

County of Hawai'i Integrated Solid Waste Management Plan Update

Zero Waste and ISWMP Integration Value Model Results – Residuals Management Initial Implementation Planning

March 2-3, 2009

CH2MHILL
in association with

GA GEOMETRICIAN
ASSOCIATES

SKY VALLEY
ASSOCIATES



Agenda

- **Plan status**
- **Zero Waste and ISWMP Crosswalks**
- **Value Model and Risk Analysis of Residuals Management Options**
- **Initial Draft Implementation Planning**

Status of ISWMP Update

- **First draft chapters: Presented to SWAC and Council EMC**
 - All but implementation plan and summary
- **Remaining Milestones:**
 - April 6/7: Implementation Plan (SWAC, Council EMC)
 - May 4-7: Draft Plan from consultant (for deliberation by SWAC, Council EMC, Public Meetings)
 - Late spring/early summer: Approval process (DEM, SWAC, Council)
 - Public hearing
 - Early summer: Submit draft plan to State
 - State review (60 days if no extension required)
 - Late summer/fall: Plan adoption by Council resolution

3

ISWMP Consultant Initial Recommendations Zero Waste and ISWMP Integration

- **Basis for CH2M HILL initial recommendations**
 - Our understanding of SWAC opinions
 - Discussions during SWAC meetings
 - SWAC “voting” for various options
 - Additional comments received by email
 - Interaction with Council EMC
 - Our understanding of input received at public meetings
 - Meetings for ISWMP Update and Zero Waste plan
 - Discussions with various community groups
 - One-on-one discussions with community members
 - Discussions with County DEM staff

4

Zero Waste Study Crosswalks

Zero Waste Study, Summary of Recommendations	ISWMP Consultant Recommendation for Inclusion in ISWMP Update
1. Local ordinances to require the following:	
A. Compostable organics out of landfill	If included, need to decide how to implement. Will require County composting of food/yard at SHSL and WHSL, plus significant backyard element, plus study of options at transfer stations (e.g., food bins with front load route at most stations; backyard in areas without food bin at TS)
B. Separation of designated organics, reusables and recyclables (residents, businesses, haulers)	Include
C. Construction and demolition reuse and recycling plans	Include
D. Funds for training and social marketing programs	Include
E. Retailer and producer take back of problem products and packaging	Include
5	

Zero Waste Study Crosswalks (continued)

Zero Waste Study, Summary of Recommendations	ISWMP Consultant Recommendation for Inclusion in ISWMP Update
2. Landfill and transfer stations redesigned into Resource Recovery Parks	
A. ReStores on at least six sites for recovery and sales of reusables	Include
B. Mini-MRFs on at least six sites to accept and sort commingled recyclables	Two MRFs (at landfills) and study cost-effectiveness of MRF here or on mainland
C. Organic material and rock grinding areas	Include
D. Full signage and demonstration areas	Include
6	

Zero Waste Study Crosswalks (continued)

Zero Waste Study, Summary of Recommendations	ISWMP Consultant Recommendation for Inclusion in ISWMP Update
3. Training and social marketing programs	
A. Train the trainers	Include
B. Train the technicians and regulators	Include
C. Train people and businesses	Include
D. Facilitate research and public, private, and academic partnerships	Include

7

Zero Waste Study Crosswalks (continued)

Zero Waste Study, Summary of Recommendations	ISWMP Consultant Recommendation for Inclusion in ISWMP Update
4. New rules for local and island-wide resource management issues	
A. Producer and retailer responsibility	Include
B. Source separation ordinance	Include
C. Get organics out of the landfill	Include
D. Construction and Demolition C&D Recycling	Include
E. Planning, Zoning, Health and Incentives	Include

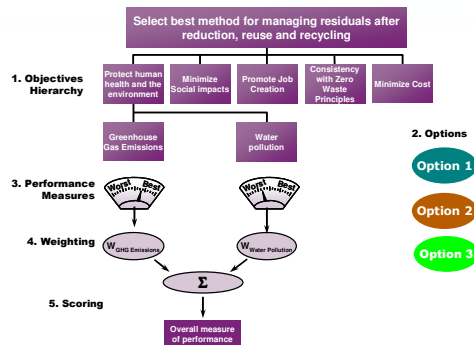
8

Concluding Remarks Zero Waste Study – ISWMP Integration

- **Concept of Zero Waste Embedded in ISWMP Update**
- **Initial suggested name for ISWMP: “The Path to Zero Waste”**
- **Likely differences**
 - Speed of implementation
 - Details of implementation
 - Funding

Value Model and Risk Analysis of Residuals Management Options

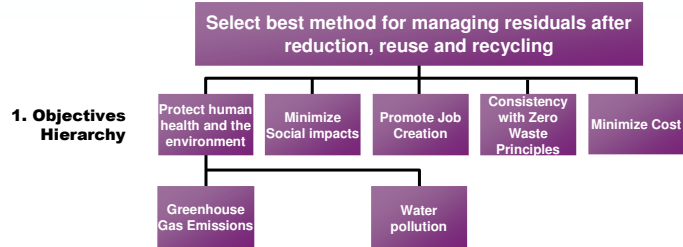
Value Model



Risk Analysis

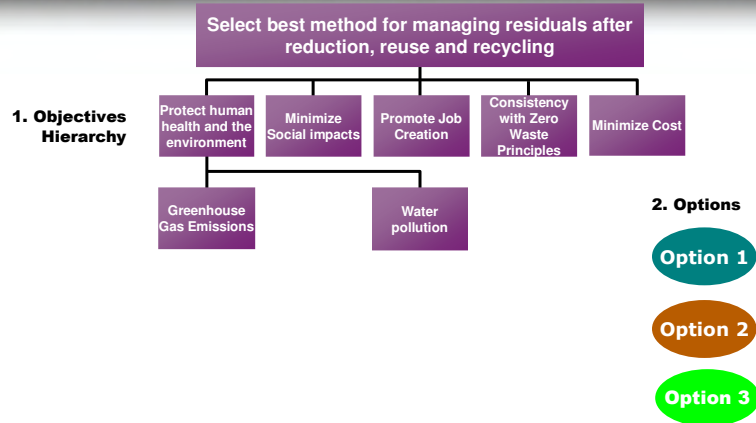
Can the alternative be implemented with confidence at the estimated cost i.e., what is the uncertainty surrounding the cost of each alternative?

Value Modeling Overview



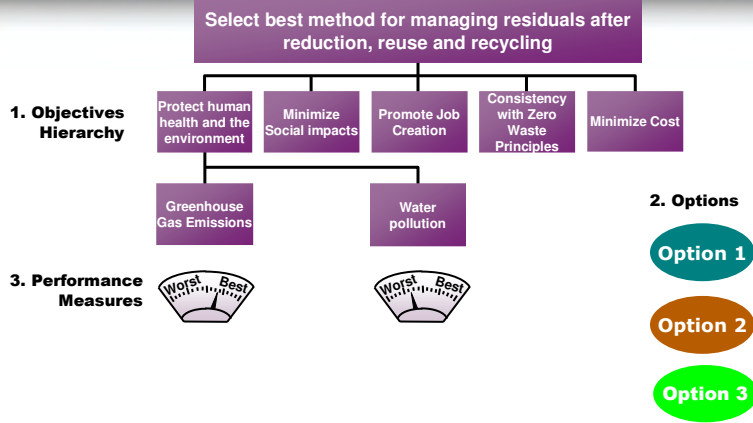
11

Value Modeling Overview



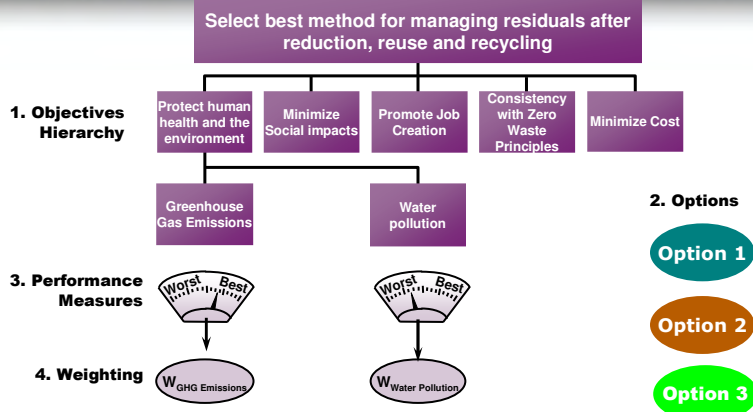
12

Value Modeling Overview



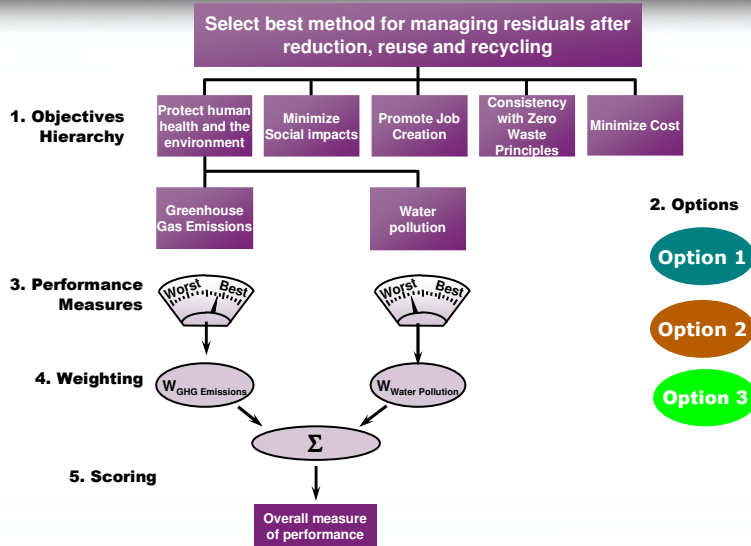
13

Value Modeling Overview



14

Value Modeling Overview



15

Hawai'i County Residuals Management Objective Hierarchy and Performance Measures

Objectives Hierarchy	Performance Measure
1. Minimize long-run life-cycle cost	System average per-ton cost in FY 2008
2. Protect public health and the environment	
A. Minimize greenhouse gas production (from process and/or vehicles)	Change in annual MTons Carbon Equivalent
B. Minimize other harmful air emissions (from process and/or vehicles)	1-5 Scale
C. Minimize water pollution	1-5 Scale
D. Promote worker and public safety	1-5 Scale
3. Minimize social impacts	
A. Minimize proximity impacts (e.g., traffic, noise, odor)	1-5 Scale
B. Provide local jobs	Added jobs
C. Promote environmental justice	1-5 Scale
4. Accommodates future reductions in residuals and changes in composition (i.e., no put-or-pay)	1-5 Scale

16

Hawai`i County Residuals Management Options

1. Waste-to-Energy Facility for East Hawai`i; Ash and Bypass Materials to SHSL
2. Waste-to-Energy Facility for all County Residuals; Ash and Bypass Materials to WHSL
3. One or More Modular Waste-to-Energy Facilities in Rural Areas; Ash and Bypass Waste to SHSL and WHSL
4. Develop Mechanical-Biological Treatment (MBT) Facility at the SHSL and/or WHSL Sites
5. Expand SHSL for East Hawai`i residuals, and use WHSL for West Hawai`i residuals
6. Close SHSL and landfill all County Waste at the WHSL
7. Bale and Barge East Hawai`i Waste and utilize WHSL for West Hawai`i residuals

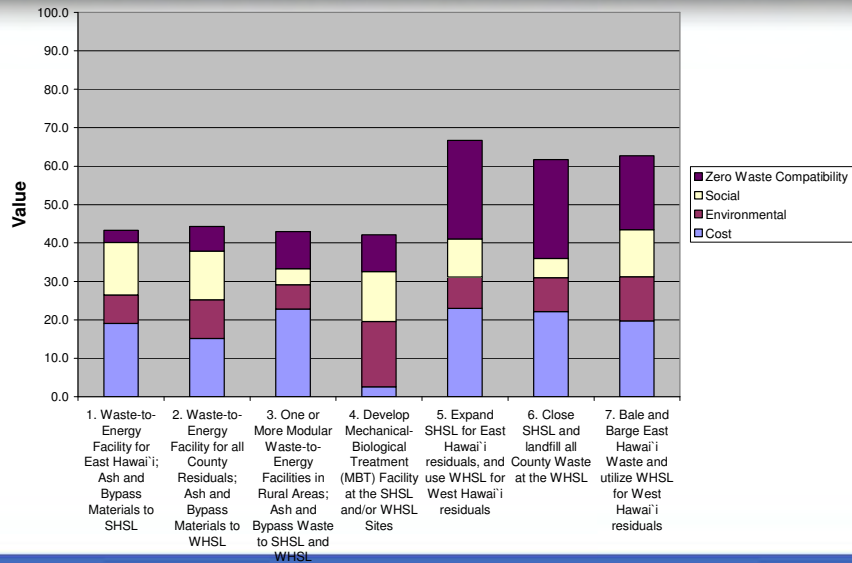
17

Hawai`i County Residuals Management Weights

Objectives Hierarchy	Weights	Percent
1. Minimize long-run life-cycle cost	85	23.0%
2. Protect public health and the environment	100	
A. Minimize greenhouse gas production (from process and/or vehicles)	90	6.8%
B. Minimize other harmful air emissions (from process and/or vehicles)	80	6.0%
C. Minimize water pollution	90	6.8%
D. Promote worker and public safety	100	7.5%
3. Minimize social impacts	90	
A. Minimize proximity impacts (e.g., traffic, noise, odor)	85	8.1%
B. Provide local jobs	80	7.6%
C. Promote environmental justice	90	8.6%
4. Accommodates future reductions in residuals and changes in composition (i.e., no put-or-pay)	95	25.7%

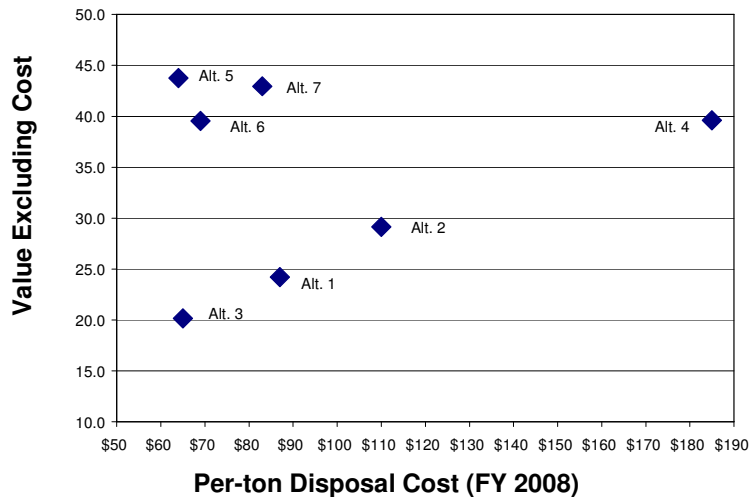
18

Hawai'i County Residuals Management Results



19

Hawai'i County Residuals Management Value-Cost Comparison



0

Hawai`i County Residuals Management Sensitivity to Changes in Weights

Scores with Changes in Weights

Changes in Weights	Value Scores						
	1. Waste-to-Energy Facility for East Hawai`i; Ash and Bypass Materials to SHSL	2. Waste-to-Energy Facility for all County Residuals; Ash and Bypass Materials to WHSL	3. One or More Modular Waste-to-Energy Facilities in Rural Areas; Ash and Bypass Waste to SHSL and WHSL	4. Develop Mechanical-Biological Treatment (MBT) Facility at the SHSL and/or WHSL Sites	5. Expand SHSL for East Hawai`i residuals, and use WHSL for West Hawai`i residuals	6. Close SHSL and landfill all County Waste at the WHSL	7. Bale and Barge East Hawai`i Waste and utilize WHSL for West Hawai`i residuals
Baseline	43.3	44.3	43.0	42.1	66.7	61.7	62.7
GHG = 15	42.7	42.7	43.1	39.5	67.4	62.5	65.7
Worker Safety = 50	44.0	45.9	43.4	44.9	65.9	62.0	63.5
Cost = 200	52.7	49.5	56.3	34.8	74.6	69.9	68.2
Cost = 50	39.1	42.1	37.1	45.4	63.3	58.0	60.3
Zero Waste Compatible - no put or pay = 60	42.3	44.0	37.0	46.3	59.0	53.1	58.6

Rank Order with Changes in Weights (1 = Highest Scoring Alternative)

	Rank Ordering of Value Scores						
	1	2	3	4	5	6	7
Baseline	5	4	6	7	1	3	2
GHG = 15	6	5	4	7	1	3	2
Worker Safety = 50	6	4	7	5	1	3	2
Cost = 200	5	6	4	7	1	2	3
Cost = 50	6	5	7	4	1	3	2
Zero Waste Compatible - no put or pay = 60	6	5	7	4	1	3	2

21

Hawai`i County Residuals Management Cost Implementation Risk

Can the alternative be implemented with confidence at the estimated cost i.e., what is the uncertainty surrounding the cost of each alternative?

Alternative	Risk
1. Waste-to-Energy Facility for East Hawai`i; Ash and Bypass Materials to SHSL	Low-Moderate
2. Waste-to-Energy Facility for all County Residuals; Ash and Bypass Materials to WHSL	Low-Moderate
3. One or More Modular Waste-to-Energy Facilities in Rural Areas; Ash and Bypass Waste to SHSL and WHSL	Low-Moderate
4. Develop Mechanical-Biological Treatment (MBT) Facility at the SHSL and/or WHSL Sites	High
5. Expand SHSL for East Hawai`i residuals, and use WHSL for West Hawai`i residuals	Moderate
6. Close SHSL and landfill all County Waste at the WHSL	Low
7. Bale and Barge East Hawai`i Waste and utilize WHSL for West Hawai`i residuals	Moderate

22

Initial Draft Implementation Plan Key Recommendations

- **Discussions with SWAC begin tomorrow**
- **Likely recommendations:**
 - Transfer system
 - Retain system and reconstruct aging stations
 - License haulers, but no curbside
 - Phased implementation of PAYT
 - Fully staffed with reduced hours and/or fewer stations
 - Develop two materials recovery facilities
 - Expand on-site composting
 - Commercial recycling initiative
 - Expand education and training
 - EPR and expand HHW/E-waste program

23

Next Steps

- **Review this material with SWAC**
- **Develop three implementation scenarios for discussion at the April SWAC/Council EMC meetings**
- **Develop draft plan**

24

Initial Thoughts

Financial Incentives and Infrastructure Requirements for Increasing Residential and Commercial Recycling

Financial Incentives and Infrastructure Requirements for Increasing Residential and Commercial Recycling

- **Key Objectives:**
 - Increase diversion of waste from landfill
 - Provide financial incentive to waste less
 - Encourage program consistency at all County facilities to the extent practicable
- **Three key strategies:**
 - Mandatory recycling and PAYT at County recycling and transfer stations
 - Increase recycling from commercial businesses and institutions
 - Differential tip fee for: disposal of designated recyclables will be double regular tip fee
- **Education, promotion, and phase-in is critical**

PAYT at Recycling/Transfer Stations

- **Mandatory recycling ordinance for recycling/transfer stations**
- **Allow one trip per day at RTSs for commercial businesses in relatively small vehicles (1 ton or smaller)**
- **Bag/tag system for garbage**
 - Standard garbage accepted only in special County-authorized bags
 - Bags made available for purchase at local retail institutions
 - Non-recyclable bulky items accepted only with special County-authorized tags
 - Tags made available for purchase at local retail institutions
 - One tag per item for most bulky items (white goods, couches, mattresses)
 - Multiple tags for various sizes of mixed hard-to-bag non-recyclable material like home remodel demo (e.g., 5 tags for a pickup load)

27

Commercial Recycling

- **County designate a list of materials delivered to landfills that must be recycled**
 - target large quantity materials relatively easily diverted
 - Possible candidates: green waste, scrap metal, cardboard
- **Tip fee increase as needed to pay for added recycling**
- **Differential tip fee (double regular fee) for loads delivered with designated materials**
 - No tolerance in ordinance; “reasonable” enforcement
- **County develop materials recovery facilities (MRFs) in East and West Hawai`i for accepting/processing all designated materials (private sector operations)**
- **Recyclables accepted at landfill/MRF sites free of charge except for:**
 - Scrap metal fee: encourage private sector to handle these materials
 - Green waste fee: encourage on-site management

28

Implementation Considerations

- **Two key actions for 2009**
 - Implement fees for scrap metal and green waste at East Hawai'i after 2-3 month education and promotion effort
 - Begin siting process for West Hawai'i sort station implement
- **Implementation of commercial recycling and PAYT**
 - Extensive education and promotion campaign for 3-6 months prior to implementation
 - Multi-media social marketing campaign (print, radio, TV)
 - MUST be adequately funded and staffed
 - Recognize economic realities (recession) and implement only after recession is nearing end?
 - Implement with a “grace period” where fees are not yet collected