



Zero Waste Plan for the County of Hawai'i

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Recycle Hawai'i**

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Report Outline/Highlights

- Overview of existing resource management programs in County of Hawai'i
- Summary of recommendations/five-year timeline and budget
- Resource generation assessment and current value of discards
- Job creation/revenue potential of recommended resource management
- Overview of stakeholder feedback

Recommended implementation plans by material/management method:

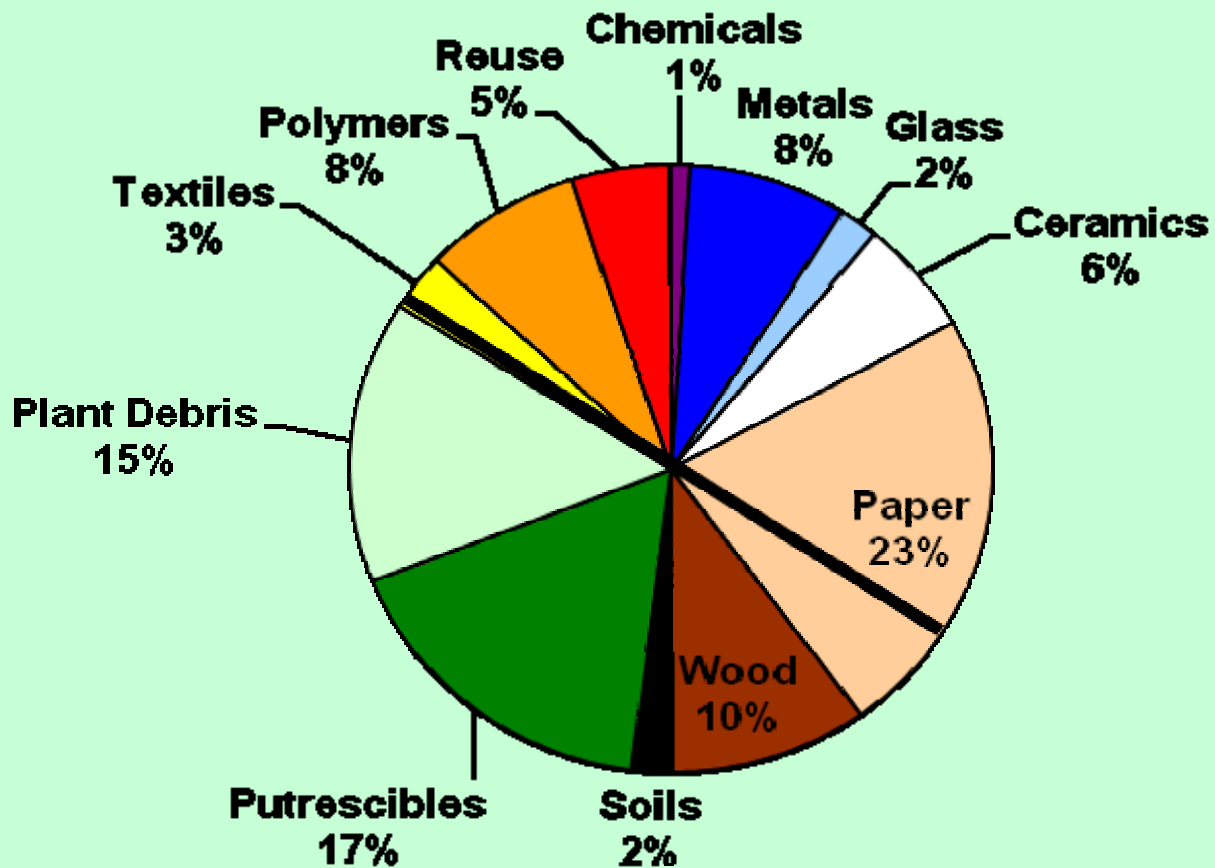
- - Organics
- - Reuse/Repair
- - Recycling
- - Special Discards
- - Education, Outreach and Public Awareness
- - Extended Producer Responsibility

Appendices:

- Sample Organics Out of the Landfill Resolution
- Sample Resource Management Ordinance
- Sample C&D Ordinance
- Sample Household Battery and Florescent Tube Ordinance
- Sample Sharps Ordinance
- Draft Model Electronics Product Stewardship Legislation
- Strategies for Architectural Salvage and Deconstruction Practices

County of Hawai'i Discards Sorted into Twelve Market Categories

(Note: More than one-third of materials are suitable for composting)



Estimated Annual Lost Value of County of Hawai'i Discards Buried in Landfill^[1]

Categories	%	Annual Tons	\$/ton	Annual Revenues Lost
1. Reuse	5	10,500	\$550	\$5,775,000
2. Textiles	3	6,300	\$50	\$315,000
3. Polymers	8	16,800	\$50	\$840,000
4. Metals	8	16,800	\$50	\$840,000
5. Glass	2	4,200	\$10	\$42,000
6. Paper	23	48,300	\$50	\$2,415,000
7. Putrescibles	17	35,700	\$7	\$249,900
8. Plant Debris	15	31,500	\$7	\$220,500
9. Wood	10	21,000	\$8	\$168,000
10. Soils	2	4,200	\$7	\$29,400
11. Ceramics	6	12,600	\$4	\$50,400
12. Chemicals	1	2,100	\$15	\$31,500
	100%	210,000	Ave. value/ton: \$67	\$10,976,700

^[1] Values subject to market fluctuation, and as such have been estimated at a lower end of the scale. Prices are FOB Hawai'i and are before sorting (high grading at the processing center). High grading would result in values increasing by five to ten times.

Waste Composition Study 9/08 CH2Mhill • Market estimates Richard Anthony Associates, 11/08

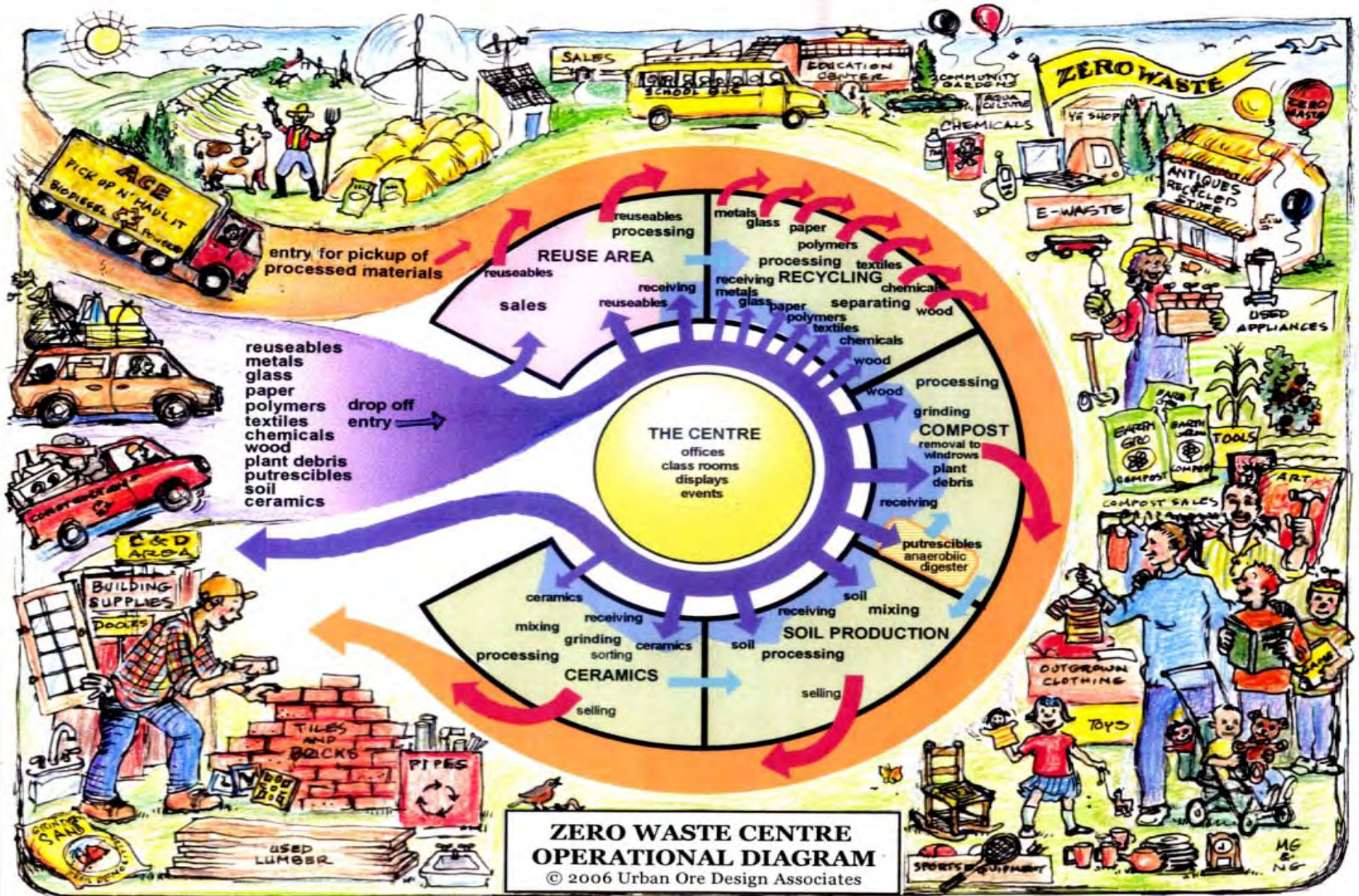
Job Potential in Hawai'i

Categories	Potential Jobs
Reuse	65
Paper	148
Organics	6
Wood	13
Ceramics	3
Metals	59
Glass	25
Polymers	298
Textiles	53
Chemicals	N/a
Total	684

Based upon at 100% Recovery Rate of 210,000 Annual Tons of Reusables/Recyclables

Note: Figures represent one possible scenario and are based on job-to-ton ratios shown in Table . Jobs for recovery of yard trimmings, putrescibles, and soils are based on the composting job-to-ton ratio. Ceramics are assumed recovered as an aggregate at a construction and demolition recovery facility. For polymers, half the recovered tonnage is assumed processed at a conventional material recovery facility but all polymers assumed to flow through a dedicated intermediate plastics processor. For paper, half the paper is assumed proposed at a conventional material recovery facility and the other half at a dedicated paper processing facility

Resource Recovery Park



Landfill and Transfer Stations Redesigned into Resource Recovery Parks with “Restores,” Mini-MRFs, and Organic Material and Rock Grinding Areas



The following “New Rules” were identified through Stakeholder Meetings

- **Source Separation Ordinance** (separation of designated organics, reusable and recyclables, including all haulers being required to provide recycling services as a condition of their County permit)
- **Get Organics Out of the Landfill** (to reduce global warming, toxic leachate, and stimulate agriculture on the island)
- **Planning, Zoning, Health and Incentives** (facilitation of resource management programs that are economically and environmentally beneficial to the island)
- **Construction & Demolition (C&D) Recycling** (construction and demolition reuse and recycling plans to reduce landfilling and stimulate the local economy)
- **Producer and Retailer Responsibility** (retailer and producer take-back of non-recyclable, non-reusable or non-compostable products and packaging/initiatives to encourage producers to design toxicity and waste out of products and packaging)

More specific recommendations include:

Expand organic discard management programs:

- Increase utilization of food banks as a source reduction strategy
- Install educational signs and facilitate home composting with demonstration areas at all transfer stations and landfills
- Develop education, training and initiatives (including “FaRMZ,” facilitated resource management zones) to promote composting on farms and businesses

Redesign landfill and transfer stations into Resource Recovery (RR) Parks:

- Develop Re-stores and Mini-MRFs on at least six sites to accept and sort commingled recyclables and recover and sell reusables
- Establish organic material and rock grinding areas on larger transfer sites
- Install full signage and demonstration areas at all transfer sites

Training and social marketing programs:

- Train the trainers
- Train the technicians and regulators
- Train people and businesses
- Facilitate research required to support sound resource management, including facilitation of public, private, and academic partnerships

REQUIRE SOURCE SEPARATION OF DESIGNATED ORGANICS, RECYCLABLES AND REUSUABLES AT ALL COUNTY DISPOSAL FACILITIES

- Available and convenient opportunities



COMPOSTABLE ORGANICS OUT OF THE LANDFILL AND BACK TO THE SOIL

Feed Local Soils: Support local farmers and sustainable food production with community composting infrastructure.

Compost:

- Sequesters carbon in the soil
- Suppresses diseases and pests
- Reduces or eliminates the need for chemical fertilizers
- Promotes higher yields of agricultural crops
- Improves soil structure, water holding capacity and erosion control, drainage and permeability
- Buffers soil acidity and much more!

County of Hawai'i

- Approx. 1 million acres of ag
- Approx. 5,500 farms
- 85% family-owned
- \$500 million annually revenues

Planning and Land Use ...

Manage discarded organics as agricultural commodities

- Facilitate composting as an accessory use on farms
- Training for County planners/regulators to understand composting and its importance to island agriculture
- Modify County Code to include reasonable composting rules for the commercial and industrial sector



REQUIRE CONSTRUCTION AND DEMOLITION REUSE AND RECYCLING PLANS...

- All permits must have a plan that complies with County reuse and recycling targets



TAKE BACK ORDINANCES...

Require Retailers to Take Back Toxic Discards

Include: Sharps, pharmaceuticals, mercury batteries , paint, florescent lights and non-recyclable/non-compostable products



TRAINING AND SOCIAL MARKETING PROGRAMS

- Train the trainers, technicians and the people
- Research and data banks
- Develop full signage
- Initiate social marketing programs

Budget and Five-year Timeline



Year	Recommendations	Budget
<i>Organics</i>		
Year 1	Modified zoning rules/County code	TBD
	Training program for County officials	\$25,000
	Source reduction program for reducing wasting of food	\$10,000
	Expanded utilization of food bank program	\$10,000
	Educational signs and home composting demonstration areas at all TS's and landfill	\$125,000
	Certified master composter program	\$30,000
	Training for transfer station attendants	\$150,000
Years 2 - 4	Training program for farmers	\$50,000
	Training guides in print and web form for farmers	\$10,000
	Training program for resort and larger generators of organics	\$75,000
	Drop-off bins for yard trimmings at all TS/convenience centers	\$135,000
	Subsidized bins for residents	\$25,000
	Subsidized bins for small business	\$40,000
	Hauling costs for organics	\$500,000
Years 2 - 5	Mobile chippers (2)	\$100,000
	Front-end Loader	\$100,000
	Tubgrinder	\$250,000
	Certified master composter program	\$50,000
Years 3 - 5	Tax credit program	TBD
	New technology grant fund establishment	\$750,000
	FaRMZ establishment (includes grant funds)	\$750,000
	Five-Year Total	\$3,255,000

REUSE

Years 1-2	Source separation ordinance	In-Kind
	Hiring and training of staff and stakeholders	\$1,500,000
	Equipment, buildings, and contractors	\$3,500,000
Year 3	Public awareness	\$250,000
Years 4-5	Operations (staff training and management)	\$1,000,000
	Five-Year Total	\$6,250,000

RECYCLABLES

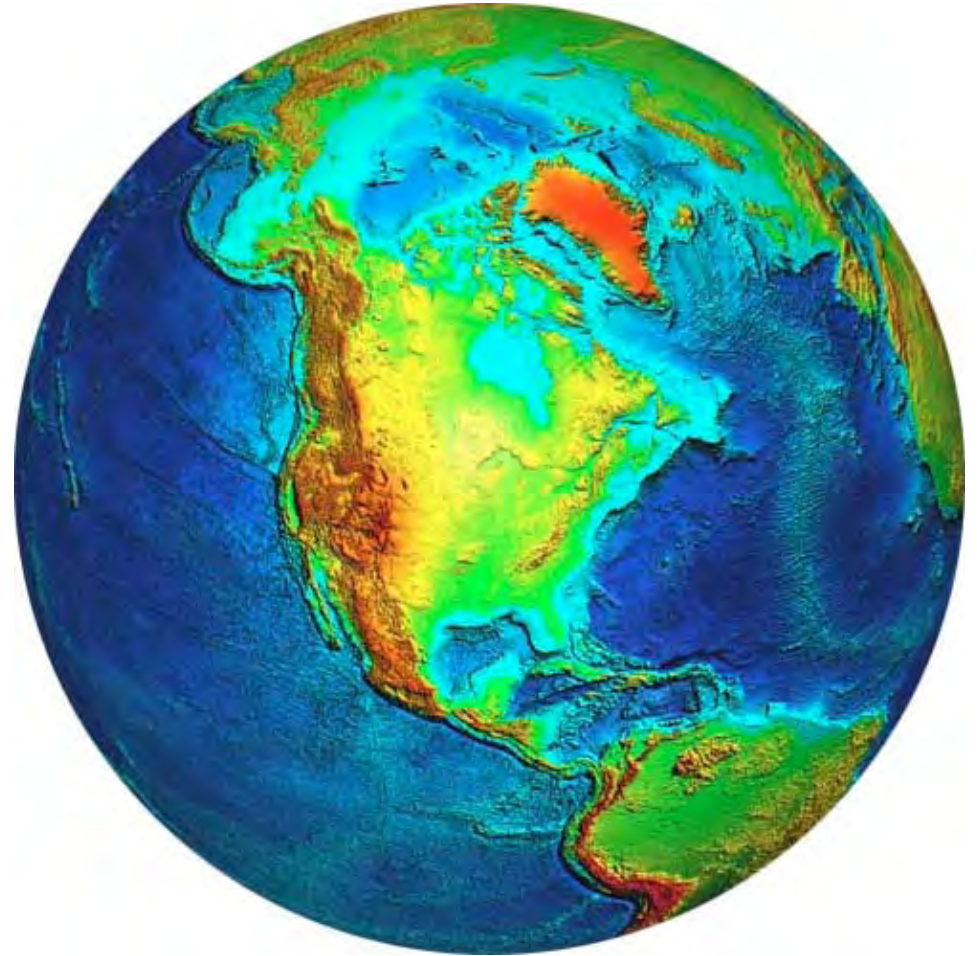
Year 1	Source separation ordinance and permit requirements	\$25,000
Years 2 - 3	Processing center design and construction Infrastructure: \$3 million amortized over 20 years • Pole barn at six sites Equipment: \$3.5 million amortized over 6 years • Conveyors magnets, baler, scales, bins for reusable's, commingled recyclables, compostable organics, and rocks • Trucks for moving materials	\$6,500,000
Years 2 - 5	Training and public awareness	\$1,000,000
	Five-Year Total	\$7,525,000

SPECIAL DISCARDS

Year 1	Pass ordinances and work with health department on reuse	\$50,000
Year 2	Construction of special discard centers	\$1,500,000
	Equipment	\$250,000
Years 3-5	Staff training	\$500,000
	Public awareness campaign	\$500,000
	Operating costs	\$300,000
	Five-Year Total	\$3,100,000

<i>EDUCATION, OUTREACH AND PUBLIC AWARENESS</i>		
Year 1	Hire recycling education and public awareness coordinators	
	Develop recycle art campaign	
	Develop E-scrap campaign (anything with a plug)	
	Develop EPR for difficult-to-recycle campaign	
	Explore legislative actions for takeback of hazardous products and packaging	
	Implement recycling/composting industry internship program	
	Implement communitywide social marketing plan	\$880,000
Year 2	Launch campaigns and intensified in-school programs	\$880,000
Years 3-5	Maintain existing campaigns/seek community feedback for modifications	\$680,000 annually
	Five-Year Total	\$3,800,000
	Five-Year Total for all Programs	\$23,930,000

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