



Presentation to USVI CAC

Subject: County of Maui Hawaii
Integrated Solid Waste Management
Plan (ISWMP)


By: Bob Brickner, Executive V-P
Gershman, Brickner & Bratton, Inc.

(Source: Adopted From GBB Briefing to the County of Maui
Council Members on February 24, 2009)




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




2



ISWMP Process

- County Management commits to process and selects consultant
- Mayor appoints SWRAC
- Data collection
- Develop current status and four scenarios
- Develop scenario costs
- Select scenario for implementation
- Public participation & state approval



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3

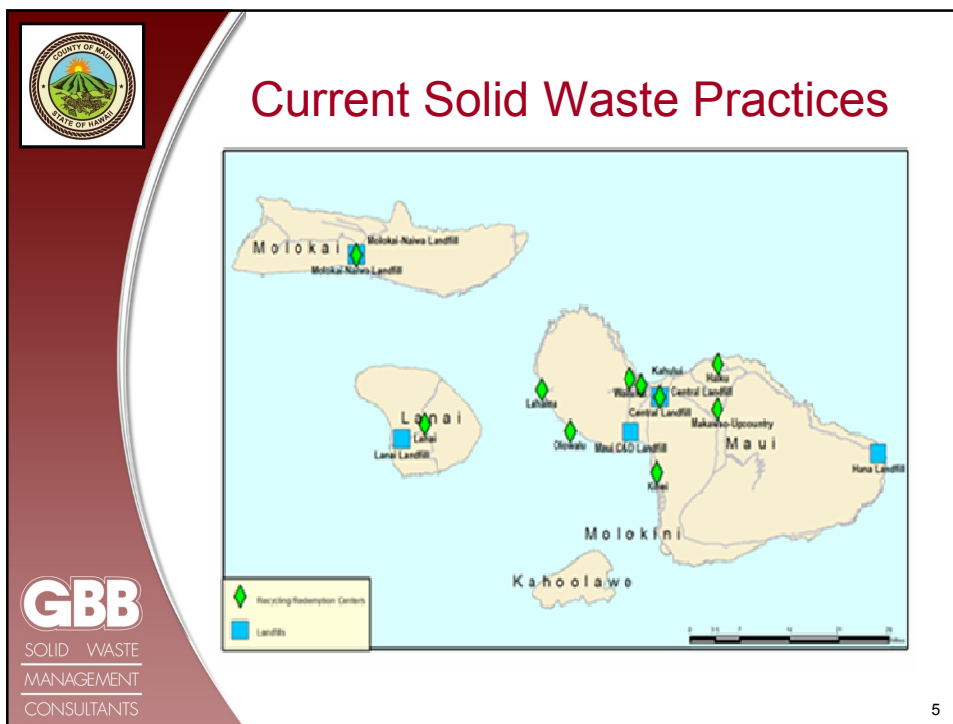


SWRAC

- Community input required by state law (HRS Section 342G)
- Composed of 16 members appointed by Mayor
- Conducted 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





4



Maui 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

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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





Gold Medal For Composting Is Only One-Third The Story

With facilities in Montana, Idaho and Hawaii, a company takes stock of its accomplishments, challenges and opportunities — while getting ready to accept an award for excellence.




7

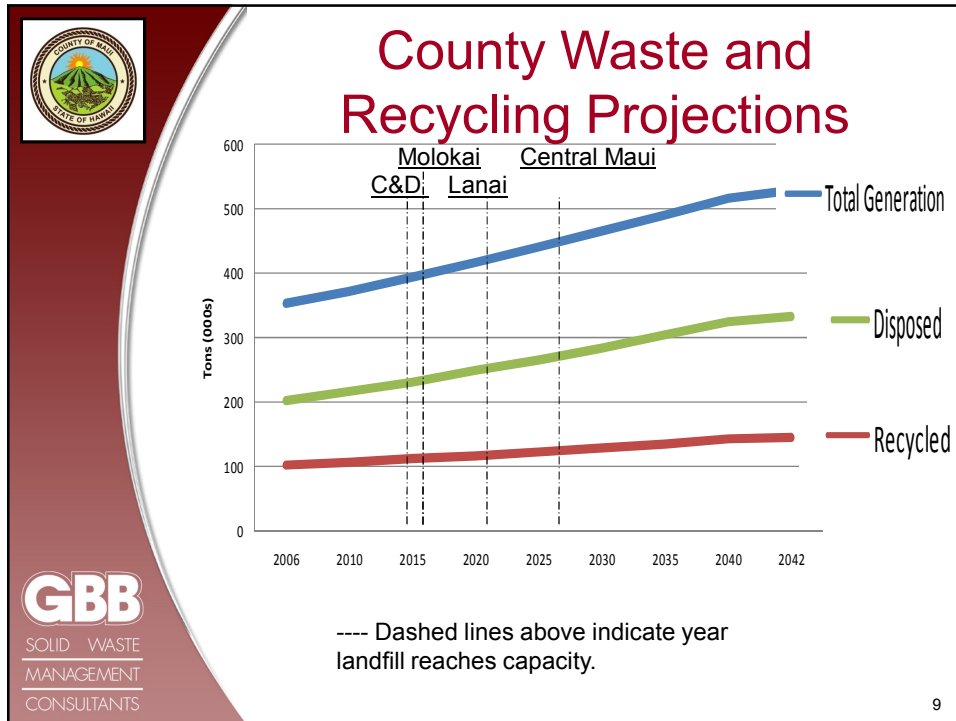


County Services on Maui Island (without Hana)

	Now
Residential Refuse Collection	Collected by manual (once per week)/automated (twice per week) from 24,000 of the 51,000 eligible properties
Recycling	No collection
Disposal	MSW & CD Landfills
White goods	Collection by appointment & direct delivery to processor
Bulky waste	No collection
Green waste	No collection
HHW	No collection



8




Disposal in the County

Landfill	Owner	Items Taken	Estimated Year Capacity Is Reached	Tons Per Day (365 days/year)
Central Maui	County	MSW	2024*	550
Decoit C&D	Private	C&D	2012	137
Hana	County	MSW	2096	3.8
Lanai	County	MSW	2020	14.0
Molokai	County	MSW	2015	20.8

* Assumes C&D materials start coming to CML in 2013; if not, CML reaches capacity in 2026.

10




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 transfer 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, W-T-E Conversion to MECO
 - 400 kilowatt hours per ton
 - \$0.15 per KWHr
 - \$54 revenue per ton



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Recommendations

- 60 % Recycling, by Law
 - MRF
 - C&D MRF
 - Legislation
- Universal Collection Services
- Household Hazardous Waste
- Waste-to-Energy
- Disposal



13



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



14



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



15



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



16




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




17




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




18



Disposal Recommendations

Waste-to-Energy Conversion

- 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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W-T-E Conversion–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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20




Disposal Recommendations Re: Central Maui Landfill (CML)


- Remains active; w/o/ change, reaches capacity in 2024
- 60 % recycling extends CML to 2031
- If W-T-E Conversion starts operating in 2013, CML reaches capacity in 2042




21



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




22




Maui Island

	Current	Recommended
Refuse Collection	Collected by manual/automated	Weekly collection of carts with semi-automated truck
Recycling	No collection	Single stream materials in carts collected curbside every other week with semi-automated truck; drop-off at convenience center; all sent to MRF
Disposal	MSW & CD Landfills	WasteTEC; C&D sorting
Metal and white goods	Collection by appointment & direct delivery to processor	Collection by appointment & direct delivery to processor
Bulky waste	No collection	Collection by appointment
Green waste	No collection	Pilot curbside collection program
HHW	No collection	Permanent Facility Open throughout the year




23

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- ## Several 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 Pauole Community Center
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- 24




Public Testimony

1. Add more local facilities for residents & businesses
2. Implement more green waste recycling
3. Clean-up derelict cars & appliances, which will help prevent Dengue fever
4. Utilize waste for energy or fuel
5. Add MRF and other MSW infrastructure
7. Implement more recycling
8. Willing to pay more for increased services
9. Add C&D recycling




25




Public Testimony (Continued)

10. Add Household Hazardous Waste (HHW) program
11. Concern: nothing will be done, "Plan will sit on shelf"
12. Concern: waste to energy air emissions, ash toxicity and health risks Concern:
13. WTE will reduce recycling
14. Concern: curbside recyclables will be stolen
15. Integrate ISWMP into community-specific Community Plans
16. Concern: ISWMP development not be limited to residents
17. Concern: data tables in ISWMP may be wrong
18. Concern: ISWMP lacked imaginative solutions




26



State of Hawaii Comments on The Draft Plan

- Comments received November 5, 2008 in a 5-page letter
- Most comments provided either additional commentary to include or requested clarifications
- Closing comment:
 - “...the draft plan document contains all components required...and the County of Maui has adequately met the procedural requirement of HRS §342G.”


27



General Economy and Financial Markets

- Stock market drop in Fall 2008
- CPI -U (All Urban Consumers) decreased 0.1 percent during period Dec '07 - Dec '08
- New U.S. President and Administration
- Federal stimulus package

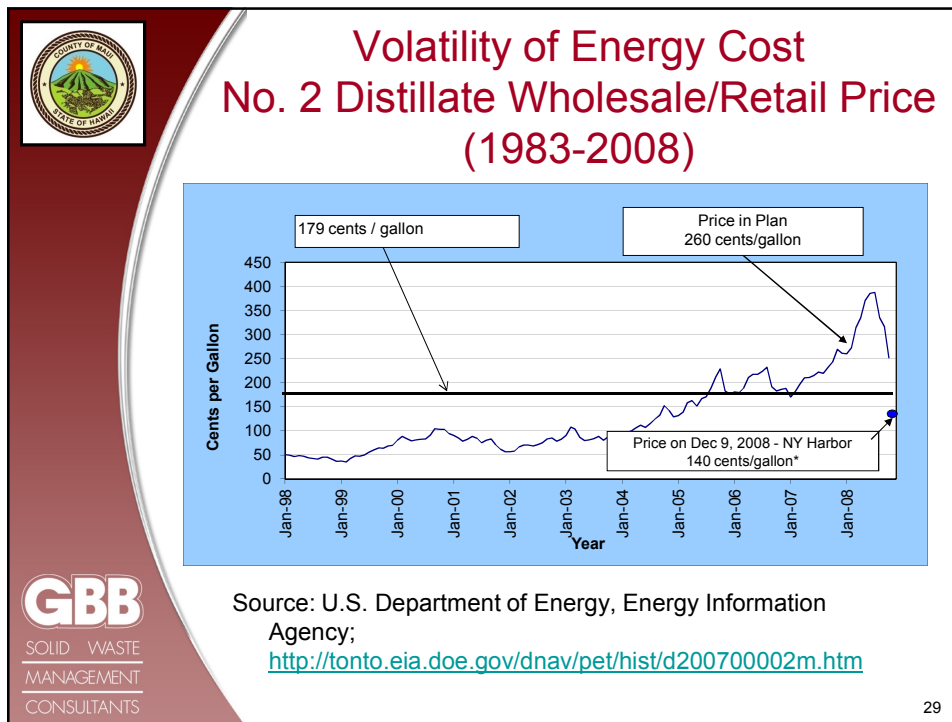


Dow Jones Industrial Average
 10 Year Price - "DJI"
 SMA(200): 9391.26 SMA(0): 10730.01

Today: 8265.05	Change: 52.56	% Change: 0.64%
Open: 8215.67	High: 8341.20	Low: 8215.67
YTD: -6.43%	52 Wk Hi: 13136.69	52 Wk Lo: 7449.38

Market Data and Charting powered by QuoteMedia. Data delayed 15 to 20 minutes unless otherwise indicated. Copyright © 2009 QuoteMedia, Inc. | Terms of Use


28



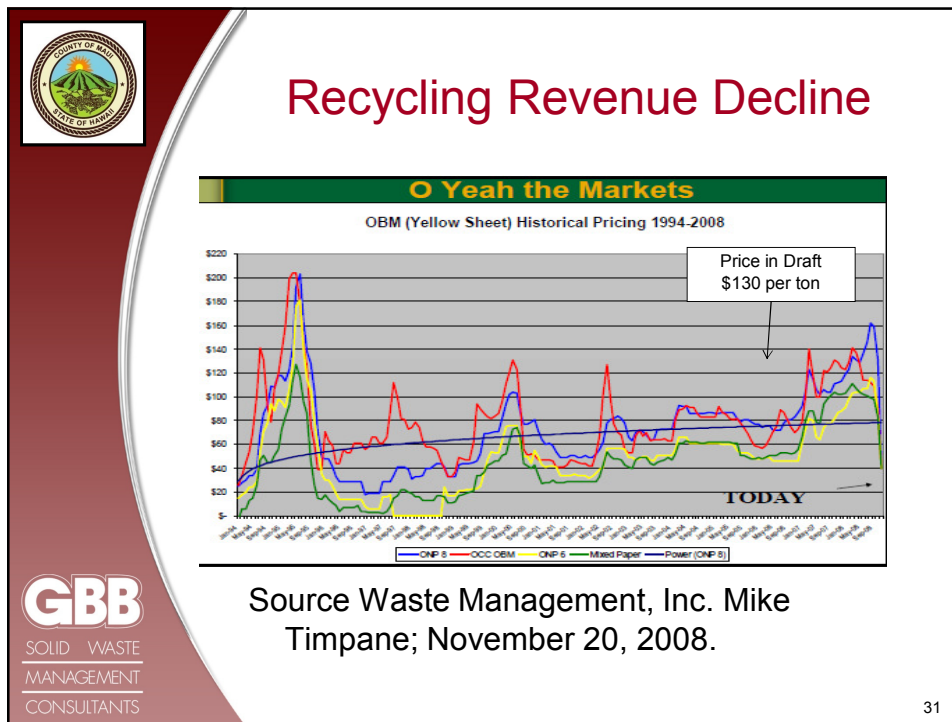
“Back at Junk Value, Recyclables Are Piling Up”
By [MATT RICHEL](#) and [KATE GALBRAITH](#)
New York Times; Published: December 7, 2008

Trash has crashed.


The economic downturn has decimated the market for recycled materials like cardboard, plastic, newspaper and metals. Across the country, this junk is accumulating by the ton in the yards and warehouses of recycling contractors, which are unable to find buyers or are unwilling to sell at rock-bottom prices.....

Source: http://www.nytimes.com/2008/12/08/business/08recycle.html?_r=1

30




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- Assumptions For Economic Analysis**
- Base year is 2006 w/ planning period out through 2042
 - 1 ½ % growth rates applied to:
 - Population; Home accounts and tonnages collected by Non-County sources
 - Escalation factor developed by averaging 2002-2006 CPI; 3 % per year
 - Bond interest rate – 5%
 - Revenues assumed (FY 2006):
 - County household collection services: \$138 per year
 - CML Tipping Fees from Private sources: \$51 per ton (47 + 4 for recycling fee)
 - General Fund Revenue: \$3,992,385... (Includes \$1,172,927 for abandoned vehicle revenues)
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Population, Waste and Recycling Projections


Year	2005	2010	2015	2020	2025	2030
Population	140,050	151,301	162,599	174,450	186,850	199,548
	Tons					
MSW Generated	246,970	268,999	341,170	363,602	387,039	410,753
C&D Generated	51,162	52,664	53,153	53,168	53,168	53,153
Total Generated	298,132	321,663	394,324	416,770	440,208	463,907
Recycled, County	70,625	76,788	203,724	218,699	234,345	250,176
Recycled, Commercial			32,870	35,286	37,811	40,365
WasteTEC			131,426	131,426	131,426	131,426
Total Disposed	227,507	244,876	87,872	95,038	102,510	110,055




33



INCREMENTAL COSTS FOR ADDING TO THE CURRENT SYSTEM




34




Current System Costs (Projected for Selected Years)

	2010	2020	2030	2040
Expense	(\$24.5 million)	(\$38.2 million)	(\$55.7 million)	(\$79.1 million)
Revenue	\$15.7 million	\$30.1 million	\$46.3 million	\$71.1 million
Excess/ (Shortage)	(\$8.8 million)	(\$8.0 million)	(\$9.4 million)	(\$8.0 million)
Number of Employees	91	104	119	136
Number of Collection Accounts	25,769	29,552	33,805	38,527
Number of Tons	321,663	416,770	463,907	516,249
Expense per Ton	(\$76)	(\$92)	(\$120)	(\$153)
Excess/ (Shortage) per Ton	(\$27)	(\$19)	(\$20)	(\$16)

Escalation: \$ @ 3% per year; waste/accounts @ 1 ½% per year.




35




Effects on Landfill (2007\$)

	Curbside Recycling and MRF	C&D MRF	WasteTEC
Tons Recycled/Diverted from Disposal	58,000 tons per year	32,000 tons per year	99,000 tons per year
Amount of Landfill Capacity Saved	3 months of capacity per year	1.6 months of capacity per year	6 months of capacity per year
Landfill Development/Closure Costs Delayed	\$800,000 per year	\$400,000 per year	\$1.6 Million per year
Landfill Purchase Costs Avoided @ \$150,000 per Acre	\$3.3 Million	\$1.8 Million	\$6.2 Million

Note: Combining all three would result in extending Central Maui Landfill almost 11 months for every year these facilities would be operating and saving over \$11 million in land acquisition costs.




36




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

Plan Project	Total
Central Maui Solid Waste Campus	- Included Below -
Call Center*	\$0.1M
Bulky Waste Collection	\$0.8M
MRF*	\$18M
Universal Collection	\$7M
Fleet Maintenance*	\$3M
Hana Convenience Center	\$0.4M
Construction & Demolition MRF*	\$9M
Household Hazardous Waste*	\$0.9M
Olowalu Transfer Station	\$7M
Lanai Convenience Center	\$2M
Molokai Convenience Center	\$2M
W-T-E Conversion*	\$86M
Total	\$137M

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




37



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 -

Note: To compare these scenarios, a Phase VII had to be added to the MCL so that it would last until 2042, the year the recommended scenario has Central Maui Landfill filling up under the current MCL Phase VI design.



38




Recommended New Ordinances (Presumed To Be 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




39




Recommended System Costs for Selected Years

	2010	2020	2030	2040
Expense	(\$26.2 million)	(\$89.6 million)	(\$126.0 million)	(\$177.5 million)
Revenue	\$15.6 million	\$48.4 million	\$75.5 million	\$121.8 million
Excess/ (Shortage)	(\$10.6 million)	(\$41.2 million)	(\$50.5 million)	(\$55.7 million)
No. Employees	94	226	239	272
No. Collection Accounts	25,769	47,671	54,532	62,148
Number of Tons	321,663	416,770	463,907	516,249
Expense per Ton	\$82	\$215	\$272	\$344
Excess/(Shortage) per Ton	(\$33)	(\$99)	(\$109)	(\$108)




40




Comparison of Current and Recommended Systems Cost

	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)

Note: years 2010 and 2042 assuming continued reliance on the General Fund for making up revenue shortages. So, without changing the rates, the demand on the General Fund would grow and grow.




41




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



42




CHANGES WILL BE NEEDED IN COUNTY ORGANIZATION AND ADMINISTRATION

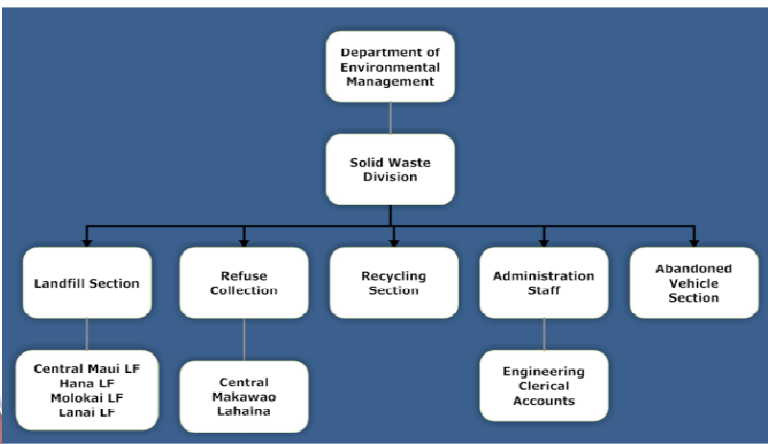


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Current Organization DEM and Solid Waste Division




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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[Hanalei LF]; Landfill --> ML[Molokai LF]; Landfill --> LL[Lanai LF]; Refuse --> CM2[Central Makawao Lahaina]; Recycling --> ECA[Engineering Clerical Accounts];
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Current Organizational Structure

- New Department of Environmental Management (DEM) began in July 2007
 - Includes Solid Waste and Wastewater Divisions
- DEM Administration – 6 FTEs
- SWD - 101 FTEs in five functional groups:
 - Landfill Disposal – 37 FTEs
 - Refuse Collection – 46 FTEs
 - Highway Division does SWD work in Molokai & Hana
 - Recycling – 4 FTEs
 - Administration – 11 FTEs
 - Abandoned Vehicle – 3 FTEs
 - Added during Plan preparation




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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 W-T-E)
- 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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Capital Financing Alternatives

- Pay-As-You-Go
 - Increases annual demand on General Fund
 - Does not spread the cost over useful life
- General Obligation Financing
 - Debt affordability impacts
 - Lack of accountability
 - Growing reliance and impact on the General Fund of the County
- Private Financing by selected contractor
 - Generally more expensive, especially if under short-term contracts
 - Ownership at end of contract term not with the County
- System revenue bonds
 - Revenues from service recipients and products sales key
 - Ultimate financial backstop requirement to keep off County balance sheet
 - Potential to eliminate reliance on General Fund and be self-supporting



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Recommended Funding and Organizational Changes


- Change SWD to be financially self-supported
- 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
- Convert General Fund backed SWD to be self-supporting

Note: A new County system that counts on 60% recycling will also require an ongoing public information campaign to make sure one never forgets what to put where so it is properly managed more as a resource than as a waste.




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48




Implementation Requirements and Schedule

- **Budgets and funding**
- **Human resources**
- Project kick-off and planning
- **Site selection and zoning** (focus on site decisions sooner rather than later)
- Procurement/negotiation
- **Financing and capital**
- Permitting
- Design/construction/supply of equipment/facilities
- Start-up of equipment/facilities
- Long-term operations, contract administration, and monitoring




49



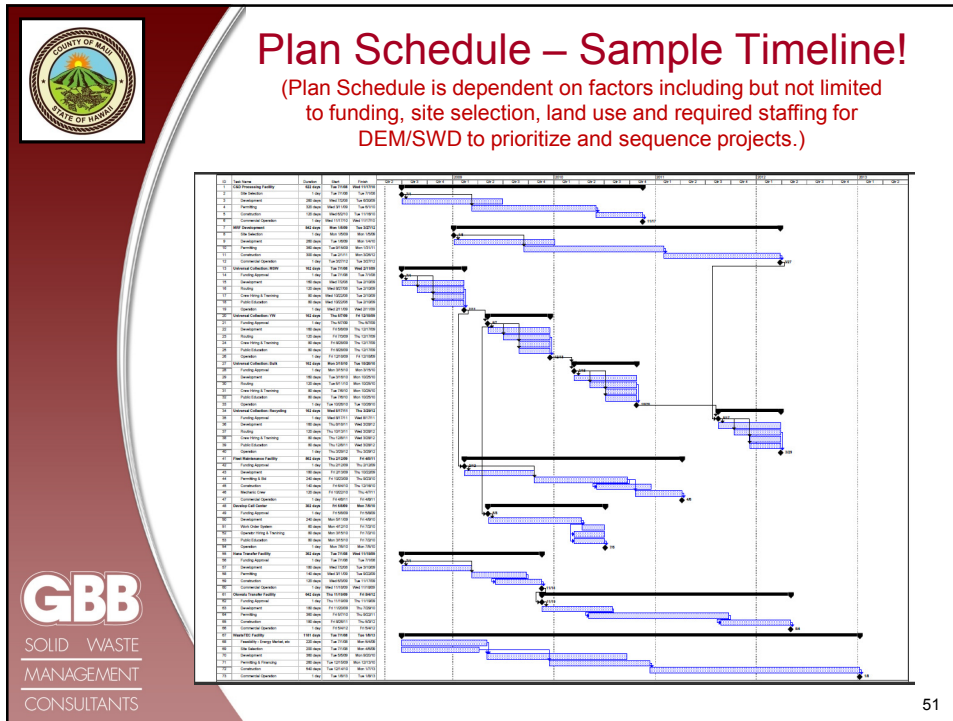
Development Time and Capital (Does Not Include Timeline for Siting)

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* (7 Acres)	42	\$18M
Universal Collection	14	\$7M
Fleet Maintenance* (1.5 Acres)	33	\$3M
Hana Convenience Center	20	\$400,000
Construction & Demolition MRF* (3 Acres)	42	\$9M
Household Hazardous Waste*	24	\$900,000
Olowalu Transfer Station	32	\$7M
Lanai Convenience Center	22	\$2M
Molokai Convenience Center	22	\$2M
W-T-E Conversion* (7 Acres)	57	\$86M

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



50




The figure is a table titled "Benefits of the Plan Projects". It lists four projects and their corresponding benefits. The table is as follows:

Project	Benefits
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
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
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



53



THANK YOU!



54