


County of Maui Integrated Solid Waste Management Plan – Highlights from Briefing for County Council February 24, 2009

Presented at
WASTECON 2009
“Solid Waste Management: An Island Perspective” Session
By Harvey W. Gershman

September 22, 2009




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Presentation Outline - Morning

1. *Why Do A Plan?*
2. SWRAC
3. Current Solid Waste Practices
4. Recommendations
5. Comparison of Current vs. Recommended
6. Public Information Meetings and Hearings
7. Comments from State of Hawaii Department of Health



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1. Why Do A Plan?


- ✓ Hawaii State Law requires it
 - ❖ Last Plan done in 1994
- ✓ Over one-year in the making
- ✓ State Law established a 50% recycling goal be reached by January 2000
 - ❖ In FY2007, County at 34%
- ✓ Central Maui Landfill filling up
 - ❖ Current capacity runs out in 2026
- ✓ Maui County continues to grow
 - ❖ 1,000 tons per day currently; 1,400 projected in 2030

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2. SWRAC

- Community input required by state law (HRS Section 342G)
- Composed of 16 members appointed by Mayor
 - Concerned citizens
 - Industry leaders
 - Members of the County Council
- 7-day research tour in Oregon and California
- 12 noticed meetings on current solid waste practices on Maui and industry best practices
- 18 consensus points recommendations made for the Plan

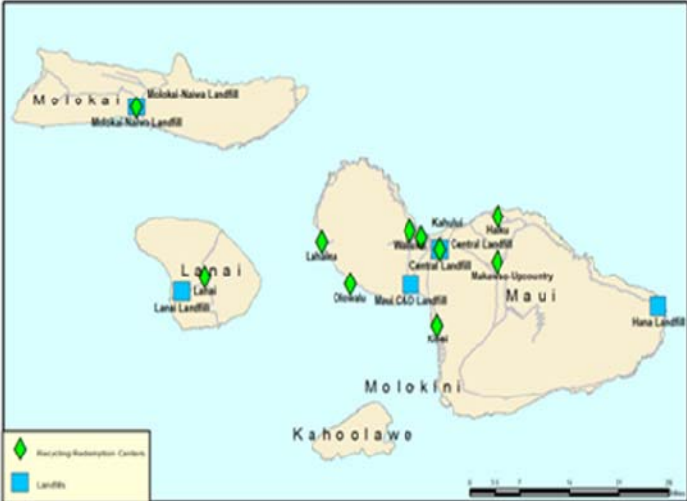



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3. Current Solid Waste Practices





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County Refuse Collection

- Solid Waste Division collects from single-family residential properties on roads meeting County standards
- In FY2007, 24,000 voluntarily subscribed of the 51,000 possible households
- Once or twice per week refuse service
- Agreement with Union controls pick-ups per route
 - 1000 for automated
 - 350 for manual







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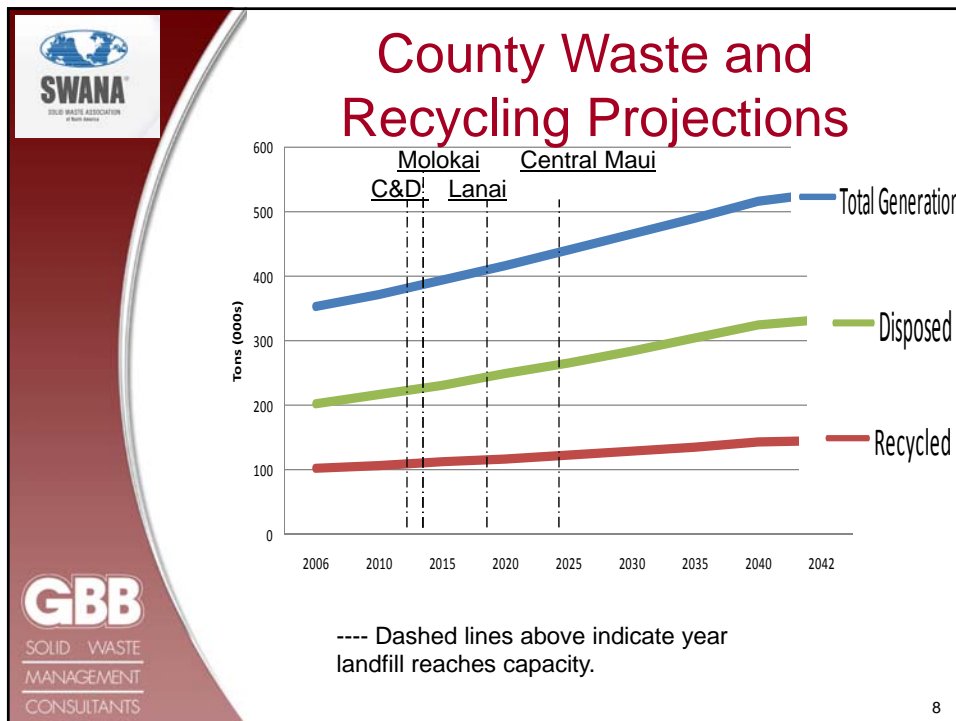



County Recycling Efforts




- 9 recycling centers
- 17 redemption centers
- Public-private partnerships for
 - Composting yard waste and biosolids
 - Converting fats, oils, and greases to biofuel
- Collection opportunities for paint, batteries, electronics
- Collection sites for used motor oil recycling

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Global Findings

- Challenges inherent in operating on three islands
- Amount of waste generated in County will continue to increase
- Landfill space in County is finite
- During Plan preparation:
 - Value of recyclable materials and energy products that can be derived from waste is increasing
- Now, with economic downturn:
 - Value of recyclables and fuel have fallen off greatly

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Value of Products in Plan


- Curbside recyclable materials
 - \$130 per ton revenue (West coast U.S.)
 - \$75 per ton cost (container shipping)
 - \$55 per ton net revenue
 - Plus HI – 5 redemption value : None
- C&D recyclable materials
 - \$40 per ton revenue (Maui markets; net of transportation)
- Electricity, WasteTEC to MECO
 - 400 kilowatt hours per ton
 - \$0.15 per KWHr
 - \$54 revenue per ton

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4. Recommendations

- 60 % Recycling
 - MRF
 - C&D MRF
 - Legislation
- Universal Collection Services
- Household Hazardous Waste
- WasteTEC
- Disposal

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MRF to Process Recyclables

- Single-stream processing trend now
- Capital - \$18 million
- O&M - \$75 per ton
- Revenue - \$55 per ton
- Net cost - \$20 per ton*

* HI-5 redemption value not included in Plan



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Residential Collection Service

Universal for all single-family residences served by streets and roads meeting County standards with large carts


1. **Refuse** collected once per week
2. **Single-stream recyclables** collected once every other week
3. **Yard and large green waste** collected in cans, paper bags, or bundled
4. **Bulky and White goods** collection expanded to single family residents
5. **Call center** handles all service requests and inquiries

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C&D Recycling and Disposal

- County-initiated C&D MRF
- Ordinance requiring 50% C&D recycling by 2013
- County provides grants to encourage reuse
- Capital - \$8.7 million
- O&M - \$67 per ton
- Revenue - \$24 per ton
- Net cost -\$43 per ton



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Other Efforts Needed to Reach 60% Recycling


- Recyclable drop-offs continue and are improved
- Mandatory commercial recycling legislation by 2013
- Mandatory commercial food waste recycling
- Increased metal recycling
- Increased E-waste recycling
- Increased County public education and enforcement






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Household Hazardous Waste Facility for HHW and E-Waste

- Permanent Facility
 - 312 tons per year
 - Capital - \$872,000
 - O&M - \$1,200 per ton
 - Net Revenue - \$0
- HHW examples: paints, chemicals, solvents, fertilizers, weed killers, pharmaceuticals, etc.
- Event Collection
- Reuse Shop
- Recycle More



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Disposal Recommendations


WasteTEC –

- Pursue Maui County-specific feasibility study for alternative conversion technologies to convert waste to electricity or other consumable fuel
- Capital - \$86 million
- O&M - \$134 per ton
- Revenue - \$54 per ton
- Net Cost - \$80 per ton






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WasteTEC Technologies and Risk

Alternative	Risks/Liability	Risk Summary
Mass Burn/WaterWall	Proven commercial technology	Very Low
Mass Burn/Modular	Proven commercial technology	Low
RDF/ Dedicated Boiler	Proven commercial technology	Low
RDF/Fluid Bed	Proven technology; limited U.S. commercial experience	Moderate
Pyrolysis	Previous failures at scale, uncertain commercial potential; no operating experience with large scale operations	High
Gasification	Limited operating experience at only small scale; subject to scale-up issues	High
Anaerobic Digestion	Limited operating experience at small scale; subject to scale-up issues	High
Mixed-Waste Composting	Previous large failures; No large-scale commercially viable plants in operation; subject to scale-up issues	Moderate to high
Chemical Decomposition	Technology under development; not a commercial option at this time	High





Source: GBB; December 2008.

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WasteTEC – Energy Opportunity

- County-initiated facility sized for 360 tons per day
- Electricity output
 - 14 megawatts power net capacity
 - 47 million kilowatt hours per year exported
 - Displaces 5% of MECO's fuel oil purchases
 - Approx. \$8.3 million per year (@ \$120 per barrel)
- Extends CML life to 2042



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Disposal Recommendations



- Olowalu Convenience Center
 - ❑ Convert to transfer station
- Central Maui Landfill
 - ❑ Remains active; reaches capacity in 2024
 - ❑ 60 % recycling extends CML to 2031
 - ❑ If WasteTEC starts operating in 2013, CML reaches capacity in 2042
- Lanai and Molokai landfills
 - ❑ Evaluate for standby status
- Hana:
 - ❑ Put landfill on standby
 - ❑ Add full-service convenience center

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5. Comparison of Current vs. Recommended

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COMPARISON	Current	Recommended
Diversion Rate	30%	60%
Curbside Customers	27,000	44,000
Curbside Recycling	No	Yes
Curbside Bulk Item	No	Yes
Curbside White Good	Partial	All
Household Hazardous Waste Facility	No	Yes
Materials Recovery Facility (MRF)	No	Yes
Construction and Demolition MRF	No	Yes
Active Landfills	4	3
Curbside Pilot Yard Waste	No	Yes
Generating Electricity from Garbage	No	Yes
Central Maui Landfill Phase VI Capacity Used Up (with C&D)	2024	2042
Education	Not separate budget item	\$2/HH implementation \$1/HH sustained
Average Annual Division Budget 2006 – 2042	\$50 million	\$107 million
Cumulative Capital Needed	\$76 million	\$200 million
General Fund Contribution	\$19/ton	\$0/ton



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6. Public Information Meetings and Hearings

- **Monday, July 21 – Hana:** Hana Community Center Cafeteria
- **Tuesday, July 22 – Lahaina:** Lahaina Civic Center Social Hall
- **Wednesday, July 23 – Wailuku:** Wailuku/Velma Santos Community Center
- **Thursday, July 24 - Lanai City, Lanai:** Lanai Community Center
- **Friday, July 25 – Kaunakakai, Molokai:** Mitchell Paule Community Center



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7. State of Hawaii Comments on The Draft Plan

- Major comment:
 - “Stand-by” status in permitting landfills not recognized; so, need to address re: Hana, Lanai, and Molokai landfill recommendations
- Closing comment:
 - “...the draft plan document contains all components required...and the County of Maui has adequately met the procedural requirement of HRS §342G.”



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Presentation Outline - Afternoon

1. Impact of recent changes in the economy
2. Review of the current and recommended systems
3. Assumptions in the economic analysis
4. Incremental costs for adding to the current system
5. Changes needed in County organization and administration
6. Implementation schedule
7. Benefits of the Plan projects
8. Questions and discussion



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1. Impact of Recent Changes in the Economy



- General economy and financial markets
- Volatility of energy cost, using No. 2 distillate wholesale/retail pricing
- Declining value of recyclables

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2. REVIEW OF THE CURRENT AND RECOMMENDED SYSTEM



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3. Assumptions in the Economic Analysis



- Base year 2006
- Planning period through 2042
- Growth rates and escalation
- Bond interest rates
- Population, waste and recycling projections

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4. INCREMENTAL COSTS FOR ADDING TO THE CURRENT SYSTEM

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Plan Projects Capital Requirements (2007\$; M=Million)

Plan Project	Total
Central Maui Solid Waste Campus	- Included Below -
Call Center*	\$100,000
Bulky Waste Collection	\$800,000
MRF*	\$18M
Universal Collection	\$7M
Fleet Maintenance*	\$3M
Hana Convenience Center	\$400,000
Construction & Demolition MRF*	\$9M
Household Hazardous Waste*	\$900,000
Olowalu Transfer Station	\$7M
Lanai Convenience Center	\$2M
Molokai Convenience Center	\$2M
WasteTEC*	\$86M
Total	\$137M


*Projects potentially located at the Central Maui Solid Waste Campus.

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Central Maui Landfill Capital Costs (2007\$)

Scenario	Year Phase VI Used Up	Total CML Capital Costs through 2042	Additional Acreage through 2042
With Current System	2024	\$84 Million (Requires Phase VII)	8 acres
With Plan Projects	2042	\$63 Million (Through Phase VI)	- None -



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Recommended Ordinances (In Place By 2013)

- Establish universal collection including recycling requirements for residential generators collected by the County
- Establish recycling requirements for residential generators not collected by the County
- Establish commercial bans and recycling requirements
- Establishing C&D recycling requirement for all commercial and residential projects at 50%
- Ordinances include enforcement mechanisms




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Current and Recommended Systems Cost Comparison

	Current 2010	Rec'd 2010	Current 2042	Rec'd 2042
Expense	(\$24.4 million)	(\$26.2 million)	(\$86.2 million)	(\$197.4 million)
Revenue	\$15.7 million	\$15.6 million	\$77.5 million	\$133 million
Excess/ (Shortage)	(\$8.8 million)	(\$10.6 million)	(\$8.7 million)	(\$64.4 million)
Number of Employees	91	94	139	279
No. Collection Accounts	25,769	25,769	39,770	63,795
No. of Tons	321,663	321,663	527,564	527,564
Expense per Ton	(\$76)	(\$82)	(\$163)	(\$374)
Excess/(Shortage) per Ton	(\$27)	(\$33)	(\$17)	(\$122)




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Rates without General Fund

	Past Pricing	Current Pricing	Current w/o GF	Current w/o GF	Plan w/o GF	Plan w/o GF
	2006	2008	2025	2042	2025	2042
Monthly Residential Collection	\$12	\$14	\$43	\$68	\$50	\$75
Recycling Surcharge per Ton	\$4	\$10	\$19	\$34	\$40	\$53
Disposal per Ton	\$47	\$53	\$78	\$86	\$207	\$275


Note: Landfill Tipping Fee = Recycling Surcharge + Disposal Fee




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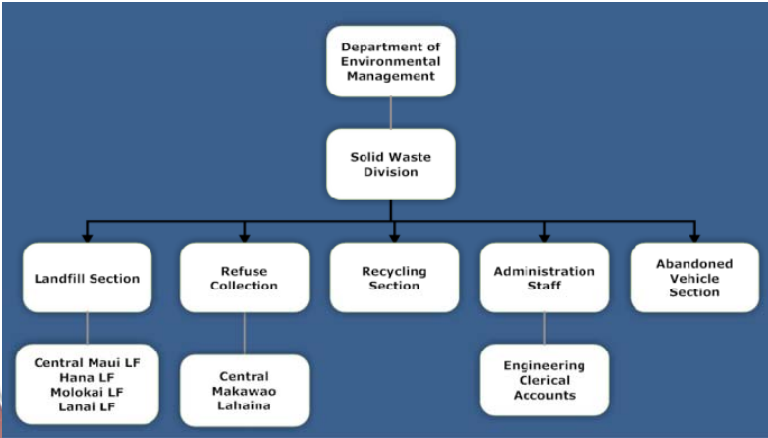
5. CHANGES NEEDED IN COUNTY ORGANIZATION AND ADMINISTRATION


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Current Organization DEM and Solid Waste Division



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graph TD; DEM[Department of Environmental Management] --> SWD[Solid Waste Division]; SWD --> Landfill[Landfill Section]; SWD --> Refuse[Refuse Collection]; SWD --> Recycling[Recycling Section]; SWD --> Admin[Administration Staff]; SWD --> AVS[Abandoned Vehicle Section]; Landfill --> CM[Central Maui LF]; Landfill --> HL[Hana LF]; Landfill --> ML[Molokai LF]; Landfill --> LL[Lanai LF]; Refuse --> CM2[Central Makawao Lahaina]; Admin --> ECA[Engineering Clerical Accounts];
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Recommended System Will Require:

- ❑ More human resources to plan, procure, implement and monitor new operations
- ❑ Collection equipment, software and services for efficiency improvements and expanded services
- ❑ Training to manage and oversee these activities
- ❑ Land for the Central Campus of added facilities
- ❑ Capital for Central Landfill expansion
- ❑ Capital for improvements at collection yards, transfer station, and convenience centers
- ❑ Contractors to Design/Build/Operate new facilities/services (MRF, C&D MRF, and WasteTEC)
- ❑ Capital for Design/Build of the new facilities
- ❑ Increased revenue to pay for the added debt service on capital, service fees and operating costs



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Recommended Funding and Organizational Changes

- Change SWD to be financially self-supported
 - Revenues equal to or greater than expenses
- Revenue bonds recommended for major capital investments including land purchases
- Revenue sources could include:
 - County residential service charges
 - Tipping fees at County at convenience centers, transfer stations, and landfills
 - Revenues/revenue sharing from the sale of products
 - Solid Waste System Benefit Fee on properties
- Utilize full service contractors for major infrastructure improvements requiring sale of products
 - Note: if there is an existing private facility, County should allow for it to compete under long-term offering
- Converts General Fund backed SWD to be self-supporting



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Recommended Funding and Organizational Changes (Continued)


- Prepare the County SWD for a significant expansion of the current organization that could include:
 - Additional staff for expanded and efficient organization
 - Software improvements for equipment maintenance, customer service, work order tracking, activity based cost management, and computerized collection path routing
 - Increased public education and information to accomplish the level needed for reaching the 60% recycling goal

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6. IMPLEMENTATION SCHEDULE


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Development Time and Capital (Does Not Include Timeline for Siting)

Project	Development Time (Months)	Capital Requirement (2007\$)
Central Maui Campus	Included in Below	- Included Below -
Call Center*	15	\$100,000
Bulky Waste Collection	13	\$800,000
MRF*	42	\$18M
Universal Collection	14	\$7M
Fleet Maintenance*	33	\$3M
Hana Convenience Center	20	\$400,000
Construction & Demolition MRF*	42	\$9M
Household Hazardous Waste*	24	\$900,000
Olowalu Transfer Station	32	\$7M
Lanai Convenience Center	22	\$2M
Molokai Convenience Center	22	\$2M
WasteTEC*	57	\$86M

*Projects potentially located at the Central Maui Solid Waste Campus.




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Land Requirements Central Maui Solid Waste Campus

Facility	Land Area (Acres)	Office Space
MRF	7.0	6,000
C&D MRF	3.0	0
Fleet Maintenance	1.5	1,500
HHW Facility	0.5	100
Base Yard	2.5	0
WasteTEC	7.0	3,000
Total	21.5	10,600



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Sites for New Facilities

- New facilities require land area
- Central Maui Solid Waste Campus or separate sites decision for: MRF, C&D MRF, HHW, Fleet Maintenance, and/or WasteTEC
- Maui Electric has site set aside for WasteTEC type facility
- Site confirmation requires: selection, acquisition, zoning, permitting and funding
- Timeline for site confirmation could be 4 years
- Conclusion: focus on site decisions sooner rather than later



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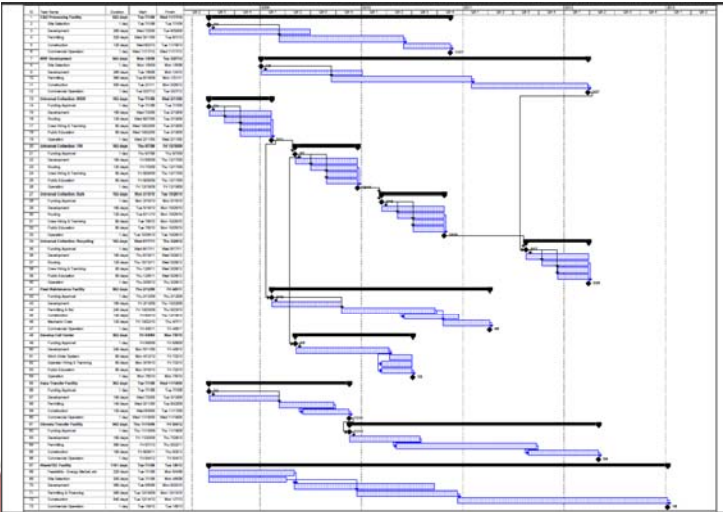
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Plan Schedule – See Attachment



(Plan Schedule is dependent on factors including but not limited to funding, site selection, land use and required staffing for DEM/SWD to prioritize and sequence projects.)







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7. BENEFITS OF THE PLAN PROJECTS


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Benefits of the Plan Projects


Project	Benefits
Central Campus	<ul style="list-style-type: none"> ✓ More efficient use of resources (labor, equipment, and supplies, e.g. fuel) ✓ Improved communication among programs ✓ Eliminates transportation among dispersed facilities ✓ Lower vehicle emissions
Call Center	<ul style="list-style-type: none"> ✓ Better customer service with 1 vs. current 7 phone numbers ✓ Better tracking of work performed by County
Bulky Waste	<ul style="list-style-type: none"> ✓ More customer friendly services to residents ✓ More recycling of white goods and metals ✓ Reduces illegal dumping ✓ Potential reuse options for furniture
MRF	<ul style="list-style-type: none"> ✓ More recycling ✓ Market revenue potential ✓ saves landfill capacity ✓ Allows for curbside recycling ✓ Reduces green house gas emissions

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Benefits of the Plan Projects (cont'd)

Project	Benefits
Universal Collection	<ul style="list-style-type: none"> ✓ Curbside recycling ✓ Curbside trash cart collection ✓ Equal service for residences
Fleet Maintenance	<ul style="list-style-type: none"> ✓ Increases equipment reliability ✓ Lowers cost of equipment maintenance
C&D Facility	<ul style="list-style-type: none"> ✓ More recycling ✓ Prolongs life of landfill ✓ market revenue potential
HHW	<ul style="list-style-type: none"> ✓ More service to residents ✓ Increase in collection and proper management of toxics ✓ More recycling and reuse ✓ Reduces actual and potential harm to the environment
Olowalu Transfer station	<ul style="list-style-type: none"> ✓ More service to residents and commercial haulers ✓ Lowers cost of transportation ✓ Lower vehicle emissions




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Benefits of the Plan Projects (cont'd)

Project	Benefits
Hana Convenience Center	<ul style="list-style-type: none"> ✓ More recycling ✓ More services to residents ✓ Reduces Illegal Dumping
Lanai Convenience Center	<ul style="list-style-type: none"> ✓ More service to residents ✓ More recycling ✓ Reduces illegal dumping
Molokai Convenience Center	<ul style="list-style-type: none"> ✓ More service to residents ✓ More recycling ✓ Reduces illegal dumping
WasteTEC	<ul style="list-style-type: none"> ✓ Generates base load electricity using renewable fuels ✓ Reduces oil import requirements ✓ Reduces dependence on landfills ✓ Reduces green house gas emissions
Restructuring Solid Waste Funding	<ul style="list-style-type: none"> ✓ Stabilizes revenues ✓ Collects revenues more reliably ✓ Takes financial pressure off of General Fund ✓ Creates a self-supporting financial system



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<http://www.co.maui.hi.us/index.aspx?NID=881>

The screenshot shows the Maui County website's 'Integrated Solid Waste Management Plan' page. The page features a navigation menu with links for Mayor, Council, Departments, For Residents, For Business, and How Do I?. The main content area lists various sections of the plan, including an Executive Summary, Summary Matrix, Division of Drafts, and a table of contents. The plan is organized into 14 chapters, covering topics such as Introduction, Landfill Capacity and Sitelands, Recycling, Solid Waste Collection, Education Strategy, Source Reduction and Reuse, Construction and Demolition Debris, Organic Waste, Metal Recycling, Household Hazardous, Specialty, and Electronic Waste, Alternative Business Concepts, Funding, Organization, and Alternative Scenarios, and Plan Implementation. The page also includes a search bar, online services, employment opportunities, and email notifications. The GBB logo is visible in the bottom left corner of the slide.



Mahalo!

Harvey W. Gershman

hgershman@gbbinc.com

The slide features the SWANA logo in the top left corner and the GBB logo in the bottom left corner. The text is centered on the slide, with 'Mahalo!' in a large, bold, red font, followed by 'Harvey W. Gershman' in a smaller, bold, red font, and the email address 'hgershman@gbbinc.com' in a blue, underlined font.