Recycling Markets

Option 2-1: Evaluate opportunities to reduce transportation costs and increase market revenue through backhauling and cooperation among Hawai'i recyclers.

Estimated cost: \$10,000 - \$200,000 for a one time evaluation and partnership outreach effort (range depends on funding commitments from partners).

The remote location and small population of the County results in chronically low market revenue for recyclable materials due to high transportation costs and poor market negotiating leverage. This is a well known barrier to recycling in Hawai'i which has been addressed in various ways over the past 10 to 15 years. For example, the 2000 State Solid Waste Management Plan describes an effort that culminated in a reduction of inter-island shipment rates. While clearly beneficial, this success did not fully alleviate this important barrier.

According to State and County officials, however, there has not been a systematic attempt to facilitate greater cooperation by Hawai'i recyclers in marketing materials, or to reach out to potential partners in providing transportation services. For example, during negotiations over the new Hawai'i deposit beverage container program, beverage industry representatives indicated they would be willing to facilitate low-cost shipment of recycled glass and plastic containers if the State did not adopt the law. While the willingness of this particular industry may have lessened since the law was adopted, this does indicate the existence of potential opportunities.

The County could allocate funding and/or seek other funding sources to conduct a thorough evaluation and outreach effort to potential partners. The project could explore the establishment of a cooperative recyclable materials marketing organization among recyclers in the County and/or other Hawaiian islands, and seek to secure commitments from retailers, distributors and others to provide low-cost transportation services for recyclable materials.

Option 2-2: Promote expansion of Hawai'i processing capacity and end-use demand for scrap tires.

Estimated Cost: \$100,000 for a one-time evaluation and promotion effort. Additional equipment investment and/or ongoing costs possibly required.

Currently, Unitek Solvent Services operates a scrap tire chipping service on O'ahu that provides tire-derived-fuel (TDF) to the AES power facility. The volume is limited by a strict permit restriction at the AES facility, and consequently scrap tires from Kaua'i and other Hawaiian islands are often shipped to the mainland for processing and/or disposal.

Potentially, O'ahu scrap tire processing capacity could be enhanced to produce a tire-derived-aggregate (TDA) product suitable for a range of uses in the islands. This would likely require an investment in equipment along with expanded demand for TDA or TDF products. Demand could be increased through a permit adjustment at the AES facility, or by increasing State and/or local use of TDA in light weight fill or other applications. TDA is a rapidly growing market and, in certain applications, provides substantial cost and performance benefits over competing materials. Especially given the high cost of importing aggregate to Hawai'i, TDA may have a particularly strong niche here.

The County could propose a joint project to explore and promote expansion of scrap tire markets in O'ahu, which would benefit the County directly and reduce the cost of the study. A possible funding source would be an allocation of funds from the \$1 retail fee paid by importers of new tires to Hawai'i. According to State staff, the fee has been temporarily suspended because the amount in the fund has reached a threshold maximum. However, the fee may be reinstated in the future. To support investment in recycling infrastructure, legislation may be required. This approach has been successfully implemented in several other states.

Option 2-3: Promote expansion of Hawai'i processing capacity for scrap electronics.

Estimated cost: Staff and elected official time to propose and support State and federal efforts.

Hawai'i currently does not have processing capacity for scrap electronics and there are currently no opportunities to recycle electronics in the County. While it is possible to bale whole electronic devices for shipment to Pacific Rim markets, this practice has been severely criticized for leading to harmful environmental exposures in areas with lax environmental laws or enforcement. A new law in California requires payment of a retail fee upon purchase of new televisions or computer monitors, with the funding used to subsidize "free and convenient" collection and processing of electronics. The law has led to a robust and growing processing infrastructure for electronics, both those covered under the law and others. The County could petition the State to adopt a similar law, and/or lend its support to efforts to adopt a voluntary or mandated system at the federal level.

California is not alone in proactively addressing the growing electronics waste stream. An overview of how other states are actively addressing electronics is provided in Table 9-3.

Table 9-3
Examples of State Electronics Recycling Legislation

State	Type Of Law	Status as of 7/19/05
Arkansas	Starting January 1, 2008, State-agency generated computers, monitor's, TVs, audio and stereo equipment, VCRs, keyboards, printers, telephones and fax machines will be banned from landfill disposal.	Signed by the Governor on March 21, 2005.
California	An advance recovery fee (ARF) assessed on any device with a cathode ray tube or any flat-panel device; graduated fee system; manufacturer must submit a collection and recycling plan; retailers can retain 3% administrative fee; fines for non-compliant retailers. State fund reimburses collection and processing costs.	Became effective January 1, 2005.
Illinois	Commissions a study into effective means for recycling e-waste.	Waiting for the Governor's signature.
Louisiana	Commissions a study into effective means for recycling e-waste and how it should be funded.	Passed House and Senate.
Maine	Manufacturers must submit collection, reuse, recycling plans to state; municipalities must transport waste electronics to a consolidation site; manufacturers shall pay for the consolidation, based on market share. Cost can not be separate line item, nor charged at end of product life. Landfill ban on e-waste beginning January 2006. All manufacturers must comply by January 2006, or may not sell products in state.	Bill passed in 2003 and signed by Governor; took effect January 1, 2005. Administrative rules pending.
Minnesota	Established a county-by-county collection system, with manufacturers being responsible for funding the program or creating their own plan.	Will take effect July 1, 2006.

**Table 9-3
Examples of State Electronics Recycling Legislation**

State	Type Of Law	Status as of 7/19/05
Washington	Commissions a study into effective means for recycling e-waste.	Passed in May of 2004.

9.4.4 Options to Generally Strengthen Recycling Markets through Government Policies

Option 3-1: Strengthen County's recycled product procurement policy and practices.

Estimated cost: \$20,000 to \$30,000 for a one-time evaluation and revision of standard County bid specifications, and estimate of ongoing costs and benefits.

Option 1-2 above focuses on the need for County purchase of two specific recycled product categories critical to on-island market development: recycled glass and organic products. Additionally, the County could promote stronger recycling markets through broad purchase of recycled products in all facets of its operations. County agencies are encouraged to follow a state recycled product procurement policy (HRS 103D-105). However, according to the County's Purchasing Department, Kaua'i and other County purchasing department are not procuring a significant amount of recycled-content products because 103D-105 only encourages, rather than mandates, them to do so. The County did establish a Recycled Oil Act Program Policy in 2004 provides a preference for oil products containing the greatest percentage of recycled oil. While federal guidelines require purchase of recycled products when the purchase involves over \$10,000 and federal funds are used for a portion of the purchase. (See the Appendix, Reference Materials for Buy Recycled and Environmentally Preferable Purchasing Programs.)

Procurement policies at the local level can generally be structured in one of three ways:

- The least effective is to offer a preference for recycled products, but without a price preference or specific specification to purchase recycled. The current County policy is an example of this approach, and many other local and state governments have adopted similar policies.
- A somewhat more effective approach is to offer a price preference. For example, certified recycled products may be given a five or ten percent price advantage during competitive bid solicitations. This approach can lead to greater purchasing than a mere preference policy, but still is problematic because purchasers and bidders may not respond because bids are often adjusted to the solicitation terms and may lead to higher priced purchasing in general. Another form of price preference is to provide a source of funding to cover the difference between

recycled products and conventional products. An example of this approach is the State of California's incentive payments for use of recycled rubber in asphalt paving projects. This can be an effective approach, but requires a driver to encourage or mandate use of recycled products, and also requires a funding source.

- The most effective recycled product procurement policy is generally acknowledged to be a direct, unambiguous adoption of bid specifications to require recycled product use. This approach can lead to the lowest price recycled products and provides by far the most effective market signal to trigger increased investment and interest among vendors.

The County could evaluate its purchasing specifications to identify opportunities to change bid specifications to provide a clear preference for recycled content products. The federal bid specifications can serve as a guide for this effort. The evaluation could analyze the potential price implications.

Option 3-2: Promote enhanced State and federal market development efforts and funding.

The U.S. EPA and the State of Hawai'i have offered a range of recycling market development funding, assistance and services in the past. The County could petition both to increase the level of support. Examples include:

- Broad funding solicitations for analyzing and pursuing recycling markets and opportunities (i.e., to support options identified in this paper).
- Allocation of deposit beverage container program funds to strengthen on-island glass recycling programs and/or cooperative marketing and transportation efforts (i.e., options 1-2 and 2-1 above), or to fund County staffing and exploration of on-island partnerships (i.e., option 1-1 above).
- Adoption of additional funding mechanisms to support recycling market development similar to the ADF program (i.e., options 2-2 and 2-3 above).
- Reinstatement of the U.S. EPA's *Jobs Through Recycling Program* to provide funds for state and local recycling market development efforts.

Option 3-3: Adopt a County product stewardship policy and support State and national product stewardship efforts.

Estimated Cost: \$250 to become a member of the Product Stewardship Institute. Also, staff time to become actively involved and support stewardship efforts.

Nationally, many state and local government agencies are aggressively calling for greater product stewardship – the sharing of responsibility and costs for waste management and recycling by all entities involved in producing, selling and consuming products. Since local governments already hold nearly complete responsibility, this generally translates to calls upon manufacturers and retailers to play a greater role, including making commitments to ensure products are designed for recycling or reuse, to use recycled content in their products and in some cases to directly support the achievement of recycling goals, including providing funding and

assistance. Efforts include proposals for state and national legislation (e.g., covering electronics, beverage containers and mercury containing products) and efforts to forge voluntary agreements (e.g., covering household batteries and carpets). The U.S. EPA has been heavily involved in many of the voluntary efforts, and its Resource Conservation Challenge is one vehicle being used to engage industry. The Massachusetts-based Product Stewardship Institute serves as a forum for local and state agencies, and has secured dozens of members, including the State of Hawai'i.

To help support these efforts, the County could explicitly join the Product Stewardship Institute and publicly call for greater product stewardship policies at the State and federal levels. The County can also become an active partner with industry as opportunities are identified, as discussed under option 1-1 above.

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