Integrated Solid Waste Management Plan Update

County of Maui, Hawai‘i

Adopted: August 14, 2024

County of Maui
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Acronyms and Abbreviations

2009 Plan	2009 County of Maui Integrated Solid Waste Management Plan
AOR	Annual Operating Report
BSE	Bovine Spongiform Encephalopathy
CCRS	Office of Climate Change, Resiliency, and Sustainability
C&D	Construction and Demolition Waste
CED	Covered Electronic Device
CEMP	Comprehensive Emergency Management Plan
CESQG	Conditionally Exempt Small Quantity Generator
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CML	Central Maui Landfill
CNG	Compressed Natural Gas
County	County of Maui, Hawai‘i
CRC	Certified Redemption Center
CTV	Covered Television
DBC	Deposit Beverage Container
DEM	County of Maui Department of Environmental Management
DLNR	State of Hawai‘i Department of Land and Natural Resources
DOBOR	Division of Boating and Ocean Recreation
DOH	State of Hawai‘i Department of Health
DOT	Hawai‘i Department of Transportation
ED	Electronic Device
EPA	U.S. Environmental Protection Agency
EPR	Extended Producer Responsibility
EP&S	Environmental Protection & Sustainability Division
E-Waste	Electronic Waste
EZ	Enterprise Zone
FEMA	Federal Emergency Management Agency
FOG	Fats, Oils, and Grease

FY	Fiscal Year (July 1–June 30)
GHG	Greenhouse Gases
HAR	Hawai‘i Administrative Rules
Hawai‘i	State of Hawai‘i
HB	House Bill
HDPE	High Density Polyethylene
HDR	HDR Engineering, Inc.
HHW	Household Hazardous Waste
HL	Hana Landfill
HRS	Hawai‘i Revised Statutes
H5N1	Highly Pathogenic Asian Avian Influenza A
LL	Lāna‘i Landfill
LNG	Liquefied Natural Gas
MMBtu	Metric Million British Thermal Unit
MMF	Moloka‘i Metals Facility
MNL	Moloka‘i-Naiwa Landfill
MRF	Materials Recovery Facility
MSW	Municipal Solid Waste
$MTCO_2E$	metric tons of carbon dioxide equivalent
OCC	Old Corrugated Cardboard
PAYT	Pay-As-You-Throw or unit or variable-rate pricing
PCB	Polychlorinated Biphenyls
PCS	Petroleum-Contaminated Soil
PET	Polyethylene Terephthalate
Plan	Integrated Solid Waste Management Plan Update
PV	Photovoltaic
RCRA	Resource Conservation and Recovery Act
RNG	Renewable Natural Gas
SW	Solid Waste
SWAC	Solid Waste Advisory Committee
SWM	Solid Waste Management

TPY	Tons Per Year
TSCA	Toxic Substances Control Act
VSQG	Very Small Quantity Generators
WWTP	Wastewater Treatment Plant
WARM	Waste Reduction Model
WTE	Waste-to-Energy

Disclaimer

To the best of their ability, the County of Maui provided information in this document that was current at the time it was reviewed by the Solid Waste Advisory Committee and submitted to the State of Hawai‘i Department of Health. Changes in the information and website links presented in the document are anticipated over the next 10-year period. It is not the intent to update the document as information changes, but to revisit and update the document as needed during the 5-year review period.

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Executive Summary

This Integrated Solid Waste Management Plan Update (Plan) recommends strategies to manage solid waste generated in the County of Maui over the next 10 years as required by Hawai'i Revised Statutes Chapter 342G, Part III, Integrated Solid Waste Management Planning. This Plan will guide the actions of the County of Maui and local citizens, private solid waste industry, private recycling and scrap material processing industry, environmental groups, County staff, and hospitality staff that provide municipal solid waste and recyclable materials collection, handling, disposal, and recycling options to residents. It is the collaborative effort of the County and industry representatives, thought leaders, and subject matter experts in the solid waste field and incorporates a balanced approach to solid waste and recycling management in the County of Maui.

The overriding mission statement for the Plan is:

> *The County of Maui and its citizens recognize that protecting air, land and water through effective, fiscally prudent and sustainable solid waste management practices improves the quality of life while valuing and preserving human health, environmental quality and natural resources.*

To further this mission, the Plan proposes a comprehensive set of recommended strategies for implementation over the 10-year planning period. Highlights include:

Infrastructure and System – The Plan recommends capital facility enhancements in alignment with the County Six-Year Capital Improvement Project Schedule and additional recommendations outlined herein. Providing for long-term system curbside collection and disposal through master planning for waste disposal, transfer facilities, organics management, regional infrastructure, and collection sites will assist the County in providing cost-effective, environmentally responsible, and sustainable waste handling and disposal strategies that reduce materials landfilled while extending the life of the critical landfill infrastructure system owned and operated by the County.

Waste Reduction and Recycling – Waste prevention, reduction, and recycling are continuing priorities for this Plan. Promoting a variety of education and outreach initiatives while dealing with changing recycling markets will continue to be a priority through harmonization of programs and cooperative work with public and private partners. Prioritization of managing waste as a resource, as appropriate, while incorporating zero waste principles and practices, including consideration for climate change initiatives, will ensure that management of materials is conducted to preserve value, minimize environmental impacts, and conserve natural resources.

Staffing – Adequate staffing will be a critical component for implementation of Plan recommendations and actions. Staffing will be needed not only for implementation of successful waste reduction and recycling program initiation but also to continue current programs. Prioritization of staffing is key to attaining the goals and objectives outlined in the Plan to achieve a successful waste management system in the County.

Financing – Providing funding for implementation of Plan recommendations and the Six-Year Capital Improvement Project Schedule will require evaluation and strategy. Recommendations for rate studies and additional funding sources will assist the County in determining options for funding of infrastructure, equipment, and staffing needs for implementation of Plan recommendations.

Long-range planning is essential to achieving a cost-effective and environmentally sound integrated solid waste system. To this end, the Plan facilitates a cooperative effort between partners and provides a framework for infrastructure planning, short-term and long-term management of solid waste and recyclables, policy making, and funding for the system. This Plan is intended to be a “living document” to be revisited on a regular basis to evaluate progress, reassess initiatives and implementation plans, and consider potential updates in response to emerging data and information and future conditions.

1 Introduction and Background

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1 Introduction and Background

This chapter provides a general introduction and background information regarding the Integrated Solid Waste Management Plan (Plan), its development, and relationship to other State and local documents.

1.1 Introduction

This Plan recommends strategies to manage municipal solid waste (MSW) and household hazardous waste (HHW) generated in the County of Maui, Hawai‘i (County). MSW handling includes management, storage, collection, diversion, transportation, treatment, use, processing, and final disposal. This Plan also includes recommendations for source reduction and recycling of MSW, household hazardous waste, and special wastes.

1.2 Purpose

State of Hawai‘i (Hawai‘i) law assigns responsibility for solid waste planning to the local government through Hawai‘i Revised Statutes (HRS) Chapter 342G, Part III, Integrated Solid Waste Management Planning. HRS 342G-24 requires the County to revise their Plan once every 10 years provided that an interim status report on the implementation of the revised plan is submitted 5 years after the original submission. The County produced this Plan in accordance with the requirements of HRS 342G for implementation over the next 10-year period.

The purpose of this Plan is to develop recommended waste management strategies for the period 2023 through 2033 and was guided by the nine-member Solid Waste Advisory Committee (SWAC) appointed by the Mayor.

1.3 Goals and Objectives

The County adopted the following mission statement for this Plan:

> *The County of Maui and its citizens recognize that protecting air, land and water through effective, fiscally prudent and sustainable solid waste management practices improves the quality of life while valuing and preserving human health, environmental quality and natural resources.*

For each element of the Plan, goals were developed with this mission statement in mind. Existing conditions relative to each element were assessed, and needs and opportunities were identified. Alternatives were then evaluated, and recommendations for specific programs, policies, or actions were selected and adopted.

In summary, the goals for the Plan are described in the sections below.

1.3.1 Infrastructure and System

The infrastructure and system goals include the following:

- Manage wastes in a cost-effective manner that promotes, in order of priority, waste reduction, reuse, and recycling.
- Enhance and improve the overall efficiency of waste and recyclables collection, transfer, and disposal.
- Build the infrastructure needed to provide maximum recycling and waste diversion opportunities.
- Encourage public/private partnerships that promote recycling facilities for ease of permitting at the state and local levels.
- Ensure that collection infrastructure is flexible and adaptable to changing recycling and waste diversion practices.
- Ensure that the County solid waste system is in full compliance with the appropriate rules and regulations.

1.3.2 Sustainability

The sustainability goals include the following:

- Manage waste as a resource to increase local job opportunities and support economic development.
- Consider environmental impacts to climate, air, water, and land that are associated with waste generation, transportation, handling, recycling, and disposal.
- Ensure that the County's solid waste system has an equitable and sustainable funding mechanism.
- Ensure that the County's development community and the commercial sector are aware of and invested in less wasteful and more sustainable building and development practices.

1.3.3 Education

The education goals include the following:

- Encourage people in the County to act on the basis of their understanding of the societal, environmental, health, and financial impacts of their consumption and disposal choices. This includes their impacts on climate change.
- Encourage people and businesses to make responsible choices about what they produce, consume, and generate as waste.

1.3.4 Outside Influences

The outside influences goals include the following:

- Promote and support life cycle product stewardship and industry advancements in packaging standards that lead to less waste generation.
- Incorporate zero waste principles and practices that consider the entire life cycle of a product to manage materials in ways that preserve value, minimize environmental impacts, and conserve natural resources.
- Support changes to federal and state regulations and policies that support and enforce increased recycling opportunities and waste diversion.
- Support alignment with County and community plans that promote climate change and resiliency opportunities.

1.4 Participants in the Planning Process

This Plan was developed with guidance from the County and SWAC, whose participation is gratefully acknowledged. Committee members and their affiliations are shown in Table 1-1.

Table 1-1. County of Maui Solid Waste Advisory Committee

Member/Title or Company	Industry Affiliation
Malia Cahill Maui Huliau	Environmental Education
Alex deRoode *(Former Member)* County Energy Commissioner	Recycling/Energy Industry
Tamara Farnsworth Division Manager Environmental Protection & Sustainability Division	County of Maui Department of Environmental Management
Rubens Fonseca Maui EKO Systems	Agriculture/Composting Industry
Nick Garofalo Schnitzer Steel	Recycling/Metals Industry
Gabrielle Schuerger Former Mālama Maui Nui Representative	Environmental Organization/Public
Yuki Lei Sugimura County Council	County of Maui Council Member
Pete Sullivan P.B. Sullivan Construction	Construction Industry and Inert Waste Recycling
Roger Yamagata Maui Disposal	Private Sector Solid Waste Industry

1.5 Planning Area

The planning area (see Figure 1-1) includes all areas of the County, including the islands of Maui, Molokaʻi, Lānaʻi, and Kahoʻolawe. The County is alone among the state of Hawaiʻi's counties to have multiple inhabited islands. The County of Kalawao encompasses the Kalaupapa Peninsula on the island of Molokaʻi and is isolated from the rest of the island as shown on Figure 1-1. Due to its small size, it is designated as a judicial district.

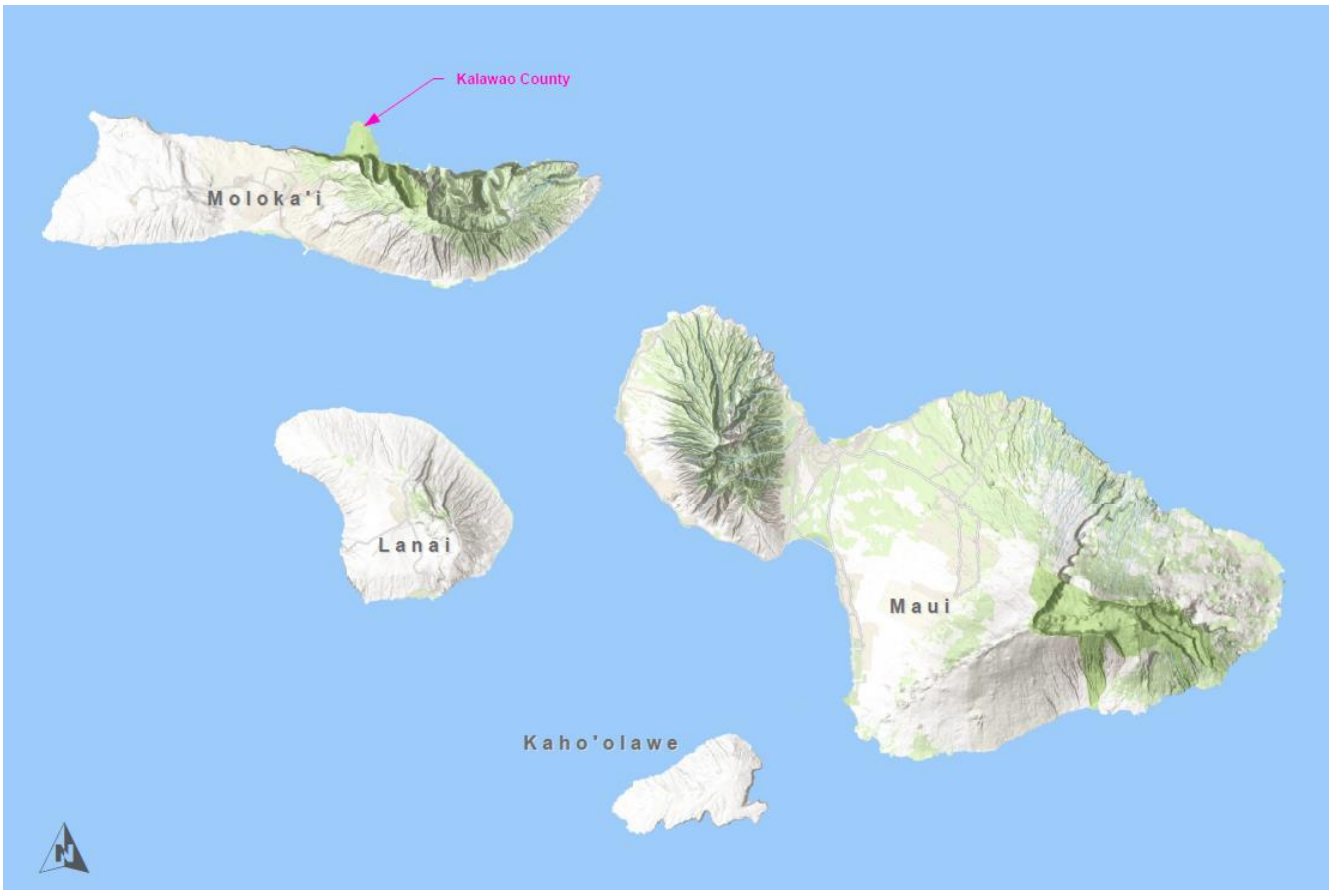

Figure 1-1. County of Maui Map

1.6 Plan Development Process

The Plan was developed over a period of approximately 14 months. The process began in November 2021, at which time the County's Director of the Department of Environmental Management (DEM) recommended to the Mayor a final list of 11 members of the community to serve on the SWAC. The Mayor approved the appointment of the 11 members, and the Director welcomed the SWAC members to the team in January 2022. The first SWAC meeting was held on February 8, 2022, and was followed by 12 subsequent meetings. During the 14 months, technical research, analysis, and recommendations were prepared by County DEM staff and HDR

Engineering, Inc. (HDR), and were presented and discussed with the SWAC, stakeholders, interested members of the public, and other interest groups. This participatory, interactive process was undertaken to prepare and build support for the Plan.

The public participation process was largely focused on the SWAC. The 11 SWAC members were selected to represent a balance of interests and included local citizens involved in general industry, private solid waste industry, private recycling or scrap material processing industry, environmental groups, County staff, environmental associations, hospital and hospitality industry, and other members as appropriate. The SWAC reviewed the Plan during preparation, made suggestions, and proposed changes it believed were appropriate. SWAC meetings were open to the public, and meeting notices published beforehand in accordance with Part 1 of HRS 92, the Hawai‘i Sunshine Law. For additional information on the SWAC, please refer to Appendix A.

1.7 Status of Previous Plan

This Plan supersedes previous solid waste management plans, including the 2009 County of Maui Integrated Solid Waste Management Plan (2009 Plan). The status of the 2009 Plan recommendations can be found in Appendix B.

1.8 Relationship to Other Plans

This section provides information on how this Plan is related to other state and local documents.

1.8.1 State of Hawai‘i 2000 Plan for Integrated Solid Waste Management

The State of Hawai‘i 2000 Plan for Integrated Solid Waste Management was adopted in July 2000 to address solid waste management challenges and incorporate diverse recommended actions within the state. The planning process began with the following two basic purposes, defined by the State of Hawai‘i Department of Health (DOH):

- To address the primary environmental burdens and liabilities caused by improper handling of solid wastes in Hawai‘i.
- To develop programs that have the greatest potential to reduce the quantity of wastes generated and to increase recycling and composting.

The core of the State of Hawai‘i’s 2000 Plan addressed six focus topics with guidance recommendations that included:

- Illegal Dumping
- Commercial Recycling
- Construction and Demolition (C&D) Waste Management

- Market Development
- Public Education
- State Program Funding

The State of Hawai‘i 2000 Plan reaffirmed the 50 percent waste diversion goal, promoted County solid waste planning, established a permanent advisory committee, encouraged County programs to determine the full cost for waste disposal, and encouraged sustainable disposal strategies.

1.8.2 Maui County General Plan 2030

The Maui County General Plan 2030 is a long-term comprehensive blueprint for the physical, economic, and environmental development and cultural identity of the County. The Maui Island Plan, which is part of the Maui County General Plan 2030, makes recommendations to transform the way lands and planning are managed for communities and includes:

- Adoption of a directed growth plan
- Protection of Maui’s small towns and rural character
- Affordable housing
- Protection of watershed and coastal resources
- Identification of transit corridors
- Economic diversification
- Integration of land use and infrastructure planning

Major capital costs are projected for solid waste, specifically for the Central Maui Landfill, including closure of Phase IV, acquisition of land and construction of Phase VI, and acquisition of land and construction of Phase VII.

1.9 Required Plan Elements

This Plan provides details on the County’s solid waste management objectives and is intended to support the County’s goals on sustainability, climate change, and resilience, including the Aloha+ Challenge for a 70 percent waste reduction goal. The Plan is divided into chapters to align with HRS 342G-25, which provides guidance for the contents in the County’s Plan. The outline for this Plan is as follows:

Chapter 1 – Introduction and Background – Provides background and regulatory information for Plan updates. Establishes the Plan mission, goals, and objectives and discusses Plan participants, the Plan area, the development process, and required elements.

Chapter 2 – Waste Stream – Provides waste stream and population projections and waste characterization information.

Chapter 3 – Source Reduction and Reuse – Discusses current source reduction and reuse activities, examines issues and concerns, and reviews additional source reduction and reuse strategies for implementation.

Chapter 4 – Recycling, Bioconversion and Markets – Discusses current recycling and bioconversion activities, examines issues and concerns, and provides options for achieving County goals and objections for implementation.

Chapter 5 – Education and Outreach – Provides current education and outreach programs and opportunities in the County and reviews future programs and outreach materials for implementation.

Chapter 6 – Household Hazardous Waste and Electronic Waste – Examines the status of household hazardous waste and electronic waste collection, recycling, and disposal, identifies current issues and concerns, and provides recommendations for action.

Chapter 7 – Special Wastes – Discusses waste streams that require special considerations for handling including asbestos, used oil, lead acid batteries, medical waste, tires, white goods, junk vehicles, non-hazardous sewage sludge and ash, and disaster debris. Recommended actions are provided for each identified special waste.

Chapter 8 – Collection and Transfer – Describes the collection and transfer system within the County and presents recommendations for implementation.

Chapter 9 – Residuals Management and Disposal – Discusses materials that cannot be economically utilized and are disposed of in the County landfills. Examines recovery and treatment technologies and presents recommendations for implementation.

Chapter 10 – **Energy Balance and Emissions** – Discusses and evaluates key components of the County's existing solid waste management system and the effects of implementing Plan recommendations on reducing energy usage, emissions, and dependency on fossil fuels.

Chapter 11 – Administration and Financing – Provides an overview of the current administration and funding structure within the County for the solid waste management system. Presents Plan recommendations for implementation including a schedule for implementation and costs.

Chapter 12 – **Implementation Plan** – Provides information about the priorities and costs to implement the recommendations made in all chapters of the Plan.

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2 Waste Stream

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2 Waste Stream

This chapter provides information on County population growth, current waste generation, and future waste quantities for the planning period from January 1, 2023, through December 31, 2033.

2.1 Introduction

The data in this chapter is used in various ways in the following Plan chapters, such as assessing the need for, or determining the impact of, a proposed new program or assessing remaining landfill capacity based on source reduction and recycling methods implemented.

2.2 Waste Stream and Population Projections

This section presents information regarding past, present, and future projections as they relate to population projections and waste generated in the County.

2.2.1 Population and Waste Generation Rates

2.2.1.1 Population

Current population levels and future population growth are important factors to consider in solid waste management planning. People create solid waste and, in general, the more people there are (now and in the future), the more waste that is created.

Table 2-1 provides past, current, and future estimates of the County population. This table utilizes de facto population figures produced for Hawai‘i by the Research and Economic Analysis Division Department of Business, Economic Development and Tourism. De facto population is defined as “the number of people physically present in an area, regardless of military status or usual place of residence. It includes visitors, such as tourists, but excludes residents temporarily absent, both calculated as an average daily census.” Because the County has a large number of visitors, which impacts waste generation, it is important to include them when determining population and the amount of waste generated.

Table 2-1. De Facto Population Estimates[1]

Year	De Facto Population
2000	168,650
2010	194,384
2020	229,621
2025	245,300
2035	270,500
2045	293,300

[1] Population and Economic Projections for the State of Hawai‘i to 2045, DBEDT 2045 Series Report. https://dbedt.Hawaii.gov/economic/economic-forecast/2045-long-range-forecast/.

2.2.1.2 Waste Generation Rates

The waste generation rate is generally expressed on a per-capita and per-household basis. The County's waste generation rate is expressed as tons of solid waste generated per person per year in Table 2-2.

This Plan focuses primarily on MSW consisting of those wastes generated by residential and commercial sources that are meant to be handled by either the County's solid waste disposal system or a privatized operation. Some residential solid waste within the County is collected by private collection and processing companies. The total amount of MSW generated by residents and visitors in the County was determined by combining the tons delivered for disposal to each of the listed landfills and the tons recycled (including diversion).

Table 2-2 shows the Fiscal Year (FY) 2019 (July 2018 through June 2019) solid waste quantities disposed of in the County based on Annual Operating Reports (AOR) provided for each facility. This table also shows the quantities of materials recycled or diverted through various drop-off and collection programs managed by the County. The quantities do not include the private and non-profit recycling programs shown in Table 4-4. The program owners report quantities to the DOH, if required, and typically do not share that data with the County. Overall, County residents and visitors generate approximately 1.54 tons per person per year.

Table 2-2. Current Waste Generation Rate (FY2019)

Facility and Waste Stream	Annual Amount
Central Maui Landfill	212,087 tons
Hana Landfill	1,438 tons
Lānaʻi Landfill	4,315 tons
Molokaʻi Landfill	5,811 tons
Total MSW Tonnage Disposed	**223,651 tons**
Recycled/ Diverted Material Tonnages[1]	129,214 tons
Total Materials Tonnage Recycled/Diverted	**129,214 tons**
Grand Total Tonnage, All Solid Waste	**352,865 tons**
Population (2020 Estimate)	229,621
Waste Generation Rate, per person per year (tons/pounds)	1.54 tons / 3,073 pounds
Waste Generation Rate, per person per day	8.42 pounds

[1] Recycling and diversion tonnages as reported in the Office of Solid Waste Management Annual Report to the Thirtieth Legislature State of Hawaiʻi, 2020.

In Table 2-3, waste quantities have been projected using the most current (FY2019) available per capita waste generation rate multiplied by population forecasts for the County. The current generation rate was calculated by combining the tons disposed

of in FY2019 with the tons recycled or diverted in FY2019 then dividing by population. By applying the current per capita rate to future years, the projected figures for years 2025 through 2045 assume no change in waste generation or disposal practices, or in the percentages of material recycled and reduced.

Table 2-3. Projected Waste Quantities

Year	Total Population[1]	Waste Generated TPY[2]	Waste Generation Rate	Amount Recycled /Diverted TPY[3]	MSW Disposed TPY
Actual Amounts					
2020	229,621	352,865	8.42	129,214 (37%)	223,651 (63%)
Projected Amounts					
2025	245,300	376,940	8.42	139,468	237,472
2035	270,500	415,665	8.42	153,796	261,869
2045	293,300	450,700	8.42	166,759	283,941

Note: Figures, except for the year, population, and generation rate, are shown in tons per year (TPY). The waste generation rate is shown in pounds per person per day.

[1] Population figures are from Table 2-1.

[2] Projected waste generation figures for 2025 through 2045 are based on the estimated waste generation rate for 2020 (8.42 pounds per person per day) and population forecasts.

[3] The projected quantities of recycling/diversion, disposed MSW, and other wastes assume the same percentage of the total waste generated as in Table 2-2.

2.2.2 Composition of Disposed Municipal Solid Waste

In 2012, the County conducted a waste composition study for the entire County. Figure 2-1 presents an overview of the 2012 Maui County Waste Composition Study by material type disposed and percentage of the aggregated MSW waste stream. The aggregated composition includes residential, commercial, and mixed waste and excludes industrial processed wastes, sewage sludge, cooking oil and grease, dedicated green waste loads, and dedicated C&D debris. The green waste and C&D materials that are included in the composition were commingled with MSW in the loads sampled.

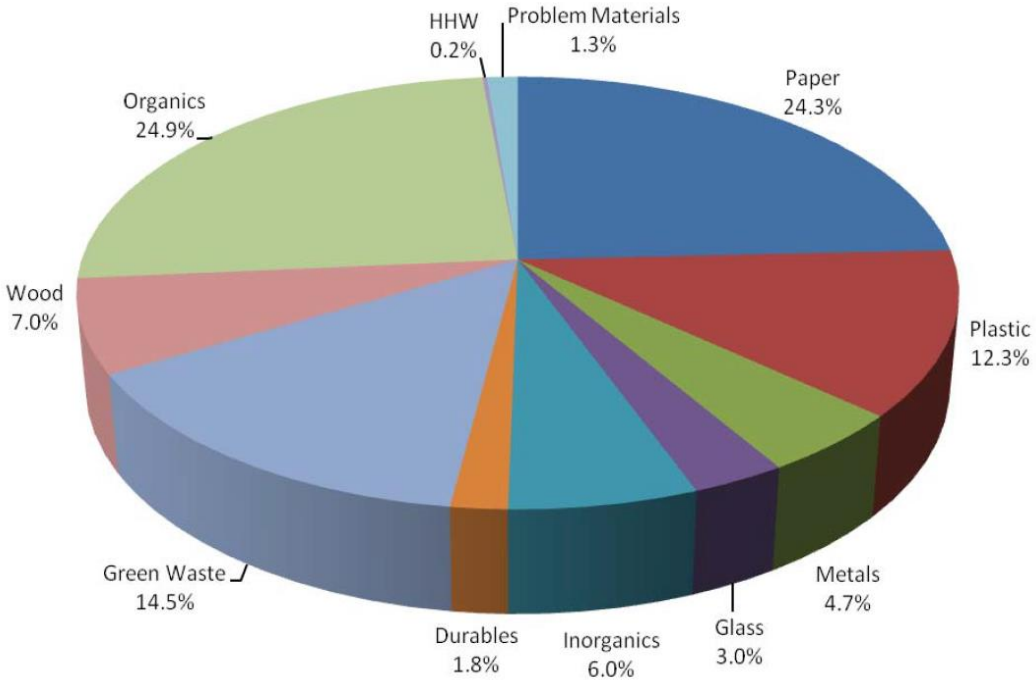

Figure 2-1. Maui County 2012 Waste Composition Study (Aggregated MSW Composition by Weight)

Waste composition can be expected to change in the future due to changes in consumption patterns, packaging, disposal habits, tourism, and other factors. These changes are difficult to predict in the long term. Furthermore, implementation of this Plan may affect waste composition in the County by changing purchasing and disposal habits. Utilizing the compositional analysis derived from 2012 Maui County Waste Composition Study and tonnage disposed of in 2019, Table 2-4 illustrates composition of the total measured County waste stream landfilled.

Table 2-4. Maui County Waste Stream Composition (2019)

Materials	Waste Stream	
	Percent by Weight	Tons of Material
Paper	**24.3%**	**54,347**
OCC (Recyclable) Kraft	5.0%	11,183
Newspaper	1.9%	4,249
Mixed Recyclable Paper	6.8%	15,209
Compostable Paper	8.9%	19,905
Non-Recoverable Paper	0.8%	1,789
High Grade Office Paper	0.9%	2,012
Plastic	**12.3%**	**27,509**
#1 PET Bottles (HI-5 Deposit)	0.3%	671
#1 PET Bottles (Non-Deposit)	0.3%	671

Table 2-4. Maui County Waste Stream Composition (2019)		
Materials	**Waste Stream**	
	Percent by Weight	**Tons of Material**
#2 HDPE Bottles	0.6%	1,342
Other Bottles and Containers	0.7%	1,566
Plastic Film and Wrap	4.8%	10,735
Other Plastic Products	5.6%	12,524
Glass	**3.0%**	**6,710**
HI-5 Glass Bottles and Containers	0.8%	1,789
Glass Bottles and Containers	1.8%	4,026
Other Glass	0.4%	895
Metals	**4.7%**	**10,512**
Aluminum Cans (HI-5 Deposit)	0.3%	671
Aluminum Cans (Non-Deposit)	0.2%	447
Tin Cans	0.8%	1,789
Other Ferrous Metals	2.1%	4,922
Other Non-Ferrous Metals	0.3%	671
Mixed Metals/Other Materials	0.9%	2,012
Inorganics	**6.0%**	**13,419**
Other C&D	4.6%	10,512
Miscellaneous Inorganics	1.3%	2,907
Durables	**1.8%**	**4,026**
Electrical/Household Appliances	0.5%	1,119
Furniture	0.4%	895
Mattresses	0.9%	2,012
Green Waste	**14.5%**	**32,429**
Green/Yard Waste	14.5%	32,429
Wood Waste	**7.0%**	**15,656**
Untreated Wood	2.0%	4,473
Treated Wood	3.5%	7,604
Pallets	1.5%	3,355
Stumps	0.1%	224
Organics	**24.9%**	**55,689**
Food	18.5%	41,151
Disposable Diapers	2.5%	5,591
Textiles and Letter	2.7%	6,039
Rubber	0.4%	895

Table 2-4. Maui County Waste Stream Composition (2019)		
Materials	**Waste Stream**	
	Percent by Weight	**Tons of Material**
Carpet	0.1%	224
Miscellaneous Organics	0.8%	1,789
HHW	**0.2%**	**447**
Automotive Products	0.2%	447
Problem Materials	**1.3%**	**2,907**
Batteries	0.1%	224
Other Computer Equipment	0.2%	447
Other Electronics	1.0%	2,012
Mercury-Containing Products	0.1%	224
Total 2019 Tons Disposed		**223,651**

Note: HDPE = high-density polyethylene; OCC = old corrugated cardboard; PET = polyethylene terephthalate.

3 Source Reduction and Reuse

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3 Source Reduction and Reuse

This chapter discusses existing source reduction and reuse programs, identifies relevant planning issues to meet local and state goals, and describes and evaluates alternative strategies.

3.1 Background

This section provides information on the regulations and authorities that govern source reduction and reuse programs and issues.

3.1.1 Source Reduction and Reuse

Source reduction and reuse are the highest priorities for solid waste management according to the U.S. Environmental Protection Agency (EPA) and HRS 342G. It is preferred over recycling and composting because the social, environmental, and economic costs are typically lowered if waste is not produced (see Figure 3-1).

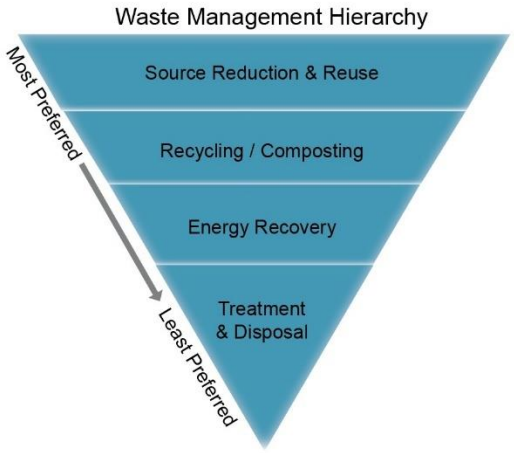

Figure 3-1. EPA Waste Hierarchy

Source reduction strategies can include changes in product design and packaging, reduction of consumer purchases, reuse of consumer materials or goods, and bans on the use of certain products or materials.

Waste collection fees can be used to encourage waste reduction through “pay as you throw” rates in which single-family households are charged according to the amount of waste they discard.

The primary role of the County agencies that manage solid waste, including the Solid Waste Division and the Environmental Protection & Sustainability (EP&S) Division, is to ensure the sound management of MSW produced within the County. To accomplish this, the County agencies adopt and implement policies and procedures that positively affect the environmental health of the islands. These policies and procedures are based on ecologically sound principles that reflect the values of County residents and preserve and improve their quality of life.

Greenhouse gases (GHG) produced by human activity are a contributor to climate change and its associated impacts. Because of the public’s concern of the public health impacts caused by climate change, governmental bodies, including the state and County, have adopted policies to reduce their emissions of GHG.

The County agencies play a key role in executing these policies and procedures through their continued development of new programs that encourage reduction and reuse of materials and reduced use of virgin materials. In addition, County agencies regularly review their operations, programs, and facilities to ensure that decisions and policies help reduce GHG emissions and support changing business practices that are cost-effective. This will continue to be accomplished by maintaining and growing current programs for waste reduction and reuse and establishing new programs and partnerships throughout the County.

3.1.1.1 State Regulations

HRS 342G requires each County to consider solid waste management practices and processing methods in the following order of priority:

- Source reduction
- Recycling and bioconversion
- Landfilling and incineration

HRS 342G-3 also established a 25 percent waste reduction goal by 1995 and a 50 percent reduction goal by 2000 to be accomplished through implementation of the above practices and methods. Through the adoption of the 2009 Plan, the County recommended implementation of practices and methods to meet a 60 percent recycling and diversion goal. Additional information on recommendations from the 2009 Plan can be found in Appendix B.

Included in the Hawai‘i Integrated Solid Waste Management Act are preferences for recycled content procurement, double-sided copying as a standard practice, and establishment of an office paper and other materials recovery and source reduction program.

Deposit Beverage Container Program 2002 (Material Recycling)

> *Beginning on October 1, 2002, every deposit beverage distributor shall pay to the department a deposit beverage container fee on each polyethylene terephthalate, high density polyethylene, or metal deposit beverage container manufactured in or imported into the State. The fee shall be imposed only once on the same deposit beverage container. The fee shall be $0.05 cents per deposit beverage container.*

The redemption program is established in HRS 342G Part VIII.

Hawai‘i Electronic Waste and Television Recycling and Recovery Law 2008 (Material Recycling)

Electronics were the first goods to be legislated for Extended Producer Responsibility in Hawai‘i in HRS Title 19 Chapter 339D. This law was amended in 2016 and in 2022.

Electronic devices (EDs) include computers, computer printers, computer monitors, portable computers with screen sizes greater than four inches measured diagonally, and any device capable of receiving broadcast, cable, or satellite signals with a viewable screen of nine inches or larger (refer to Section 6.1.2).

> *By January 1, 2023, before selling or offering for sale any electronic device in the State, each manufacturer shall register with the department and pay to the department a registration fee of $5,000. Thereafter, if a manufacturer has not previously registered, the manufacturer shall register with the department prior to any offer for sale for delivery in the State of the manufacturer's new electronic device.*

In 2023, there were 19 registered ED manufacturers.

2015 SB1049 SD1 HD1 CD1 amends 339D-4 effective 01/01/2016

> *By June 1, 2009, and annually thereafter, each electronic device manufacturer shall submit a plan to the department to establish, conduct, and manage a program for the collection, transportation, and recycling of its covered electronic devices sold in the State, which shall be subject to the following conditions…*

No fee is charged if the device is brought to a central location, a mail-back-only option is not allowed, and approval of an electronic device manufacturer's recycling plan is authorized if a manufacturer of exclusively mobile covered electronic devices has products that are voluntarily accepted at no charge by at least 50 retail locations in the state with documentation of these locations.

2022 HB 1640 HD2 SD1 CD1 amends 339D-4 (Act 151) effective 07/01/2022

In 2022, amendments were added as Act 151 (2022)**,** which were transmitted to the Governor on May 4, 2022, and became effective on July 1, 2022. The 2022 amendments established recycling goals for electronic device manufacturers, record keeping and reporting requirements for manufacturers and collections, require collectors to register with the Department of Health, and require manufacturers to fund the collection and recycling of used devices. The 2022 amendments also include the following:

> *(1) Beginning January 1, 2023, the equivalent of fifty per cent, by weight, of the manufacturer's electronic devices sold in the State two years prior, unless amended by rule pursuant to chapter 91;*
>
> *(2) Beginning January 1, 2024, the equivalent of sixty per cent, by weight, of the manufacturer's electronic devices sold in the State two years prior, unless amended by rule pursuant to chapter 91; and*

(3) Beginning January 1, 2025, the equivalent of seventy percent, by weight, of the manufacturer's electronic devices sold in the State two years prior, unless amended by rule pursuant to chapter 91.

3.1.1.2 Local Regulations

Plastic Bag Reduction

The County adopted Ordinance No. 3587, effective January 11, 2011, prohibiting businesses from providing plastic bags to customers at the point of sale for transporting groceries or other goods. The Ordinance allows businesses to provide reusable bags or recyclable paper bags, for sale or at no charge, at the point of sale as an option. This law was amended in 2021 to include disposable foam body boards via Ordinance No. 5236.

Polystyrene Foam Food Service Container Prohibition

The County also adopted Ordinance No. 4457, effective December 31, 2018, prohibiting food providers and County facilities, authorized concessions, programs, or events from selling, using, providing, or offering polystyrene foam food service containers, with some exemptions for raw or butchered meats, foam coolers or ice chests for multiple re-use, protective packaging, and other unique situations.

Plastic Disposable Foodware Prohibition

On April 20, 2020, the County adopted Ordinance No. 5084 prohibiting food providers and County facilities, authorized concessions, programs, or events from selling, using, providing, or offering plastic disposable foodware and was later amended to include disposable foam coolers through adoption of Ordinance No. 5237, effective January 1, 2022.

3.2 Existing Program Elements

The following sections provide background information regarding source reduction and reuse and discuss the County's existing programs.

3.2.1 Source Reduction and Reuse

As briefly described in Section 3.1.1, source reduction and reuse are the highest priorities, according to the EPA, and are preferred over recycling and composting because the social, environmental, and economic costs are typically lower when consideration is given to avoiding the creation of waste.

Waste collection fees can be used to encourage waste reduction (and recycling) through "pay as you throw" rates in which single-family households are charged according to the amount of waste they discard. Avid recyclers or households that minimize waste can select a smaller cart for a reduced collection cost (refer to Chapter 8 – Collection and Transfer for additional information). Business and multifamily

properties are generally already charged according to the amount of solid waste disposed.

Opportunities for source reduction and reuse available in the County include the non-profit Habitat for Humanity reuse store for building materials and organizations such as Goodwill, Salvation Army, and St. Vincent de Paul, all of which accept gently used clothes, furniture, and home goods. The Friends of the Library Bookstore sells used books and other used media. Retail stores offering bulk housewares, cleaning products, and personal items such as Zero Waste Hale and Rooted in Wailuku reduce packaging waste and promote reusable alternatives to single-use items. Food banks provide opportunities to reduce food beyond their shelf dates and divert materials from the landfill. Other reduction and reuse opportunities include yard sales, local government surplus sales, upcycling, and classified advertisement websites that may be utilized to buy and sell second-hand goods locally.

The EP&S Division also regularly provides grant monies to businesses and organizations that promote source reduction and reuse education and practices such as the Zero Waste Maui Coalition, HuiZero Food Container Reuse Program, Maui Huliau Green Events, Share Circle, Trailer of Trash Reuse Distribution Program, and Teens On Call Airport Recycling and Reuse Program, among others.

The EP&S Division promotes waste reduction and reuse through the BYO! (Bring Your Own) Campaign, which includes targeted distribution of reusable items such as utensil kits, water bottles, coffee cups, produce bags, and clamshell "plate-lunch" containers, and insulated and foldable pouch shopping bags. These items have been provided at no charge in partnership with organizations that provide zero waste services and community members to enhance waste reduction education for their own programs. Assistance with waste reduction efforts at other community events and weddings can be funded through grant monies provided by the County.

3.2.2 Source Reduction and Reuse Education

The County maintains an education and outreach program and promotes these efforts through their website, which can be accessed at:

https://www.mauicounty.gov/742/Environmental-Protection-Sustainability-.

In addition to the website, the County produces a “Residential Recycling Guide A-Z” that promotes waste reduction and reuse measures that can be implemented by citizens and encourages personal responsibility for waste reduction to preserve the island environment. Additional information regarding source reduction and reuse education is provided in Chapter 5 – Education and Outreach.

3.2.3 Procurement Policies

Pursuant to HRS 342G-41, the County has a policy to give preference to the purchase of products made from recycled materials that are themselves recyclable. Furthermore, double-sided copying is standard practice in County offices. In

December 2019, the County adopted Resolution No. 19-209, which acknowledged a climate emergency and committed to an immediate and just transition and emergency mobilization effort to restore a safe climate. As part of the actions adopted in Resolution No. 19-209, the County committed to include development of an environmentally preferable purchasing policy to guide efficient, consistent, and just action to the fullest extent allowed by the Hawai‘i Public Procurement Code and other laws.

3.2.4 Product Bans

In 2011, the County prohibited businesses from providing plastic bags to customers to reduce landfilling and provide environmental protection to the islands located within the County solid waste system; this prohibition was later amended to include foam body boards. In 2018, the County prohibited food providers and County facility users from selling, using, providing, or offering polystyrene foam food service containers.

In addition to the above product bans, the County adopted an additional product ban prohibiting food providers and County facilities from using, selling, providing, or offering plastic disposable foodware and foam coolers, and required that disposable food serviceware be made of non-plastic and/or compostable materials and be provided by request only.

3.2.5 Grasscycling

Grasscycling, which is the process of leaving grass clippings on the lawn after mowing, can significantly reduce the volume of organic waste that is landfilled and return nitrogen-rich clippings to the soil. The DOH and County encourage grasscycling through development of programs and education and outreach efforts.

3.3 Status of Previous Recommendations

The status of the recommendations made by the 2009 Plan can be found in Appendix B.

3.4 Alternatives and Evaluations

Existing service gaps and other issues connected to source reduction and reuse are evaluated below.

3.4.1 Re-Imagine the Waste Hierarchy

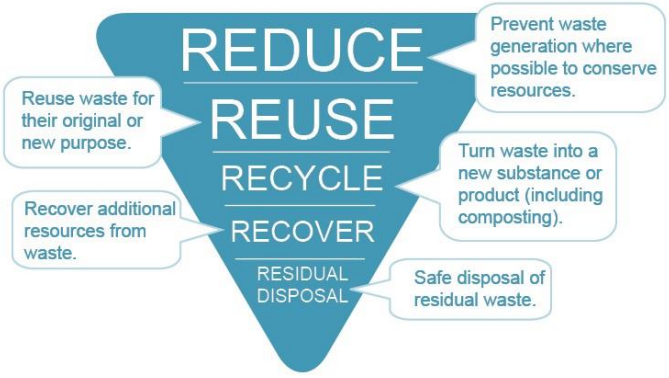

Figure 3-2. Reimagined Waste Hierarchy

The County could consider a long-term waste management strategy that recommends waste reduction, reuse, recycling, recovery, and residual disposal (the 5 Rs; see Figure 3-2) policies and programs that are cost-effective, socially acceptable, and environmentally sustainable for the long term. This "triple bottom line" approach would give consideration to each component during development of the Plan and would provide a direct correlation to the mission statement, goals, and objectives outlined in Chapter 1 – Introduction and Background.

3.4.2 Aloha + Challenge

The Aloha + Challenge is a statewide commitment to achieve Hawai'i's sustainability goals and a locally driven framework to implement the United Nations Sustainable Development Goals. The solid waste reduction goal builds on state law that mandated a solid waste stream reduction of 50 percent by January 1, 2000. While that target was not met, the state, all four Hawai'i counties, and the Office of Hawaiian Affairs agreed to recommit to the target and reduce the solid waste stream by 70 percent through source reduction, recycling, bioconversion, and landfill diversion methods by 2030. It should be noted that waste-to-energy (WTE) is not included as a source reduction method towards the 70 percent goal.

3.4.3 Partner with the Hospitality Industry on Source Reduction Methods

The County could consider implementing waste reduction efforts related to the hospitality industry. Tourism is one of the largest industries in the County with hospitality facilities (hotels, motels, and lodging facilities) contributing waste for disposal to the County solid waste system. The County could partner with the hospitality industry to build on their existing waste reduction efforts and material management methods. Measures for consideration could include:

- Implement mandatory food diversion systems for establishments of a certain size.
- Provide room service food in reusable, washable containers.
- Buying recycled content products.

- Buy in bulk, when possible.
- Replace disposable, single-use items with reusable ones (soap, shampoo, and lotion dispensers).
- Install water refilling stations and offer reusable water bottles to guests, eliminating the use of single-use plastic water bottles.
- Replace paper towels in restrooms with hand dryers.
- Implement on-site composting.
- Implement an integrated pest management system to reduce the use of pesticides.
- Practice grasscycling.
- Change lighting fixtures to light-emitting diode.
- Donate or sell used furniture and appliances.

3.4.4 Source Reduction Education and Outreach

The County should take the lead in establishing, expanding, and incorporating public education and promotion of waste management programs to inform residents, businesses, and visitors regarding opportunities and program availability when managing materials. Efforts to inform residents, businesses, and visitors about both recycling and waste reduction options should be conducted on an ongoing basis and coordinated with municipalities, schools, businesses, and waste collection companies. Chapter 5 – Education and Outreach provides additional information on education and outreach programs.

3.4.5 Support Reuse Events

The County could consider sponsoring or promoting reuse events through a collaborative process with volunteers and local nonprofits. For example, a reuse event could be a 1-day drop-off event providing an opportunity for the public to donate landfill-bound materials to island nonprofits or a community swap event, both of which allow residents to obtain gently used materials for reuse (e.g., furniture, toys) in a convenient yet structured way so that the events do not contribute to uncleanliness, litter, or illegal dumping. The events could include garage sales, giveaway events in common areas (for multi-residential buildings) or at curbside (for single-family households), or swap events (e.g., mom-to-mom sales, jewelry or clothing exchanges).

Fix-it or repair clinics can also help reduce quantities of waste by refurbishing or repairing items that would otherwise be thrown out. Repair clinics can be hosted by a municipal entity, a local non-profit or community business, or some combination of public and private entities. These are typically attended by volunteers with skills to share, gained either professionally or through hobbies. Depending on the suite of skills offered by volunteers, items such as household electronics, clothes, jewelry, bikes, and small household items could be repaired and that knowledge passed along.

3.4.6 Facilitate Business Material Exchanges

The County could promote or financially support forums or other methods to facilitate business material exchanges. Such programs help businesses find and connect to markets for surplus materials and items that might otherwise become waste.

3.4.7 Promote Existing Reuse Programs

The County could promote and support expansion of existing reuse and material exchange opportunities in the County, such as the Habitat for Humanity Store, Salvation Army, and Goodwill. Residential options include providing information on reuse organizations or supporting reuse events focused on specific products (such as bike swaps). Promotion could involve maintaining and publishing a resource guide in local newspapers, a stand-alone guide with a map, or a web page listing organizations that promote waste reduction activities such as thrift shops, repair services, and tool rental businesses. The County may also continue with its BYO campaign efforts to support the use of reusable food containers and continue to promote and support organizations such as Share Circle. Information on Share Circle can be found at:

https://www.sharecirclemaui.org/.

3.4.8 Food Waste Prevention

The County could support and promote existing food collection and distribution programs through the Maui Food Bank program. This program assists community partners to safely collect surplus edible food for those in need. Information on the Maui Food Bank can be found at:

https://mauifoodbank.org/.

Common Ground Collective provides education and support to promote food security, economic, and educational opportunities in the County. Information on Common Ground Collective can be found at:

https://www.commongroundcollective.com/.

Another unique program that can be found on Maui is Feed My Sheep, which is a mobile food distribution program that provides groceries to those in need to assist with food insecurities in the community. Additional information on Feed My Sheep can be found at:

https://feedmysheepmaui.com/.

3.5 Recommended Actions

The following recommendations are being made for source reduction and reuse programs:

SR1) Continue to implement and revise a long-term waste management strategy that recommends waste reduction, reuse, recycling, recovery, and residual disposal to correlate with the County's mission statement, goals, and objectives relating to solid waste handling.

SR2) Partner with the hospitality industry to support their current waste reduction efforts and expand as appropriate.

SR3) Expand the County source reduction and education program to incorporate opportunities and program availability for new and existing outreach efforts.

SR4) Support and promote reuse events and programs.

SR5) Support programs, forums, or other methods, such as existing reuse and reusable materials exchange programs to facilitate business materials exchanges.

SR6) Promote and support food waste prevention collection and distribution programs in the County.

SR7) Participate, support, and monitor state and federal legislation regarding source reduction initiatives, as appropriate, for the County.

SR8) Continue to promote and support County procurement policies and procedures that promote environmentally preferable purchasing and waste reduction methods.

SR9) Promote data collection to establish baseline metrics for promoting waste reduction programs.

Recycling, Bioconversion and Markets

4

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4 Recycling, Bioconversion, and Markets

This chapter discusses existing recycling programs, bioconversion opportunities, and markets, identifies relevant planning steps to increase and improve County and state goals, and develops and evaluates alternative strategies.

4.1 Background

This chapter provides information on the regulations and authorities that govern recycling, bioconversion, and market programs and issues.

4.1.1 Recycling and Bioconversion

4.1.1.1 Federal and State Regulations

Chapter 4 provides an update of the County's methods to divert waste from landfill disposal and comply with state requirements regarding recycling opportunities and programs. HRS 342G-1 defines recycling and bioconversion as:

> *'Recycling' means the collection, separation, recovery, and sale or reuse of secondary resources that would otherwise be disposed of as municipal solid waste, and is an integral part of the manufacturing process aimed at producing a marketable product made of postconsumer material.*
>
> *'Bioconversion' means processing of the organic fraction of the waste stream through biological or chemical means to perform composting or generate products including, but not limited to, fertilizers, feeds, methane, alcohols, tars and other products. This term includes, but is not limited to biogasification, acid hydrolysis, pyrolysis, and fermentation. This term does not include any form of incineration or methane gas extraction from a municipal solid waste landfill.*

The state established waste reduction, recycling, and bioconversion goals in HRS 342G-3 that include:

- Twenty-five percent reduction in the solid waste stream prior to disposal by January 1, 1995; and
- Fifty percent reduction in the solid waste stream prior to disposal by January 1, 2000.

In addition, the Aloha+ Challenge commits to a statewide 70 percent solid waste stream reduction before disposal by 2030. Reducing the waste stream will be accomplished through source reduction, recycling, and bioconversion. Additional information on the Aloha+ Challenge can be found in Chapter 3 – Source Reduction and Reuse.

HRS 342G-26(d) requires that the energy component of the Plan describe the programs through which the County will investigate or incorporate ways of increasing the energy efficiency of the solid waste management process, including the assessment of energy and fuel-production options such as composting, anaerobic digestion, acid hydrolysis, or a combination thereof. The energy component shall identify and assess:

- The amount of energy input including but not limited to electrical power, gasoline, diesel fuel, coal, natural gas, propane, kerosene, and heating oil required by the Plan for the accomplishment of collection, recycling, composting, bioconversion, waste handling, disposal, and landfilling.
- The amount of energy produced from waste, including electricity, natural gas, hydrogen, and liquid fuels such as ethanol or methanol.
- The net energy use or energy production to the solid waste program. Where feasible, this assessment shall include energy used in the original manufacture of these goods. National averages of energy consumed may be incorporated in these estimates.
- Methods by which energy use may be decreased or net energy or fuels production may be increased.

The statewide Aloha+ Challenge also includes the following energy component goals:

- By 2030, increase clean energy in the electricity sector to 70 percent: 40 percent in renewable energy and 30 percent through energy efficiency. Target 100 percent clean energy by 2045.
- By 2030, reduce total annual fossil fuel use to below 2008 levels.

The Aloha+ Challenge goals are aligned with HB 623, which establishes 100 percent renewable portfolio standards for the electricity sector by 2045. Waste-to-energy is currently not considered a “renewable” energy source although it can be considered an “alternative” fuel-to-energy. Chapter 10 – Energy Balance and Emissions provides an evaluation of the impacts of the solid waste management system—specifically, reducing dependency on fossil fuels through program implementation and operational changes.

The Merchant Marine Act of 1920 (the Jones Act) regulates maritime commerce, including cabotage, in the United States (U.S.) waters. This law requires trade to take place on vessels based in the U.S., owned by U.S. citizens (at least 75 percent), and manned by U.S. crews. Because of this, the act limits foreign competition and increases prices because U.S. ships are currently more expensive than other foreign ships. This adds to the cost of shipping between Hawai‘i and the mainland U.S. Similarly, the Jones Act prohibits loopholes with the following restriction:

> *A vessel may not provide any part of the transportation of merchandise by water, or by land and water, between points in the United States to which the coastwise laws apply, either directly or via a foreign port.*

This restriction also increases the cost of shipping goods to and from Hawai‘i by restricting the number of vessels that can legally deliver goods. The Jones Act has a direct effect on the ability of the County to market recyclables, as they can be transported to ports only by U.S.-owned and -operated vessels.

4.1.1.2 Local Regulations

The term “zero waste” is a solid waste management philosophy that refers to creating policies with sustainability in mind that considers waste as a resource rather than disposable and focuses on a circular economy model with additional emphasis placed on waste reduction and reuse options. While not specifically adopting a zero waste resolution, the County has adopted bills and ordinances in a conscious effort to reduce certain wastes in the waste stream and align with zero waste practices. Chapter 3 – Source Reduction and Reuse provides an overview of County-adopted bills and ordinances.

In July 2020, the County adopted Resolution 20-108 Supporting ‘Āina Aloha Economic Futures Initiative and Transitioning to a Circular Economy. This resolution supports adopting components of a circular economy that include:

- Fostering a regenerative and equitable economic system
- Decoupling of economic growth from environmental degradation
- Performing meaningful work while rejuvenating the environment
- Keeping materials and resources in the economy for as long as possible while preserving their value
- Minimizing waste

The County is also considering the adoption of a Zero Waste Master Plan. Resolution 22-77 has been introduced that encourages the creation of a Zero Waste Master Plan to set principles and practices fostering a circular economy of production that conserves resources, minimizes landfill use, priortizes the reuse and redistribution of resources, and reduces waste at the source.

4.1.1.3 Enterprise Zones

In partnership with the state, the County contains Enterprise Zones (EZ) aimed at incentivizing business, job retention, and job creation in selected areas of the County. HRS 342G-25 requires that an EZ component be part of the facility capacity and siting elements of the Plan. This section provides an overview of the EZ program, the EZs within the County, and the applicability of EZs for solid waste management planning.

EZs are designated by the County for areas that meet unemployment criteria based on U.S. Census data. Eligibility requirements are outlined on the County's website and include:

- At least half of the firm's annual gross income must come from activities such as agriculture production and/or processing or manufacturing.
- There must be one full-time employee with a 10 percent increase in employment the first year.

This program could benefit the County's solid waste management planning by taking advantage of the tax exemptions and program benefits listed below:

- State Benefits:
  - One hundred percent exemption from the General Excise Tax.
  - Eighty percent non-refundable state income tax credit for the first year, which gradually decreases to 20 percent over 6 years.
  - Income tax credit equal to 80 percent of annual unemployment insurance premiums for the first year, which gradually decreases to 20 percent over 6 years.
- County Benefits:
  - Priority permit processing
  - Zoning/building permit waivers
  - Adjustments for property taxes
  - Priority for federal job training or community development funds

There are currently four enterprise zones within the County of Maui, including West Maui, Greater Maui, Molokaʻi, and Lānaʻi. Figure 4-1 below depicts the areas within the County eligible for EZ benefits.

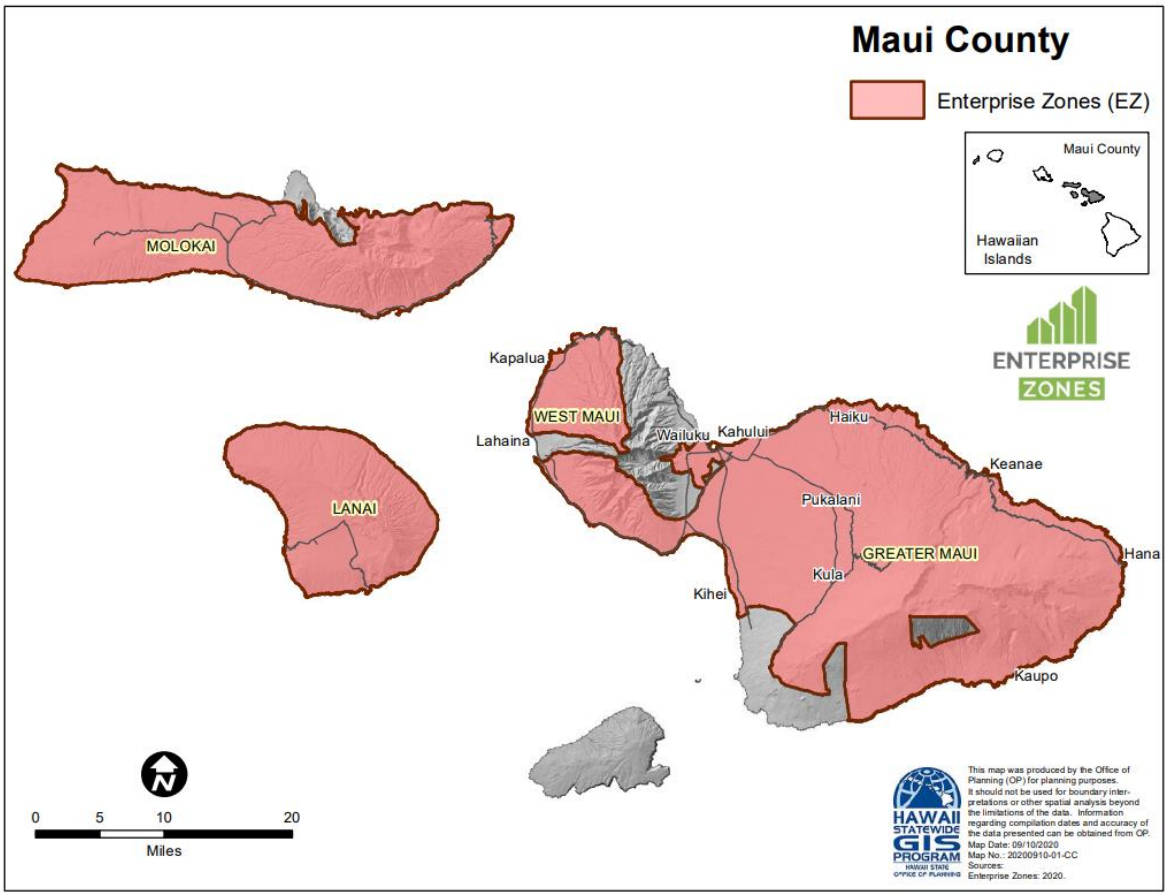

Figure 4-1. County Enterprise Zones
Source: SR2021_004-Maui-3-EZ.pdf (Hawaii.gov).

By planning and building new waste-handling and recycling facilities, more jobs with good benefits and job retention could be established in economically depressed areas within the County. There is potential to gain EZ status for future materials processing and manufacturing facilities, such as a materials recovery facility or a composting facility.

The tax and permitting incentives offered for EZ businesses could provide viability for upcoming projects. To gain EZ status, eligible businesses need to apply for approval from the State Department of Business, Economic Development, and Tourism. More information about the EZ program and how to qualify can be found on the Enterprise Zones page of Maui County's website at:

https://www.mauicounty.gov/1778/Enterprise-Zones.

4.2 Existing Program Elements

The following sections describe existing programs that promote recycling and bioconversion and provide information regarding material market activities.

4.2.1 State of Hawai‘i Recycling Programs

4.2.1.1 HI-5 Beverage Container Deposit Program – Redemption Centers

To encourage recycling among residents, the state introduced the HI-5 Deposit Beverage Container (DBC) program in January 2005. Certified Redemption Centers (CRCs), typically privately-owned and -operated (the DOH contracts CRC services on Lāna‘i), independently handle aluminum, glass, and plastic deposit containers for redemption and recycling statewide. The program is called “HI-5” because the DBC program refunds a $0.05 deposit fee for eligible containers and has eliminated more than 10 billion containers from the waste stream. Eligible containers include a “HI 5¢” mark/label on metal, glass, and plastic beverage containers (up to 68 fluid ounces) and must meet the following conditions for redemption:

- Be clear of liquid and debris
- Caps removed from bottles
- Have the HI-5 mark/label intact
- Containers separated by glass, plastic, aluminum, and bi-metal

Table 4-1 shows the current CRCs located in the County.

Table 4-1. Private HI-5 Certified Redemption Centers (as of June 2022)[1]

CRC Name	Address
Lāhainā International Market	*Maui* 275 Lahainaluna Road, Lāhainā, HI 96761
Maui Disposal	*Maui* 60 Kānoa Street, Wailuku, HI 96793 380 Alamaha Street, Kahului, HI 96732 *Lāna‘i* 12th Street & Fraser Avenue, Lāna‘i City, HI 96763
Aloha Glass	*Maui* Wahine Pio Road & Cameron Way 75 ‘Āmala Place, Kahului, HI 96732
Hanada & Son, Inc., dba Aloha Shell	*Maui* 110 S Pu‘unēnē Avenue, Kahului, HI 96732

[1]CRC names and locations provided by the State of Hawai‘i Department of Health, Deposit Beverage Program page: Deposit Beverage Container Program | Find A Redemption Center! (Hawaii.gov).

4.2.1.2 Glass Advance Disposal Fee Program

The County supports the collection and recycling of non-DBC glass containers through participation in the Glass Advance Disposal Fee Program administered through the DOH. This program requires that glass container importers pay an advance disposal fee. Collected fees are distributed to counties to implement a glass recovery program and divert glass from landfills.

4.2.1.3 E-Waste Collection Program

The state adopted HRS 339D, the Electronic Device Recycling and Recovery Act, amended June 2022, that requires manufacturers of EDs to operate recycling programs for devices including computers, computer printers, computer monitors, portable computers with screen sizes greater than four inches measured diagonally, and any device capable of receiving broadcast, cable, or satellite signals with a viewable screen of nine inches or larger (refer to Section 6.1.2).

The County participates in the State Electronic Waste (E-Waste) collection program as follows:

E-Waste is collected on the island of Maui at:

- ECycling Maui – ReThink Center, 301 Hansen Road, Puʻunēnē, HI 96784

E-Waste is collected on the island of Molokaʻi at:

- Molokaʻi-Naiwa Landfill and Recycling Center, Off Maunaloa Highway between mile markers 3 and 4, Maunaloa, Molokaʻi, HI 96770

E-Waste collection events are scheduled on the island of Lānaʻi and at the Hana Landfill Refuse and Recycling Center by the County, and E-waste is also collected at the Lānaʻi Redemption and Recycling Center located at 12th Street and Fraser Avenue, Lānaʻi City, Lānaʻi, HI 96763. Additional information for the County collection program can be found at the following website:

https://www.mauicounty.gov/2698/E-Cycling-Maui-Program.

Additional information for the State E-Waste collection program can be accessed at:

https://health.hawaii.gov/ewaste/.

4.2.2 County Recycling Programs

The County EP&S Division offers various recycling services at County Recycling Centers located throughout the County islands (see Figure 4-2). The recycling centers offer citizens opportunities to drop-off recyclable materials free of charge. The recycling centers require that all recyclable glass bottles and jars, aluminum and bi-metal cans, #1 and #2 plastic bottles, newspaper, cardboard, and paper bags be free of all food residue and all boxes are flattened. Management of the County Recycling Centers include multiple contracts with private businesses.

Figure 4-2. Kīhei Recycling and Redemption Center

The names and locations of the recycling centers operated by the County (including redemption centers) are shown in Table 4-2.

Table 4-2. County Recycling Center Locations

Name	Location
Central Maui Landfill Refuse and Recycling Center	Pūlehu Road & Hansen Road Pu‘unēnē, Maui, HI 96784
Ha‘ikū Recycling and Redemption Center	Pa‘uwela Road at Hana Highway Ha‘ikū, Maui, HI 96779
Hana Landfill Refuse and Recycling Center	Waikoloa Road, off Hana Highway Hana, Maui, HI 96713
Kahului Recycling and Redemption Center	Wahinepio Road & Cameron Way Kahului, Maui, HI 96732
Kīhei Recycling and Redemption Center	East Welakahao Road, at Pi‘ilani Highway Kīhei, Maui, HI 96753
Makawao Recycling and Redemption Center	Hale Kipa Road Makawao, Maui, HI 96768
Moloka‘i-Naiwa Landfill and Recycle Center	Off Maunaloa Highway between mile markers 3 & 4 Maunaloa, Moloka‘i, HI 96770
Olowalu Recycling and Refuse Convenience Center	Honoapi‘ilani Highway & Olowalu Village Road Lāhainā, Maui, HI 96761

[1] Drop-box center names and locations taken from the County of Maui Facilities page: Facilities • Maui County • CivicEngage.

In addition to the recycling drop-off facilities, the County manages 10 collection sites for used motor oil, with some sites participating in an antifreeze pilot project.

The County also manages an office paper recycling program for most County offices located on Maui.

County grant funds have been allocated towards hundreds of recycling programs over the past 20 years. FY2023 allocated funds went to the recipients shown in Table 4-3.

Table 4-3. FY2023 County of Maui Grant Fund Recipients

Grant Recipient	Recycling Description	Grant Amount
Aloha Recycling	40 Cubic Yard Roll Off Bins	$30,000
Concrete Collective LLC	ByBlocks Pilot Program	$22,000
Grants Central Station	Share Circle	$65,288
Habitat for Humanity	Forklift for Habitat Maui’s ReStore	$40,000
HAMER	Marine Debris Clean Ups and Analysis	$17,500
Ho‘ahu Energy Cooperative	Ho‘ahu PV Panel Re-use and Storage	$30,000

Table 4-3. FY2023 County of Maui Grant Fund Recipients		
Grant Recipient	**Recycling Description**	**Grant Amount**
Lokahi Pacific	Teenforce Recycles	$67,333
Maui Huliau Foundation	Huliau Green Events & Zero Waste Schools	$20,000
Nature Based Solutions	Recycling Glass into Sand Pilot	$96,420
ʻŪkiu Farms	Biochar Pilot	$34,500
West Maui Green Cycle	School Reusables Pilot	$54,959
Zero Waste Maui Coalition	Zero Waste Maui Coalition	$22,000
Total		**$500,000**

In 2012, the County introduced the 3-Can Plan as Phase I of a recycling curbside collection pilot study in south Maui. Phase I consisted of two collection routes that serviced 2,000 homes. The full 3-Can Plan, when implemented through Phase IV, anticipated 25,000 participants. Residents who participated in the pilot program received three waste bins: one for refuse, one for green waste, and one for mixed recyclables. During the pilot study, food and liquid contamination rates were estimated at approximately 12 to 19 percent. The study was discontinued in 2020 due to administration changes in the County, budgetary shortfalls, and increasing costs to process recyclables. No large-scale curbside recycling program is currently conducted in the County.

4.2.3 Private Recycling Programs

Private sector businesses and non-profits have developed recycling programs and facilities in the County. Table 4-4 shows an overview of private and non-profit recycling services available in the County. Figure 4-3 shows an example of a private recycling facility.

Figure 4-3. Hammerhead Metals Recycling

Table 4-4. Private and Non-Profit Recycling Programs and Facilities	
Owner	**Recycling Description**
Aloha Recycling	• Materials Recovery Facility • Residential and commercial drop-off for materials • HI-5 Redemption Center
Waste Pro Hawaiʻi	• Commercial waste and recycling hauling services • C&D recycling

Table 4-4. Private and Non-Profit Recycling Programs and Facilities	
Owner	**Recycling Description**
E-H International	• Non-Ferrous metals recycling • Tire recycling • Battery recycling
Habitat for Humanity	• ReStore for building supplies
Hammerhead Metals	• Ferrous and non-ferrous metals recycling • Appliance recycling • Vehicle recycling
Hawai'i Materials Recycling	• Recycling of concrete, asphalt, rock, dirt, and sand
Lāhainā International Market	• Recycling center • HI-5 Redemption Center
Maui Disposal	• Materials Recovery Facility • Commercial waste and recycling hauling service • Non-Ferrous metals recycling • HI-5 Redemption Center
Maui Recycling Service	• Commercial recycling hauling service
Pacific Biodiesel	• Commercial biodiesel processing facility • Used cooking oil recycling
Revive Glassworks	• Recycling glass bottles into glassware

4.2.4 Bioconversion

Organic waste, including green waste (e.g., yard trimmings), fats, oils, and grease (FOG), wood waste (e.g., pallets), and food waste are all considered materials appropriate for bioconversion. The County is currently processing green waste, biosolids, and FOG generated on Maui at the Central Maui Landfill (CML) by mixing the waste streams and landfilling (see Figure 4-4). The County co-composted these materials successfully prior to 2020. In 2020, the County was required to terminate the composting operations performed by Maui EKO Systems, under contract with the County, to allow for development of the Phase 3A landfill disposal area at the CML.

Figure 4-4. Central Maui Landfill Organics Processing Area

Maui EKO Systems is presently contracted by the County to mix the waste streams utilizing land within the undeveloped Phase 3B landfill area and transporting the mixed materials to the active disposal area for landfilling. The County estimated that the Phase 3B area will need to be developed in July 2023, which will eliminate that area

for processing of the mixed waste stream. The County is actively working to site and permit a new co-composting facility on lands adjacent to the landfill. The County will continue to pursue and evaluate new technologies and methodologies that produce the best and highest use of organic materials.

On Molokaʻi, the County Solid Waste Division staff operates the receiving and processing operations for residential and commercial green waste. The materials are processed into mulch for distribution and/or sale.

Pacific Biodiesel currently accepts natural vegetable oil and fats for conversion to biofuel at off-island plants. They produce approximately 5.5 million gallons of biodiesel annually made from cooking oil recycled from restaurants statewide.

Maui Hauling Services, formerly Kīhei Compost, collects green waste and delivers mulch and compost to customers.

The County is currently evaluating options to develop a long-term solution for management of the organic waste streams, including WTE technologies, composting, continued landfilling, or a combined approach.

4.2.5 Material Markets

In July 2017, China's government announced that it would ban 24 recyclables, including unsorted mixed paper and mixed plastic starting in January 2018. This ban originates from China's National Sword campaign to crack down on smuggling and contaminated scrap imports. In addition to the ban, China applied strict contamination standards for other recyclables, causing recyclers to seek new markets and evaluate methods to achieve lower contaminant levels. The County of Maui Recycling Section shifted programming by limiting accepted recyclables based on the commodities with the most stable marketability: plastic bottles #1 and #2, cardboard and paper bags, newspaper, aluminum and bi-metal cans, and glass bottles and jars.

The County also launched a Wish-Cycling campaign to mitigate contamination of non-recyclables. The County will continue to revise recycling programs as the ever-changing commodity markets shift and will also strive to develop and implement new recycling programs when recyclability options increase and as technologies evolve.

The import ban created a major disruption in recycled commodities throughout the U.S. Materials recovery facilities, which receive mixed recyclables and sort them for resale to commodities brokers, have had to reduce the rate of processing for recyclable materials in an attempt to reduce contamination. Slower processing rates increase storage requirements and overall program costs, making disposal of recyclables as MSW a short-term storage solution or desirable economical alternative.

An important factor for marketing of recyclable materials collected in the County is the cost of transportation to end-markets. The low market value of many recyclable materials limits the number of materials that can be cost-effectively moved to markets.

That, coupled with the requirements imposed by the Jones Act on shipping of materials, affects both materials that can be recycled and costs for shipping, processing, and marketing.

Market prices for materials recycled from the County Recycling Centers are considered proprietary by the contracted operators; however, Materials Recovery Facilities (MRFs) are required to report tonnage data to the DOH on an annual basis. Markets for recyclables are volatile and affect commodities that are able to be collected and processed for recycling. There are currently no local markets, which affects decision-making and responses to materials that can be recycled in the County.

4.2.6 Climate Change

GHG produced by human activity contribute to climate change and its associated impacts. Because of the public's concern of the environmental and human health impacts caused by climate change, governmental bodies including the County and state have adopted policies to reduce their emissions of GHG and contribution to global warming. The County has established the Office of Climate Change, Resiliency, and Sustainability (CCRS) that focuses primarily on climate mitigation, decarbonization, and adaptation through initiatives related to environmental protection, energy and clean transportation, green buildings, and resilient housing. The County is currently formulating a Climate Action and Resiliency Plan with information available on the CCRS website at:

https://resilientmauinui-mauicounty.hub.arcgis.com/.

The Solid Waste and EP&S Divisions can play a key role in executing the County's policies and programs to reduce GHG emissions and promote sustainability through the implementation of programs and operating procedures that reduce GHG in the environment.

The County continues to develop and offer new programs that encourage recovery and reuse of materials and reduced use of virgin materials. In addition, the Solid Waste and EP&S Divisions regularly review their operations, programs, and facilities to ensure that their decisions and policies help reduce GHG emissions and support changing to business practices that are cost-effective. This approach will be continued by maintaining and growing current programs and establishing new programs and partnerships throughout the County.

4.3 Status of Previous Recommendations

The status of the recommendations made by the 2009 Plan can be found in Appendix B.

4.4 Alternatives and Evaluations

Existing service gaps and other issues connected to recycling, bioconversion, and markets are evaluated below.

4.4.1 Establish a Waste Diversion/Recycling Goal

The County, as part of this planning process, could set a specific performance target for waste reduction, recycling, and composting programs. Setting diversion goals provides a benchmark for measuring future performance and also provides goals and incentives to preserve valuable landfill space. In 2019, the County recycled/diverted 37 percent of the waste generated in the County. With the discontinuation of the organics recycling program, that percentage fell to 20 percent in FY2021. The County Department of Environmental Management has set a recycling and diversion goal of 60 percent by weight, which could be adopted as part of this planning process to be reviewed and revised over the 10-year planning period.

4.4.2 Develop Zero Waste Strategies and Programming

The County could work with state legislators on a coordinated effort to adopt zero waste public policy at both the state and national levels to encourage extended producer responsibility legislation, minimum recycled content standards for products, green procurement and green building guidelines, updates to deposit programs, and support of national measuring and monitoring standards in achieving zero waste goals.

The County is currently considering the adoption of zero waste policy that would initiate the development of a Zero Waste Master Plan to set strategies and standards for programs in the future.

4.4.3 Recycling Rates by Material

Overall, the County's waste generation rate was estimated at 8.42 pounds per person, per day, in 2019 with 129,214 tons of material either recycled or diverted. Based on the 2012 Waste Composition Study and current tonnage disposed of in 2019, paper, plastic, green waste, food waste, and other organics are the most viable materials for recycling programs to consider. Refer to Chapter 2 – Waste Stream for data sources.

Until March 2020, the organics' composting program was still operational at the CML. With the discontinuation of the program, green waste is processed for size reduction (mulch) and used as a solidifier to enable biosolids, and FOG to be disposed of in the landfill. Only excess mulch not required for solidification is diverted to be used for local agriculture.

Material recovery rates in the County appear to be highest for yard/food waste, cardboard, mixed and recyclable paper, and C&D (other C&D, wood waste). Large "Big Box" retailers bale and ship their cardboard off-island in what would otherwise be empty shipping containers. Ferrous metal, non-ferrous metal, and white goods recycling may include vehicles and heavy appliances, thus increasing the recycled

tonnages. Providing County residents the opportunity to recycle at the curb has resulted in, in other jurisdictions, an increase in recycling rates on collected materials.

Focusing recycling and diversion efforts on those waste streams, such as yard and food waste, cardboard, mixed and recyclable paper, and C&D—which represent significant tonnage remaining in the waste stream over this planning period—could have positive results to help meet the proposed 60 percent recycling and diversion goal.

4.4.4 Continue to Conduct Waste Composition Studies

The County conducted a waste composition study in 2012. The County could perform a new study to provide an updated assessment of recycling and HHW program performance as well as useful information on waste generation rates by source (residential and non-residential). This study is recommended to be conducted over the course of a year to address seasonal variations. With the changes in recycling brought about through waste bans in China and residents' consumption patterns, the County waste composition is likely to have changed since the 2012 study was conducted.

4.4.5 Reinstate the Green Waste Compost Program

Currently, green waste composting has been discontinued. Green waste is being chipped for size reduction and used as a solidifier for biosolids and FOG to enable these materials to be landfilled, taking up valuable landfill space at the CML. The County is in the process of developing a long-term Organics Management Plan to provide a solution for management of organic waste streams that includes reinstating the compost program, evaluation of WTE technologies, continued landfilling, or a combined approach. With the County considering a 60 percent diversion/recycling goal during this planning period, re-establishing the compost program is critical to success. Once completed, recommendations presented in the Organics Management Plan will become part of this Plan.

4.4.6 Evaluate Implementation of Curbside Recycling Services for Recyclable Materials, Green Waste, and Food Waste

Since the discontinuation of the County 3-Can Plan curbside recycling study in 2020, curbside recycling is currently not available in those areas serviced by the County for curbside waste collection. Curbside recycling programs and the availability of a MRF for processing materials are essential elements to increase waste diversion efforts. Both elements were studied in 2010 and led to implementation of the 3-Can Plan curbside recycling pilot study. Although the pilot study was discontinued, changes in social dynamics related to recycling and sustainability practices, County growth, advances in technology, and recyclable market conditions could make it appropriate for the County to consider updating the study. The County would be required to make a significant investment to upgrade current refuse collections infrastructure (e.g., facilities, trucks, carts, and staffing) to support re-implementation of a County-wide curbside recycling program (with potential green and food waste recycling

components). Such an investment, however, would increase the diversion rate for the County to closer align with the 60 percent recycling and diversion goal.

As part of the curbside recycling study, the County could also evaluate the potential for public-private partnerships to help offset costs for facility construction, maintenance, operations, and product marketing. The study could also consider reducing the number of current recycling center locations and utilizing the operational costs savings to offset a curbside program. In the event a curbside recycling program is re-implemented, the County recycling centers could be transitioned into reuse centers.

The County collection service currently offers a total residential refuse collection volume of 192 gallons per week through either two pickups of a 96-gallon cart or one pickup of up to six 32-gallon containers. The County could consider offering smaller collection volumes, 128 and 64 gallons per week, at an ascending cost per volume (applying the lowest cost to the smallest container or weekly volume). This would provide a monetary benefit for residents who produce less waste and divert recyclables from being landfilled. If curbside recycling is re-implemented, providing smaller carts at reduced costs to residents could incentivize waste reduction and recycling.

4.4.7 Ban Landfill Disposal of Readily Recyclable Materials

The County could ban landfill disposal of readily recyclable materials such as food waste, mixed paper, newspaper, cardboard, clean wood, plastic bottles, aluminum cans, and tin cans. To enforce the ban, the County could assess a surcharge for loads that contain more than an established minimum quantity of prohibited materials (e.g., 5 percent). As an alternative, the County could implement a surcharge on self-haul loads containing materials that can be recycled at drop-off sites without formally adopting a disposal ban.

Before implementing a ban or charging a surcharge, the County would need to evaluate whether residents and businesses have the option to subscribe to a recycling service and/or have adequate access to recycling facilities that could accept and process the banned materials.

4.4.8 Adopt Mandatory Recycling for Readily Recyclable Materials

The County could adopt a disposal ban requiring residential and commercial customers to recycle readily recyclable materials. Readily recyclable materials may include yard waste, food waste, mixed paper, newspaper, cardboard, plastic bottles, aluminum cans, tin cans, electronics, and clean wood.

Before adopting mandatory recycling policies, the County would need to ensure that residents and businesses have the option to subscribe to a recycling service and/or have adequate access to recycling facilities that could accept and process the banned materials.

4.4.9 Expand Recycling Drop-off Opportunities

The County could evaluate the number, type, and location of existing recycling drop-off centers to determine if adding additional centers or enhanced standards would further promote recycling in the County. The County provides recycling drop boxes at each of its solid waste management facilities and other centers as shown in Table 4-2. The County should continue to accept recycling materials for free and provide a convenient approach to recycling to incentivize self-haul customers.

The County could consider implementing centralized or regional drop-off centers that would receive recyclable materials and also serve as hubs for special wastes collection events. Additional information and recommendations for implementation are included in Chapter 7 – Special Wastes.

4.4.10 Facilitate Recycling Program Implementation with the Commercial and Hospitality Industries

Hotels, resorts, and commercial businesses that support and service the County's hospitality industry are major generators of both food waste and recyclable materials. The County could consider working cooperatively with the hospitality and commercial industries to increase recycling programs and opportunities.

4.4.11 Food Waste Prevention

The County could promote and support food collection and distribution programs operating within the County such as the Maui Food Bank, Feed My Sheep, Common Ground Collective, and Maui Nui Food Alliance. These programs assist community partners to safely collect surplus edible food for those in need.

4.4.12 County Staffing Levels

Implementation of new and continuation of existing recycling and diversion programs will most likely require additional County staffing levels for successful program management. As new programs are implemented, the County should evaluate staffing needs and commit appropriate resources.

4.4.13 Climate Action Response

The County is pursuing several efforts to make the County more sustainable. In 2020, the County adopted Resolution No. 20-170, which adds to the Countywide Policy Plan a goal to mitigate climate change and work toward resilience by reducing air, noise, light, land, and water pollution and to reduce the County's contribution towards global climate change. Specifically, for the Countywide Policy Plan Objective 4, Policy c. of the Resolution states, "Promote programs and incentives that decrease greenhouse-gas emissions and improve environmental stewardship."

As part of any climate action response planning initiatives, both the County Solid Waste and EP&S Divisions should be included to provide perspective, support, and recommendations for future implementation.

4.5 Recommended Actions

The following recommendations are being made for recycling, bioconversion, and markets programs:

RBM1) Establish a waste diversion/recycling goal of at least 60 percent for this planning period.

RBM2) Focus additional recycling and diversion efforts on organic waste (green and food waste), plastics, cardboard, mixed and recyclable paper, and C&D debris that represent a significant percentage of the landfill disposed volume.

RBM3) Promote and adopt zero waste policies and initiatives that encourage extended producer responsibility and achieve zero waste goals.

RBM4) Conduct a waste composition study to provide data that tracks progress towards waste diversion and recycling program performance, refines existing programs, and identifies new program opportunities.

RBM5) Implement recommendations from the Organics Management Plan, as appropriate.

RBM6) Complete a curbside recycling program and MRF facility implementation study that evaluates public-private partnerships and facility construction, maintenance, operations, and product marketing costs.

RBM7) Work cooperatively with the hospitality industry, community events, multifamily dwellings, and the commercial sector to implement recycling programs and opportunities.

RBM8) Promote edible food waste prevention to assist community partners in collecting surplus edible food for distribution to those in need.

RBM9) Provide adequate County staffing levels and resources to implement and continue selected recycling and bioconversion programs.

RBM10) The County office of CCRS, and the Solid Waste and EP&S Divisions should work cooperatively to develop and promote new programs that encourage recovery and reuse of materials and support climate change initiatives.

RBM11) Incentivize recycling and diversion businesses to locate within the County and state designated Enterprise Zones.

RBM12) Continue to support and participate in the State HI-5 DBC program, the glass advance deposit fee program, and the Electronic Waste and Television Collection program.

RBM13) Continue with the distribution of County grant funds to support innovative recycling programs in the County.

RBM14) Address the Jones Act restrictions on recycling commodity shipping through advocating and support of modifications that would promote recycling.

RBM15) Implement a data collection methodology and reporting structure to capture materials recycled from all sectors in the County.

RBM16) Consider and support technology that enhances or expands materials for recycling.

5 Education and Outreach

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5 Education and Outreach

5.1 Introduction

This chapter discusses existing education and outreach programs related to solid waste and recyclable materials management, identifies relevant planning issues, and develops and evaluates education and outreach strategies.

5.2 Background

Public education and outreach are important elements for solid waste management systems. Understanding who lives in the County, what businesses operate here, and what recoverable materials are currently disposed of as MSW help identify pertinent topics for educational outreach and waste generators who may need assistance with additional education and outreach programs and materials.

The County is facing shifts in the demographics and dynamics of its population. Tourism is one of the leading components of the County's economy. The County's population is composed of multiple ethnic heritages including Hawaiian, Japanese, Caucasian, Filipino, Chinese, Korean, Tongan, Samoan, Micronesian, Hispanic and others. In addition, the population is slowly aging; older residents are requiring access to different outreach methods than younger residents, and many remote areas of the County have no access to computer/internet service.

County residents and businesses need to be informed about the proper and available methods for waste reduction, recycling, and disposal. The education and outreach strategies described in this chapter provide guidance and encourage residents and businesses to take the extra steps to reduce, recycle, and properly dispose of their waste.

5.3 Existing Education and Outreach Program Elements

This section provides background information on existing education and outreach programs.

5.3.1 Public Education and Outreach Promotional Resources and Activities

County staff offer education and outreach resources online, in-person, and at disposal sites. Resources available on the County website include general information on disposal locations, landfill diversion opportunities, and zero waste services and programming, including the following information:

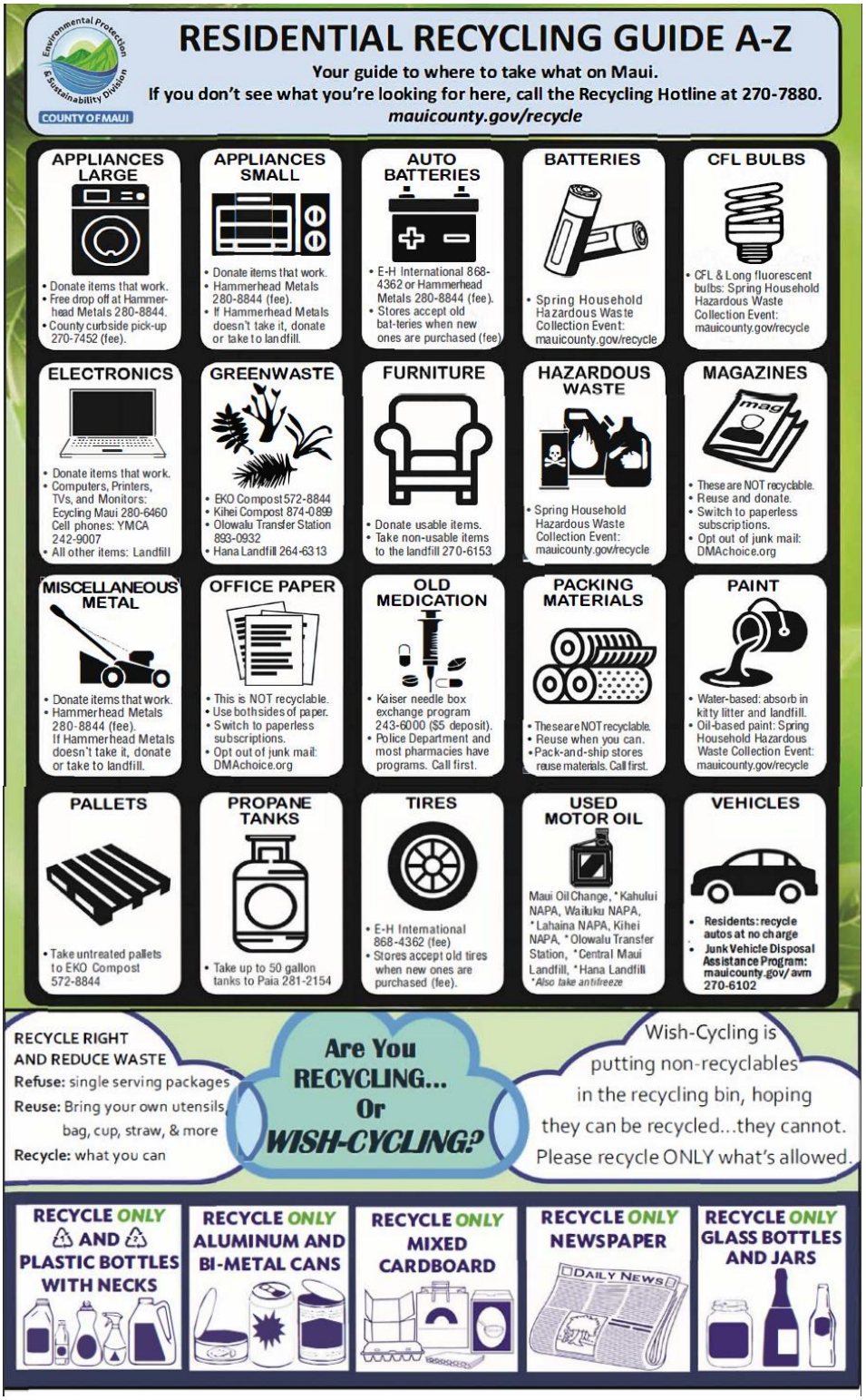

Figure 5-1. County Residential Recycling Guide

- Zero Waste Times Newsletter.
- Abandoned vehicle and metals assistance information.
- Solid waste collection and disposal services information.

County staff operate several educational programs on waste reduction, recycling, litter control, and grants. Table 5-1 provides information on current programs.

Table 5-1. County Educational Program Overview

Program Name	Description	Additional Information
BYO! Bring Your Own	Campaign to reduce waste by using your own bag, cup, straw, utensil kit, coffee cup, etc. The County Recycling Section gives away reusable utensil kits, water bottles, coolers, pouch shopping bags, coffee cups, and meal containers for special events and by request through a promotional item request form. These items are provided through limited distribution by targeting programs and organizations that already promote and/or implement zero waste programs.	In spring 2022, EP&S partnered with HuiZero to give away 1,000 free utensil kits with each new purchase of a HuiZero reusable meal container. https://www.huizero.com/.
Wish-Cycling Campaign	Campaign to reduce contamination in the recycling stream by educating residents on what can be recycled, not by placing non-recyclables in the bin and hoping they can be recycled.	https://www.mauicounty.gov/2490/Recycling.
Plastic Free Maui County	Campaign to reduce plastic waste and enforce the Plastic Disposable Foodware Ordinance No. 5049. Additional information on this program can be found in Chapter 3 – Source Reduction and Reuse.	https://mauicounty.gov/1974/Plastic-Free-Maui-County.
Foam Free Maui County	Campaign to educate and enforce the Polystyrene Foam Service Container Ordinance; this law was amended to include all plastic disposable foodware in 2020. Additional information on this program can be found in Chapter 3 – Source Reduction and Reuse.	https://mauicounty.gov/2282/Foam-Free-Maui-County.
Tour de Trash	Virtual tour of recycling and waste processing facilities.	Intention to launch a video series in FY2025; in-person tours upon request and staff availability.
Only Rain Down the Drain	Storm Water Management program to promote litter control.	https://mauicounty.gov/DocumentCenter/View/105676/2-SWMP-Public-Education-and-Outreach?bidId=.
Community Presentations	Periodic presentations to various groups including Rotary clubs, neighborhood boards, County Council, etc.	Contingent on staff availability.

Table 5-1. County Educational Program Overview		
Program Name	**Description**	**Additional Information**
Outreach Tabling Events	Attending various events to provide education and outreach on landfill diversion programs.	Includes Maui County Fair, Lānaʻi Turkey Day, Earth Day events, UHMC events, and others, contingent on staff availability.
Art of Trash and Trashion Show	An annual exhibition organized by Mālama Maui Nui that inspires the community to reimagine discarded resources as elements for creative inspiration.	https://www.malamamauinui.org/artoftrash.html.

Information on waste reduction, recycling, litter control, and zero waste initiatives can be found at:

https://www.mauicounty.gov/742/Environmental-Protection-Sustainability.

Brochures that provide important service information about solid waste facility locations and hours, rates, and guidelines for collection and disposal are mailed to new curbside collection customers. This brochure is updated yearly and can be accessed at the following website:

https://www.mauicounty.gov/1017/Solid-Waste-Refuse-Services-and-Information.

County staff offer the Zero Waste Times Newsletter, which is mailed to all refuse collection customers on a semi-annual basis in their billings and contains information about the latest recycling and zero-waste-related news.

County staff also operate the Recycling Hotline to answer questions and concerns from the public regarding waste reduction, recycling, and zero waste program availability. The Recycling Hotline number is (808) 270-7880 and recycle.maui@mauicounty.gov is used for email inquiries.

Current programs around HHW are addressed in Chapter 6 – Household Hazardous Waste and Electronic Waste. The County website, https://www.mauicounty.gov/742/Environmental-Protection-Sustainability, provides information regarding HHW collection events. Events are advertised as appointment-only on designated collection days.

5.3.2 Non-County Outreach and Promotion Programs

In addition to the County's efforts, other governmental and non-governmental entities conduct outreach and promotion programs that can support, be supported by, or otherwise expand the reach of waste reduction and recycling education. Examples of these activities are described below.

Private solid waste service providers conduct their own outreach in various degrees. Maui Disposal maintains a website that offers information on recycling and the availability of their redemption centers and curbside recycling services; this information can be accessed at:

http://www.mauidisposal.com/.

Waste Pro Hawai'i also maintains a website with information on disposal services, and recycling at the Mālama 'Aina Recycle Center and accepted commodities; the website can be accessed at:

https://wasteprohawaii.com/.

The DOH maintains a website for the Hawai'i Deposit Beverage Container Program and the Electronic Device Recycling and Recovery Program; these websites can be accessed at:

https://health.hawaii.gov/hi5/.

https://health.hawaii.gov/ewaste/.

Hawai'i Materials Recycling, Inc., has a comprehensive website that provides information on materials accepted for recycling, acceptance requirements, materials for sale, and fees. The website can be accessed at:

https://www.Hawaiimaterialsrecycling.com/.

A number of non-profit and private programs provide information on recycling and conduct community events supporting waste reduction strategies, including:

- Mālama Maui Nui maintains a website and supports recycling opportunities and litter and trash cleanup efforts; this website can be accessed at:

  https://www.malamamauinui.org/cleanups.html.

- Maui Huliau Foundation's Huliau Green Events program advises on waste reduction strategies for community events and assists with pre-event planning and zero waste information stations, resulting in approximately 80 percent diversion of event waste. The Foundation also provides programs through its Zero Waste Schools Program to assist students in implementing waste audits and waste reduction initiatives on school campuses. Additional information regarding these programs can be accessed at:

  https://mauihuliaufoundation.org/greenevents/.

- Zero Waste Maui, a coalition of non-profit organizations, businesses, and community members, maintains a website dedicated to addressing waste management and plastic pollution challenges in the County. The coalition provides

waste reduction resources to the public through outreach campaigns, workshops, social media, and its website. The website can be accessed at:

https://www.zerowastemaui.org/.

- Surfrider Foundation, Maui Chapter, educates the public about single-use plastics and how to avoid them through their Rise Above Plastics campaign. The program encourages vacation rentals to provide reusable water bottles to guests. The Foundation also manages the Ocean Friendly Restaurants certification program, which maps local eateries that do not use plastic, and hosts monthly beach cleanups. Additional information can be accessed at:

  https://maui.surfrider.org/.

- West Maui Greencycle manages a commercial composting pilot program and a school food waste composting program for various schools in the County. Additional information can be accessed at:

  https://westmauigreencycle.com/.

  SHARKastics maintains a long-term debris study and monthly beach cleanup and engages the public on various types of marine debris found on the County shorelines and where it originated. SHARKastics website can be accessed:

  https://www.sharkastics.org.

5.4 Status of Previous Recommendations

The status of recommended actions from the 2009 Plan can be found in Appendix B.

5.5 Planning Issues and Opportunities

Currently, County staff provide the majority of the promotion, education, and outreach programs conducted county-wide. The subsections below address the planning issues associated with each of the existing program categories.

5.5.1 Public Outreach Promotional Resources and Activities

County staff must consider the accessibility of educational materials for certain groups within the population:

- More people access their news and information online, but some groups, including older generations and individuals living in remote areas, tend to be digitally isolated.
- Outreach materials provided only in English are not effective for residents, business owners, and employees who are English-language learners.
- Access to educational materials for residents with disabilities, such as visual and hearing impairments, could also be beneficial, as those groups may be digitally isolated.

5.5.2 Waste Reduction and Recycling Education

Waste reduction and recycling education should address the most impactful topics and be relevant for intended audiences:

- According to the County's 2012 Waste Composition Study, paper, plastic, and organic waste made up the greatest portion of waste disposed of by most residential and commercial waste generators. Waste characterization studies can inform County staff about which types of waste reduction and recycling they should focus on.
- Manufacturing and other industries typically welcome technical and educational assistance to evaluate cost-saving methods for managing materials handled and waste streams generated at their facilities. The County could focus on providing these types of assistance to the hospitality industry, highlighting methods of managing reusable or recyclable materials, including use of soap and shampoo dispensers to eliminate packaging, installation of hand air dryers to eliminate disposable paper towels, and food waste reduction/reuse practices (e.g., separation, composting, food bank donations).

5.5.3 Litter, Illegal Dumping, and Secure Load Education

Identifying and educating those responsible for litter and illegal dumping is an ongoing process that requires participation from many entities in the County:

- Litterers and illegal dumpers cannot be easily identified and therefore require a broad outreach approach.
- Secure-load education for customers accessing disposal sites may be more effective if it includes specific information on how to secure loads (avoiding common mistakes) and when it is combined with financial incentives, such as fines for unsecured loads. Providing customers with a tarp or netting instead of a fine at the first offense has reduced the number of unsecured loads for repeat customers.

  The County maintains a website and social media account for the reporting of municipal issues related to litter and illegal dumping. Issues can be reported at:

  https://seeclickfix.com/us-hi-maui.

- Mālama Maui Nui provides annual secure load education.

5.6 Alternatives and Evaluations

5.6.1 General Education for Residents and Businesses

5.6.1.1 Refresh Educational Materials and Seek to Harmonize Messaging

Education and outreach initiatives have greater impact if messaging is consistent throughout the County. To achieve consistency, County staff can prioritize efforts to coordinate between departments within the County. The County could also work with

commercial collection companies to unify messaging on waste prevention, recycling, private recycling options, and extended producer responsibility options. Harmonization can involve:

- Standardizing a list of accepted materials when possible.
- Setting similar priorities for education objectives in terms of material and content.
- Maintaining consistency in labeling, use of picture-based icons, color coding, and—when applicable—translations for bin decals and signage.
- Communicating across agencies (e.g., the EP&S and the Solid Waste Divisions) to jointly work on overlapping objectives (e.g., moderate risk waste).

Unified messaging includes using one set of materials (e.g., decals, flyers, brochures, pamphlets, mailings), which can be co-branded or individually branded by the agency or collection company distributing them.

County staff can also review and selectively refresh the County's library of existing materials or create new materials to reflect priority recycling and composting topics; objectives around waste reduction; and key littering, illegal dumping, and moderate-risk waste issues. Building on materials and resources—such as open-source photos for recyclables—from other jurisdictions and organizations can be cost effective. For example, The Recycling Partnership offers free images for signage at:

https://recyclingpartnership.org/signage/.

Unified messaging materials can be tailored to specific generator types with relevant resources according to the specific challenges presented to each group (e.g., food waste prevention, edible food recovery, and composting for grocery and food-service businesses).

When feasible, all materials should also have translated versions. Adapting already-translated external resources, with permission, or partnering with other counties could be a cost-effective way of obtaining translated informational material.

Distribute Informational Mailings to Households and Businesses

Annual mailings could be sent to all households and businesses, potentially in partnership with the County and private haulers. These mailings should have easy-to-follow general information about what, how, where, and when to recycle and compost. For easy access, the mailings should include a collection calendar; highly visual lists of materials accepted for recycling and composting; and links to online resources with additional waste prevention, recycling, and composting information.

Periodically as needed, County staff could also distribute special mailings on specific topics or tailored to specific audiences. Topics include, but are not limited to, the following:

- Preventing food waste and donating food. Coordination with the DOH related to food waste concerns and waste reduction campaigns could be included.
- Increasing recovery of materials with low capture rates, such as food waste (residents and businesses), mixed paper (residents and businesses), cardboard (businesses and self-haul), clean wood (self-haul), and metals (self-haul).
- Minimizing contamination by keeping specific problematic materials out of recycling and compost containers.
- Minimizing C&D debris through building material reuse, salvaging, and deconstruction and recycling of unavoidable C&D debris.
- Properly disposing of and using safer alternatives to HHW and moderate risk waste products.
- Minimizing littering and illegal dumping.
- Community events that support waste reduction and recycling efforts.

Update and Expand Digital Education through Websites, Social Media, and Newsletters

County staff efforts to reach digitally inclined groups can include updating existing digital materials and expanding digital education campaigns through social media, the County website, and email newsletter subscriptions. At a minimum, the County should refresh its website to update outdated information, make it more visually appealing, use larger and easy-to-read fonts, and make it easier for different types of users to find relevant information (e.g., single-family residents, multifamily tenants, multifamily property managers, businesses, and self-haulers).

The website should include information on what, where, and how to recycle and compost and on how to reduce waste generation. The County website can add depth and details to electronic mailings on recycling, composting, hazardous waste, food waste, C&D debris, and littering and illegal dumping. For instance, a digital campaign for C&D debris could emphasize the value of reusing building materials and reducing C&D waste. The County website could include relevant links to building material reuse options and directories of reuse and recycling providers; tips from green building organizations on reducing waste during construction; user-friendly databases that inform C&D debris self-haulers on how to separate and prepare specific materials; and information on how to start a recycling business and provide business support and assistance options.

Social media campaigns are a low-cost supplement to other education and outreach efforts and can build on free resources provided by organizations such as the social media toolkit from The Recycling Partnership. This toolkit provides a variety of content that can be scheduled throughout the year, including text and images to align with seasons and holidays. Social media campaigns also offer flexibility in topics that can be covered, including promoting upcoming events and addressing seasonal or

emerging issues (such as backyard composting in spring or collection schedule changes during weather events). Toolkit information from The Recycling Partnership can be found at:

https://recyclingpartnership.org/?s=social+media.

An important consideration when using social media, newsletters, or blogs is that individual posts and articles about a small subset of products can lead to an overload of unorganized information. If adopted, these digital communications should direct users to resources on the County website so they are organized and easy to find by residents and businesses later.

5.6.2 Residential Waste Prevention Education Campaigns

5.6.2.1 Institute Residential Food Waste Prevention Campaigns

For residents, food waste accounts for approximately 18.5 percent of the respective total waste stream, based on the Maui 2012 Waste Composition Study. County staff can build a food waste reduction program and build on the EPA's Food Too Good to Waste campaign. County staff can refresh the campaign with County-specific, updated tip sheets and additional tools to help residents shop smarter, store better, and use up leftovers.

County staff can promote the campaign through its website, online newsletters, social and earned media, mailings, outreach at grocery stores and farmers' markets, presentations to interested community groups, and booths at community events. County staff can coordinate with the DOH on public health and safety rules related to residential food waste campaigns.

5.6.2.2 Conduct New Waste Prevention Campaigns

County staff could refresh and build on current and additional waste prevention campaigns using materials such as clothing and reusable cups and food containers.

Clothing waste prevention campaigns can address purchasing (buying less, second-hand, and/or higher quality clothing) as well as caring for and repairing clothing to extend its lifespan. A campaign could also include organizing repair events for clothing and other household products.

Many coffee shops allow customers to bring their own cups. The BYO! campaign by County staff could feature promotions on social media and at participating businesses and conduct outreach during on-site technical assistance, about allowing customers to bring their own containers.

5.6.3 Single-Family Residents

5.6.3.1 Expand Backyard Composting and Grasscycling (mulch mowing)

County staff can coordinate messaging and share resources that provide tips for backyard composting, vermicomposting, and grasscycling for single-family residents.

County staff can also provide initiatives by including tips and resources, and information on related events, in their web resources and mailings. Composting outreach could further expand to implement a training program for individuals to become Master Composters and share their knowledge with others in their neighborhoods to increase backyard composting. Several online organizations offer courses to become a Master Composter that require attendance at a minimum number of class sessions, field trips, and practical education through class projects and volunteering.

5.6.3.2 Curbside Recycling

County staff can coordinate outreach and messaging during evaluation of a curbside recycling program. Public outreach could include such items as stakeholder engagement activities, surveys, and facilitation of public events and meetings.

5.6.4 Multifamily Residents

5.6.4.1 Multifamily Recycling Toolkit

County staff and community partners can re-implement a toolkit for multifamily property managers with additional details and resources such as:

- Printed and downloadable guide with best practices for setting up recycling and composting containers: selecting appropriate capacity, conveniently co-locating them with garbage containers, and using clear signage and color-coding.
- Downloadable signage for waste collection areas.
- Downloadable templates for educational materials that property managers can use with tenants, such as factsheets and emails on what and how to recycle, instructions regarding breaking down boxes when moving in, reminders for when collection areas experience issues, and instructions regarding donating items when moving out.
- Downloadable sample language for lease agreements encouraging or requiring tenants to recycle and/or compost.

Multifamily Recycling Toolkit information can be found at:

https://recyclingpartnership.org/multifamily/.

5.6.4.2 Provide Multifamily Technical Assistance

The multifamily toolkit will be more effective when delivered through on-site technical assistance and combined with tenant outreach. This alternative can include:

- Conduct site visits to assess and make recommendations regarding collection containers, capacity, and conditions related to best practices.
- Assist with requests for service-level changes to optimize container capacity and convenience.

- Assist with the application of decals, signage, and color-coding in container areas.
- Provide printed flyers and/or magnets with recycling information to tenants.
- Provide reusable, washable recycling collection bags printed with recycling instructions that tenants can use to collect recyclables in their units and deliver them to collection containers.
- Conduct door-to-door outreach to tenants to provide information on recycling and deliver recycling collection bags or informational door hangers.

5.6.5 Businesses and Schools

5.6.5.1 Expand Business Technical Assistance

County staff can implement a business outreach and technical assistance program with:

- Refreshed and reorganized webpages with updated information and resources.
- Hotline and email assistance to answer businesses' questions about waste prevention, recycling, and composting.
- On-site technical assistance including waste audits, collection infrastructure assessments, customized recommendations for preventing waste and increasing recycling and composting, support for implementing recommendations, and employee trainings.
- Business toolkits and business tip sheets for preventing waste, increasing recycling and composting, and minimizing contamination.
- Provision of collection signage and free or low-cost indoor collection containers.

To continue promoting business technical assistance, County staff could focus efforts on:

- Businesses that already participate in environmental programs that may be more open to reducing waste.
- Businesses in a specific sector, such as food service or small retail, to help create a customized campaign or focus on specific topics such as food waste.
- Businesses in a few small areas of the County to make door-to-door canvassing more efficient and create a hub of waste reduction, particularly when combined with a recognition program.

Business Toolkit information can be found at:

https://recyclingpartnership.org/circular-packaging-assessment/.

5.6.5.2 Offer Technical Assistance to Schools

Schools present important opportunities to reduce waste—especially food waste—and increase recycling. Technical assistance to schools could include:

- On-site technical assistance including waste audits, collection infrastructure assessments, and customized recommendations for reducing waste and increasing recycling and composting.
- Assistance and/or grants to support implementation of waste reduction strategies such as installing a dishwasher, switching to milk dispensers with reusable cups, switching to reusable dishes and trays, setting up a sharing table or bin for students to trade unopened food/drinks and uneaten whole fruit with peels, setting up a school swap day at the end of the school year when students are cleaning out lockers, installing water-bottle filling stations, donating edible food, and more.
- Assistance with implementation of recommendations regarding green purchasing, waste collection practices, and waste collection infrastructure.
- Collaboration with a school's existing student green team, or assistance with creating a student green team, to implement a food waste audit and prevention campaign, an on-site composting demonstration project, or a waste audit and recycling/composting education campaign.

5.6.5.3 Assist with the Implementation of Hospitality Industry Education and Outreach Program

The County and the hospitality industry could work cooperatively to implement food waste reduction and waste recycling education and outreach programs. They could also collaborate on donation campaigns that promote and support food waste collection and distribution programs while also considering other targeted commodities that can be easily recycled or reused. The hospitality industry could also be encouraged to work with the County and private waste haulers to implement recycling collection and/or refresh existing programs at their facilities.

5.6.6 Self-Haul Waste

5.6.6.1 Provide Information at Disposal Sites and Disposal Site Websites

County staff could place educational messages on disposal site websites (where self-haul customers look for information about hours, fees, and accepted materials), signage near the entrances of disposal sites, and flyers handed out by customer service staff when self-haulers enter the sites. Topics could include separating materials for recovery, using donation sites that accept reusable household and construction items, properly disposing of hazardous materials, and properly securing loads and litter prevention. These outreach methods, focused on self-haulers, can reinforce messaging through other methods such as social media or special mailings.

5.6.6.2 Provide Educational Materials Online and at the Permit Counter for Reducing C&D Debris and Diversion Opportunities

County staff can update its webpage on C&D debris with additional information on reducing waste generation, using deconstruction and salvage techniques, donating or using reused building materials, recycling C&D debris, and other green building topics.

Permit counters and a partnership with the County Building Permits Section can provide an opportunity to reach residents and businesses that generate C&D debris. Permit counters can display educational materials in the form of pamphlets, brochures, flyers, or hard copies of newsletters. Topics should include securing loads, tips on recycling C&D debris, and C&D waste prevention and diversion.

5.7 Recommended Actions

The following recommendations are being made for additions or adjustments to education and outreach programs:

EO1) Maintain current educational programs, as appropriate, and provide adequate staffing for implementation of additional education and outreach programs and opportunities.

EO2) Refresh educational materials and seek to harmonize messaging.

EO3) Distribute informational mailings to households and businesses.

EO4) Update and expand on digital education through websites, social media, and newsletters.

EO5) Refresh residential food waste reduction campaigns.

EO6) Consider implementing a Master Composter training program.

EO7) Consider implementing a multifamily recycling toolkit.

EO8) Provide multifamily technical assistance as waste reduction and recycling options become available.

EO9) Consider the expansion of business technical assistance including support and assistance on how to start a recycling business in the County.

EO10) Consider offering school technical assistance.

EO11) Provide information at disposal sites and disposal site websites.

EO12) Provide education materials online and at the permit counter describing ways to reduce C&D debris and increase diversion opportunities.

EO13) Work cooperatively with County staff and programs, private waste haulers, private non-profit groups, volunteers and youth groups, the hospitality industry, and the commercial sector to develop and refresh education and outreach programs for implementation.

EO14) Continue to monitor and maintain the County See Click Fix website for reporting of littering, illegal dumping and abandoned vehicle complaints.

EO15) Provide education and outreach opportunities for littering and illegal dumping and abandoned vehicles.

Household Hazardous Waste and Electronic Waste

6

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6 Household Hazardous Waste and Electronic Waste

This chapter discusses existing HHW and E-Waste programs, identifies relevant planning issues to meet local and state goals, and develops and evaluates alternative strategies.

6.1 Background

This section provides information on the regulations and authorities that govern HHW and E-Waste programs and issues.

6.1.1 HHW Regulations

In 2011, the state adopted HRS 342J, which requires that hazardous waste be managed in a manner that protects the health, safety, and welfare of the citizens of the state and protects and conserves the state's natural resources and environment. HRS 342J-2 defines hazardous waste as follows:

> *'Hazardous waste' means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may:*
>
> 1. *Cause or significantly contribute to an increase in mortality or an increase in a serious irreversible or incapacitating reversible illness; or*
> 2. *Pose a substantial existing or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.*

Household-generated waste is not considered hazardous waste under State Hazardous Waste Management Rules, State of Hawai'i Administrative Rule (HAR) 11-261.1, and Federal Resource Conservation and Recovery Act (RCRA) Rules, 40 Code of Federal Regulations (CFR), Part 261.4, and as such are exempt from HRS 342J-2. HRS 342G-1 defines HHW as follows:

> *'Household hazardous waste' means those wastes resulting from products by the general public for household use which, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may pose a substantial known or potential hazard to human health or the environment when improperly treated, disposed of, or otherwise managed.*

Conditionally Exempt Small Quantity Generators (CESQGs) or Very Small Quantity Generators (VSQG) are facilities that generate 220 pounds or 25 gallons or less of hazardous waste in a calendar month and are also exempt from federal government rules if they adhere to other waste management requirements. As commercial

generators, CESQGs are referred to the DOH for guidance on proposer disposal of hazardous waste.

Federal Universal Waste Regulations found in 40 CFR 273 contain streamlined collection requirements for batteries, pesticides, mercury-containing equipment (thermostats), and lamps (fluorescent bulbs) to make it easier for universal waste handlers to collect these items for recycling and proper disposal.

The state standards of HAR 11-273.1, Standards for Universal Waste Management, allow certain household waste and CESQG wastes to be managed as universal wastes, including batteries, pesticides, mercury-containing equipment, lamps, and electronic items. While these universal waste types are not necessarily counted towards hazardous waste quantities when determining generator status (i.e., CESQG, small quantity generator, or large quantity generator), commercial generators are referred to the DOH for guidance on proper disposal of universal and hazardous wastes.

Additional information regarding State HHW regulations can be found at:

https://health.hawaii.gov/shwb/hazwaste/.

6.1.2 E-Waste Regulations

In 2008, the state adopted HRS 339D (amended in 2022 [Act 151]), the Hawai‘i Electronic Waste and Television Recycling and Recovery Law, which requires electronic manufacturers to provide recycling programs for televisions, computers, computer printers, computer monitors, and portable computers. An ED is defined as follows:

- A computer, computer printer, computer monitor, or portable computer with a screen size greater than four inches measured diagonally; and
- Any device that is capable of receiving broadcast, cable, or satellite signals and displaying television or video programming, including any direct view or projection television with a viewable screen of nine inches or larger with display technology based on cathode ray tube, plasma, liquid crystal, digital light processing, liquid crystal on silicon, silicon crystal reflective display, light emitting diode, or similar technology.

In addition, HAR 11-273.1 allows for some electronic items to be managed as universal wastes.

Table 6-1 provides a list of substances that, when safely managed, are designated as HHW and E-Waste.

Table 6-1. Hazardous Household Substances List				
Substance or Class of Substance	**Flammable**	**Toxic**	**Corrosive**	**Reactive**
Group 1: Repair and Remodeling				
Adhesives, Glues, and Cements	x	x		
Roof Coatings, Sealants		x		
Caulking and Sealants		x		
Epoxy Resins	x	x		x
Solvent Based Paints	x	x		
Solvents and Thinners	x	x	x	x
Paint Removers and Strippers		x	x	
Group 2: Cleaning Agents				
Oven Cleaners		x	x	
Degreasers and Spot Removers	x	x	x	
Toilet, Drain and Septic Cleaners		x	x	
Polishes, Waxes and Strippers	x	x	x	
Deck, Patio, and Chimney Cleaners	x	x	x	
Solvent Cleaning Fluid	x	x	x	x
Household Bleach (>8% solution)			x	
Group 3: Pesticides				
Insecticides	x	x		
Fungicides		x		
Rodenticides		x		
Molluscides		x		
Wood Preservatives		x		
Moss Retardants		x	x	
Herbicides		x		
Fertilizers		x	x	x
Group 4: Auto, Boat, and Equipment Maintenance				
Batteries		x	x	x
Waxes and Cleaners	x	x	x	
Paints, Solvents, and Cleaners	x	x	x	x
Additives	x	x	x	x
Gasoline	x	x	x	x
Flushes	x	x	x	x
Auto Repair Materials	x	x		

Table 6-1. Hazardous Household Substances List				
Substance or Class of Substance	**Flammable**	**Toxic**	**Corrosive**	**Reactive**
Motor Oil		x		
Diesel Oil	x	x		
Antifreeze		x		
Group 5: Hobby and Recreation				
Paints, Thinners, and Solvents	x	x	x	x
Chemicals (including Photo and Pool)	x	x	x	x
Glues and Cements	x	x	x	
Inks and Dyes	x	x		
Glazes		x		
Chemistry Sets	x	x	x	x
Pressurized Bottled Gas	x	x		x
White Gas	x	x		x
Charcoal Lighter Fluid	x	x		
Batteries		x	x	x
Group 6: Persistent Bioaccumulative Toxins				
Mercury-Containing Products		x	x	
Lead-Containing Products		x		
E-Waste		x		
Polycyclic Aromatic Hydrocarbons		x		
Polychlorinated Biphenyl		x		
Group 7: Miscellaneous				
Ammunition	x	x	x	x
Asbestos		x		
Fireworks	x	x	x	x
Marine Aerial Flares	x	x		
Pharmaceuticals		x		
Non-Controlled Substances		x		
Sharps		x		
Personal Care Products	x	x	x	

6.2 Existing Program Elements

The following sections provide background information on HHW and E-Waste and discussion of the County's existing programs.

6.2.1 HHW Collection Events

The County hosts an annual collection event for residents to safely dispose of HHW materials that require special handling. HHW is collected from households by appointment only, and commercial waste is not accepted. Figure 6-1 highlights the information provided to residents for HHW collection events.

The County contracts with a private company to receive, verify, segregate, package, transport, and dispose of HHW received during annual collection events.

Figure 6-1. HHW Collection Event Flyer

Table 6-2 provides information on HHW diverted from landfilling from 2016 through 2022. A HHW collection event was not held in 2018 due to staffing issues at the County. During HHW collection events, staff has noted that participating residents can represent multiple households, such that a resident may bring HHW from entire neighborhoods from the Hana side of the island, or a person may bring in HHW individually and for their Kūpuna.

Table 6-2. HHW Collection Event Overview

Fiscal Year	Event Location	Residents Served	Pounds Collected	Cost
2016	Maui	129	13,095	$77,672.30
2017	Maui	190	12,600	$78,363.60
2018	No Event	-	-	-
2019	Maui	296	24,015	$92,712.80
2020	Maui	283	22,280	$81,624.02
2021	Maui	383	29,319	$96,520.50
2022	Maui	417	26,853	$87,493.99

In 2019, the County initiated a pilot project with Teens on Call/Teenforce to assist with propane tank recycling. Maui Gas Services extracts the propane left in the tanks and Teenforce removes the propane control valves, rinses the tanks with water, and transports the empty tanks for recycling at Hammerhead Metals.

6.2.2 HHW Public Education and Outreach

The County website, https://www.mauicounty.gov/742/Environmental-Protection-Sustainability-, provides information regarding HHW collection events. Additional information regarding HHW public education and outreach can be found in Chapter 5 – Education and Outreach.

6.2.3 E-Waste Collection

The County contracts with E-Cycling Maui for E-Waste collection, consolidation, and shipping. E-Cycling Maui operates the ReThink Recycling Center at 301 Hansen Road, Puʻunēnē, on Maui island that is open to the public 2 days per week, Tuesdays from 1:00 p.m. to 5:00 p.m. and Saturdays from 9:00 a.m. to 1:00 p.m. In addition, E-Waste is also collected on Maui island at a tri-annual event at the Hana Landfill and at monthly collection events in Lāhainā.

E-Waste on Molokaʻi island is accepted at the Recycle Molokaʻi site located at the Molokaʻi Landfill which is open Tuesday through Saturday from 8:00 a.m. to 2:30 p.m. E-cycling collection events are conducted twice per year on Lānaʻi island at the Pūlama Lānaʻi Fleet Yard.

E-Waste collected on Molokaʻi and Lānaʻi are shipped back to Maui, consolidated and repacked, and shipped off-island from the main E-Cycling Maui facility. Items collected in the E-Waste collection program are palletized by type (i.e., computers, monitors, printers, televisions) and shipped to Universal Recycling Technologies (an R2 Certified recycler).

Table 6-3 provides information on E-Waste collection quantities and costs.

Table 6-3. E-Waste Collection Overview

Fiscal Year	CED[1,3] Pounds Collected	CTV[2,3] Pounds Collected	Total E-Waste Pounds Collected	Cost
2018	112,131	85,435	197,566	N/A
2019	273,937	462,962	736,899	$368,208.60
2020	205,235	350,889	556,124	$381,495.06
2021	163,877	245,773	409,650	$374,419.00

[1] Covered Electronic Devices.
[2] Covered Televisions.
[3] Per Act 151 (2022) CED and CTV definitions were redefined as electronic devices (EDs).

6.3 Status of Previous Recommendations

The status of the recommendations made by the 2009 Plan can be found in Appendix B.

6.4 Alternatives and Evaluations

Existing service gaps and other issues in managing HHW and E-Waste are evaluated in the following sections.

6.4.1 Permanent HHW and E-Waste Facility

In July 2019, the County issued a Finding of No Significant Impact for a proposed Maui Central Landfill Facilities Project. The County proposes to improve facilities at the Central Maui Landfill on approximately 40 acres of a larger 180-acre County-owned parcel. The proposed project will expand the County's integrated solid waste management and recycling/diversion facilities and includes the construction of a permanent HHW and E-Waste Facility. Construction of a permanent HHW and E-Waste Facility would eliminate the need for annual collection events and provide more suitable long-term handling and disposal options for the wastes. Until a permanent facility is constructed, the County would need to continue to host collection events.

Figure 6-2 provides information on the proposed conceptual HHW and E-Waste Collection and Storage Area. Additional information on the proposed Maui Central Landfill Facilities Project can be found in Chapter 9 – Residuals Management and Disposal.

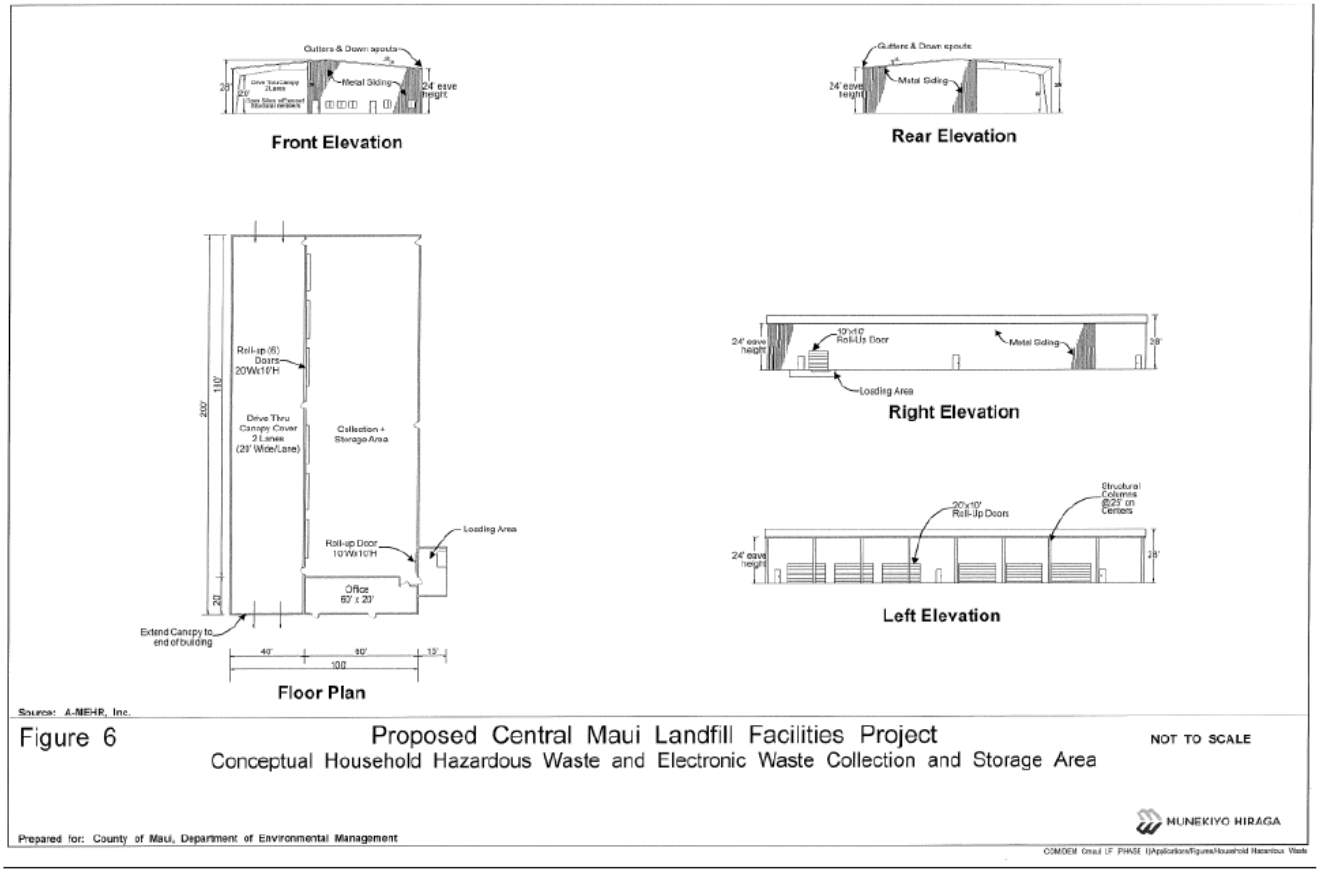

Figure 6-2. Proposed HHW and E-Waste Collection Facility

6.4.2 Producer Responsibility

The County will continue to support statewide solutions and funding sources for product stewardship initiatives and take-back programs that require manufacturers to assume responsibility for potential product impacts caused by or during packaging, energy and materials consumed, toxicity of the product, and waste disposal during product design through end-of-life management.

Product stewardship and producer responsibility initiatives promote shared responsibilities for everyday-use products and management of products through end-of-life to reduce waste, prevent disposal of harmful materials in the landfill, and increase recycling and recovery of valuable materials to accelerate a circular economy.

Support for legislation and funding at the state level is critical to the success of producer responsibility initiatives, and collaborative efforts are necessary to develop stable funding sources for local governments to manage the growing issue with HHW, E-Waste, and other toxic products. Legislative support and funding could include products such as lithium batteries, solar photovoltaic (PV) panels, propane tanks and

gas cylinders, e-vehicle batteries, paint, fluorescent tubes, and other potentially toxic or hazardous materials developed in the future.

6.5 Recommended Actions

The following recommendations are being made for HHW and E-Waste programs:

HHW1) Continue to promote safe handling and proper disposal of HHW and E-Waste through the County's website and other forms of media.

HHW2) Consider constructing the proposed permanent HHW and E-Waste Collection Facility if cost-effective.

HHW3) Continue to host HHW and E-Waste collection events until a permanent HHW and E-Waste Collection Facility is constructed. Evaluate the cost effectiveness of continuing the collection events if a facility is constructed.

HHW4) Support statewide legislation and funding efforts for producer responsibility initiatives and program implementation.

HHW5) Consider implementing lithium battery and solar PV collection and recycling programs as guidelines and technologies are developed.

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7 Special Wastes

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7 Special Wastes

7.1 Introduction

This chapter discusses existing programs, identifies relevant planning issues, and develops and evaluates alternative strategies for the management of special wastes.

7.2 Background

HRS 342-1 defines special wastes as:

> *Any solid waste which, because of its source or physical, chemical, or biological characteristics, requires special consideration for its proper processing or disposal, or both. This term includes, but is not limited to, asbestos, used oil, petroleum-contaminated soil, lead acid batteries, municipal waste combustion ash, sewage sludge that is not hazardous waste, agricultural and farm-generated wastes that are normally placed in landfills, medical wastes, tires, white goods, and derelict vehicles.*

This chapter is divided into the sections shown in Table 7-1 describing regulations, current programs, and planning issues for each type of special waste managed by the County.

Table 7-1. Special Wastes

Section	Special Waste Type
7.3	Abandoned and “Junk” Vehicles
7.4	Abandoned Vessels
7.5	Agricultural Waste
7.6	Animal Carcasses
7.7	Appliances/White Goods
7.8	Asbestos
7.9	Biomedical/Infectious Waste
7.10	Carpet and Padding
7.11	Construction and Demolition Debris
7.12	Disaster Debris Management
7.13	Lead Acid Batteries
7.14	Litter and Illegal Dumping
7.15	Mattresses

Table 7-1. Special Wastes	
Section	**Special Waste Type**
7.16	Petroleum-Contaminated Soils
7.17	Pharmaceuticals
7.18	Sewage Sludge
7.19	Tires
7.20	Used Motor Oil

7.3 Abandoned and "Junk" Vehicles

This section addresses handling and disposal of abandoned and "junk" vehicles within the County.

7.3.1 Regulations and Guidelines

The County operates an Abandoned Vehicles Program to properly remove vehicles that have been illegally abandoned on public property. Maui County Code, Chapter 20.20.060; and HRS 290 provide legal requirements that must be met for removal and disposal of abandoned vehicles in the County and authorize the chief of police and/or designated agency (EP&S Division) to remove or cause to be removed any abandoned vehicle from the highway, and the registered owner of such vehicle shall be liable for reasonable expenses incurred by such removal. Vehicles abandoned on private property are the responsibility of the landowner.

Additional information regarding abandoned vehicles and how to claim a vehicle that has been towed, or how to report one, can be found on the County's website:

https://www.mauicounty.gov/834/Abandoned-Vehicles-and-Metals.

7.3.2 Current Practice

Abandoned vehicles are managed through interagency partnerships and contracts for towing and storage of impounded vehicles. The Maui Police Department marks and reports abandoned vehicles to the EP&S Division. Vehicles are removed from public roadways within 2–3 days once a report is received. If a vehicle is not claimed within 30 days, it is taken to Hammerhead Metals Recycling on Maui or the Molokaʻi Metals Facility on Molokaʻi for scrapping and recycling. Occasionally, abandoned vehicles are offered for sale to the public via online auction. On Lānaʻi, abandoned vehicles are stored and disposed of during periodic collection and recycling events held on the island.

Maui island residents are allowed to dispose of their qualifying, unwanted vehicles at no cost through the "Tow and Scrap" Vehicle Disposal Program ("Tow and Scrap").

"Tow and Scrap" helps residents dispose of junk vehicles legally and properly in an attempt to reduce the number of abandoned vehicles on public roadways. On Molokaʻi, residents can deliver junk vehicles to the Molokaʻi Metals Facility without a reservation during regular hours. On Lānaʻi, junk vehicles are collected and recycled during periodic collection and recycling events. More information about recycling an unwanted vehicle in the County can be found at:

https://www.mauicounty.gov/Tow-and-Scrap.

7.4 Abandoned Vessels

This section addresses handling and disposal of abandoned vessels within the County.

7.4.1 Regulations and Guidelines

HRS 200 and HRS 290 have provisions that deal specifically with abandoned and derelict vessels found on public lands and govern the designation, impoundment, removal, and disposal process. Vessels abandoned on private property are the responsibility of the property owner. A vessel is defined as any type of watercraft used or capable of being used as a means of transportation on or in the water, except a seaplane.

7.4.2 Current Practice

The state does not currently have a formal abandoned and derelict vessel program. The Hawaiʻi Department of Land and Natural Resources (DLNR), Division of Boating and Ocean Recreation (DOBOR) identifies and removes abandoned or derelict vessels in ocean waters and on the shoreline. The DOBOR does not have jurisdiction over vessels abandoned on land.

The County removes trailered vessels abandoned on public lands under the auspices of the abandoned vehicle program managed by the EP&S Division and such vessels are subject to the same procedures and fines as vehicles. The DOBOR provides registration information and other assistance to the County as needed. The County landfills abandoned and derelict vessels in accordance with the Solid Waste Management (SWM) Permit.

7.4.3 Planning Issues

Current abandoned vessel disposal practices are generally adequate and should be maintained.

7.5 Agricultural Waste

This section addresses disposal of agricultural waste within the County.

7.5.1 Regulations and Guidelines

Agricultural waste includes farm wastes generated from raising and/or growing plants and animals, including, but not limited to, crop residue, manure from herbivores and non-herbivores, and animal bedding.

The Hawai‘i Invasive Species Council provides direction, coordination, and planning among various state and federal departments for eradication, prevention, and control of, and outreach for harmful invasive species throughout the state.

7.5.2 Current Practice

Agricultural wastes are not accepted at County landfills unless the generator treats and manages the waste in accordance with the facility’s SWM Permit. Agricultural wastes, whether crop residues or animal manures, can be returned to the land where they were generated. Therefore, with the exception of animal carcasses described in Section 7.6, management of agricultural wastes is not considered in this Plan.

The Maui Invasive Species and Moloka‘i/Maui Invasive Species Committees are voluntary partnerships of government, private, non-profit organizations, and concerned individuals that work to prevent, control, or eliminate noxious weeds and invasive species in the County, including coqui frogs, little fire ants, miconia, and pampas grass.

7.5.3 Planning Issues

Current agricultural waste management and disposal practices are generally adequate and should be maintained.

In July 2022, the County Department of Agriculture was established to support development and continued management of a sustainable regional agricultural system for the County. The Department could assist in developing and implementing sustainable agricultural waste management and disposal practices.

7.6 Animal Carcasses

This section addresses disposal of animal carcasses within the County.

7.6.1 Regulations and Guidelines

Animal carcass disposal requirements differ according to cause of death as described as follows:

1. Animals that die of natural causes (not infectious diseases) can be either buried on site (e.g., on the land/farm) in accordance with state and local regulations or taken to a rendering facility, the Maui Humane Society, or a County landfill for disposal. The Maui Humane Society offers cremation services for smaller animals to the public.

2. Animals killed by collision with motor vehicles (“roadkill”) or large, illegally dumped animals are managed through the Hawai‘i Department of Transportation, Highway Division and disposed of at a County landfill. Smaller animals are handled by the Maui Humane Society.
3. The carcasses of animals that die from an infectious disease must be treated to prevent them from infecting other animals or humans. Proper treatment of infectious diseases involves coordination with the DOH.

7.6.2 Current Practice

The County’s policy and procedures for disposal of dead animals can be summarized as follows:

- Animal carcasses are accepted at landfills in accordance with the facility’s SWM Permit and the County’s refuse collection instructions and rules.
- Customers are charged the same MSW disposal rate for any animal carcass weighing less than 70 pounds. Carcasses weighing more than 70 pounds require special handling at the landfill, and customers are assessed a special handling fee.
- Customers wishing to dispose of infectious and/or diseased animals are directed to the DOH for further instructions.
- The County must be notified in advance so an adequately sized trench can be prepared at the landfill for disposal of large carcasses (e.g., whale).

Two of the most concerning infectious animal diseases are Bovine Spongiform Encephalopathy (BSE) and Highly Pathogenic Avian Influenza A(H5N1), or “avian flu”, because they can potentially infect humans.

BSE-infected cattle must be buried in a lined landfill. However, BSE-infected cattle cannot be disposed of in a lined landfill if leachate from the landfill is disposed at a wastewater treatment plant (WWTP). The chlorination process at a WWTP does not deactivate prions (abnormal pathogens that transmit BSE). Incineration is also an accepted disposal method of BSE-infected cattle.

Human infections with avian influenza A viruses are uncommon but have occurred and attributed to exposure to infected poultry. Human-to-human transmission is very rare; however, there is concern that the virus could mutate and eventually acquire the ability to spread more easily between humans. On-site composting has been proven to be an effective mass-disposal method for dead poultry, as the virus is deactivated after 10 days of composting at 60° Celsius (140° Fahrenheit). Single birds may also be accepted at the landfills as MSW if they are double bagged. In larger quantities, the birds are required to be disposed of in lined landfill or incinerated (not a typical occurrence in the County).

7.6.3 Planning Issues

Current animal carcass management and disposal practices are generally adequate and should be maintained.

7.7 Appliances/White Goods

This section addresses disposal of appliances/white goods generated within the County.

7.7.1 Regulations and Guidelines

Major appliances, also known as white goods, are considered a special waste due their bulky size, making them more difficult to handle than typical residential waste. There are certain appliances that contain ozone-depleting chlorofluorocarbon (CFCs, or “freon”) refrigerants or hydrofluorocarbons (HFCs) that must be removed prior to disposal. The Federal Clean Air Act and HRS 342C-2 prohibit the direct release of CFCs into the atmosphere, and HAR 11-58.1-65 prohibits white goods from being landfilled.

7.7.2 Current Practice

Appliances are made primarily of steel, copper, plastic, and rubber materials and are typically recycled as ferrous scrap metal once stripped of non-ferrous materials. As a service to their customers, some appliance dealers haul off old appliances for recycling when delivering new appliances. The County offers appliance recycling programs on Maui, including Hana, and Molokaʻi and Lānaʻi.

The County offers a curbside appliance pick-up service on Maui for a $25 fee. Residents can contact the Solid Waste Division to schedule an appointment or complete an online application. Hammerhead Metals also accepts appliances from residents at no charge (businesses are charged a fee).

The County holds Hana Metals Recycling Events at various times throughout the year at the Hana Landfill. Items accepted include large appliances, tires (limit of five), auto batteries, propane tanks, and scrap metal (limit of one load). Electronics may be accepted at some events. Residents are not charged a fee (fees may apply to businesses).

The County collects, processes, and recycles metals and related materials at the MoIokaʻi Metals Facility (MMF) located at the Molokaʻi-Naiwa Landfill. Items accepted include vehicles, motorcycles, appliances, vehicle tires and batteries, propane tanks, and other miscellaneous metal items including roofing, gutters, tubs, sinks, faucets, pipes, metal furniture, bicycles, mowers, engine parts, tools, fencing, and ferrous and non-ferrous scrap metal. Residents are not charged a fee (fees may apply to businesses).

The County holds Lānaʻi Metals Recycling and E-Waste Recycling Events at various times throughout the year in conjunction with the EP&S Division, Pūlama Lānaʻi, and private companies that manage refrigerants and E-Waste. White goods and other materials are accepted for recycling at no charge to residents (businesses are charged a fee).

The County contracts private companies to assist in removing freon refrigerants from refrigerators, freezers, air conditioners, and similar devices, and will haul and recycle appliances based on price and availability.

7.7.3 Planning Issues

Appliances containing ozone-depleting refrigerants are banned from landfilling unless the refrigerants are certified as removed by a licensed company/individual. Although current appliance management, recycling, and disposal practices are generally adequate and should be maintained, the County is experiencing an increase in illegal dumping of appliances and could consider accepting appliances at regional drop-off centers to increase recycling options for residents.

7.8 Asbestos

This section addresses asbestos disposal generated within the County.

7.8.1 Regulations and Guidelines

Asbestos is a naturally occurring crystalline material that breaks down into small particles that can easily become airborne and, if inhaled, can become lodged in a person's lungs and cause cancer. Several federal laws address asbestos removal and disposal, including the Toxic Substances Control Act, the Occupational Safety and Health Act, the Clean Air Act, and the Clean Water Act. State laws and rules include HRS 342P, HAR 11-501 through 11-504, State Asbestos Rules, and 11-58.1. Asbestos containing material (ACM) is distinguishable as friable or non-friable. Friable asbestos is easily crushed when dry and may be crumbled, dislodged, pulverized, or reduced to powder by hand pressure, whereas non-friable asbestos is difficult to crush. Landfills may accept friable ACM if federal air emissions standards are met.

7.8.2 Current Practice

Customers with ACM are referred to the Molokaʻi, Lānaʻi, and Central Maui Landfills for disposal requirements. The County accepts ACM for disposal in accordance with the facility's SWM Permit and the County's special waste handling procedures.

7.8.3 Planning Issues

Current ACM waste management and disposal practices are generally adequate and should be maintained.

7.9 Infectious/Biomedical Waste

This section addresses disposal of infectious waste generated within the County.

7.9.1 Regulations and Guidelines

Infectious/biomedical waste is regulated by the DOH under HAR 11-58.1 and 11-104.1.

HAR 11-58.1-03 and 11-104.1-2 define infectious waste as follows:

> *"Infectious waste" means any waste which may contain pathogens capable of causing an infectious disease and shall include, but not be limited to, wastes categorized in section 11-104.1-4 of the Hawai'i Administrative Rules.*
>
> *Categories of infectious waste are as follows: (1) Infectious isolation waste; (2) Cultures and stocks of infectious agents; (3) Blood, blood products, and other body fluids; (4) Human pathological waste; (5) Contaminated sharps; and (6) Animal waste (11-104.1-4).*

HAR 11-104.1-2 includes the following infectious waste types and definitions:

Animal waste: animal carcasses, body parts, bodily fluids, blood, and bedding of animals that are known to be infected with, or have been inoculated with, pathogenic microorganisms infectious to humans.

Cultures and stocks: wastes infectious to humans, including cultures and stocks, wastes from production of biologicals and serums, discarded live and attenuated vaccines, and laboratory waste that has come into contact with cultures and stocks of etiologic agents or blood specimens. Such waste includes, but is not limited to, culture dishes, blood specimen tubes, and devices used to transfer and inoculate cultures.

Infectious isolation waste: contaminated with blood, excretions, exudates, or secretions from humans or animals that are isolated to protect others from highly communicable infectious diseases identified as pathogenic organisms assigned to biosafety level 4 by the Centers for Disease Control and Prevention.

Human blood, blood products, and other body fluids: discarded waste human blood and blood components, and materials containing free-flowing blood, blood products, and some body fluids.

Human pathological waste: human source biopsy materials, tissues, and anatomical parts that emanate from surgery, obstetrical procedures, and autopsy. Does not include urine or fecal matter submitted for other than diagnosis of infectious disease, human corpses, remains, and anatomical parts that are intended for interment or cremation.

Contaminated sharps waste: all hypodermic needles, syringes, and intravenous tubing with needles attached, scalpel blades, lancets, slides, and broken glass that have been removed from the original sterile packaging and used in the diagnosis, treatment, or immunization of human beings or animals.

7.9.2 Current Practice

Infectious waste is managed as either untreated or treated. Infectious waste can be disposed of in County landfills if rendered non-infectious by incinerating, sterilizing, autoclaving, or chemically disinfecting the waste and disposing of it in red bags or sharps containers with a visible Universal Biological Hazard symbol on the bag/container.

Generators of infectious waste in the County either sterilize the discarded waste and transport it to one of the landfills for disposal, incinerate it onsite, or contract with a private company to transport it off-island.

7.9.3 Planning Issues

Generators of infectious waste typically include medical and dental practices, hospitals and clinics, veterinary clinics, farms and ranches, and individual residences. Not all generators dispose of infectious waste properly. Although there is no definitive estimate of the quantity of infectious wastes that are improperly disposed of locally, the problem is known, as commercial haulers have reported seeing syringes sticking out of garbage bags. The problem is expected to increase due to an aging population in the County and the introduction of new medications delivered via syringe that are becoming more common in home use (e.g., medications for human immunodeficiency virus, arthritis, osteoporosis, and psoriasis).

In 2020, after the Coronavirus Pandemic was confirmed in the U.S., a Public Health Emergency was declared by the Governor, and a Stay at Home, Work at Home order was issued. Infectious waste disposal increased during the pandemic and could be expected to increase during similar events.

The County could encourage DOH to provide clearer instructions to the community in proper handling of infectious waste, including methods for safe disposal and an assistance hotline to increase worker health and safety.

7.10 Carpet and Padding

This section addresses disposal of carpet and padding generated within the County.

7.10.1 Regulations and Guidelines

There are currently no carpet and padding waste management rules and regulations in the state. Several states have passed legislation regarding carpet and padding, including Extended Producer Responsibility (EPR) and sustainable recycling initiatives

to research, incentivize, and develop new markets and expand existing markets for recycled commodities and recycling facilities.

7.10.2 Current Practice

Customers wishing to dispose of carpet and padding are referred to the County landfills.

7.10.3 Planning Issues

Current carpet and padding waste management and disposal practices are generally adequate and should be maintained; however, the County is supportive of the state adopting EPR legislation for recycling of carpet and padding to eliminate the bulky material from disposal in landfills and preserve valuable landfill space. The County could also consider volume reduction methods such as shredding to conserve landfill space.

7.11 Construction and Demolition Debris

This section addresses recycling and disposal of C&D debris generated within the County.

7.11.1 Regulations and Guidelines

The "Rules for the Maui County Landfills," Chapter 15-3-3, defines C&D waste as:

> *…construction and demolition waste resulting from the construction, renovation, and demolition of buildings; road repaving projects; bridge repair. Typical C&D wastes are made up of concrete, asphalt, bricks, blocks, rebar; cleared and grubbed material such as dirt, stumps, branches; forming and framing lumber, painted or treated lumber, plywood and particle board, shingles, gutters, siding, roofing, flooring, carpeting, screening, tar-based products, plaster glass, drywall, gypsum, wallpaper, floor and ceiling tile, porcelain and fiberglass fixtures, insulation materials, plumbing, heating and electrical parts, fencing, posts, cardboard, plastic buckets and pallets.*

C&D wastes are generated by construction companies, homeowners, and others. Large amounts of C&D wastes generated by construction companies and contractors are likely to be collected separately from normal garbage and brought to permitted disposal sites. Homeowners are likely to bring small, mixed loads containing both C&D wastes and garbage to County disposal facilities.

7.11.2 Current Practice

There are currently two operational C&D recycling/processing facilities in the County. Hawai'i Materials Recycling, located in Kīhei, currently accepts concrete, asphalt, rocks and sand/dirt and Mālama 'Āina Recycling Center, located in Pu'unēnē, accepts concrete, dirt, asphalt and ceramics. Both facilities sell dirt and aggregate products

produced from the recovered materials. All other C&D materials are accepted for disposal at the County landfills. Commercial C&D haulers must apply for and be granted a C&D Job Number prior to delivering waste to County landfills and submit a declaration of Non-Hazardous Commercial C&D Waste form to summarize the nature of the waste and identify any known hazards. The County form can be found at:

https://www.mauicounty.gov/DocumentCenter/View/97306/Final-Declaration-Of-Non-Hazardous-Waste-Form?bidId=.

7.11.3 Planning Issues

Current C&D debris management and disposal practices are generally adequate and should be maintained. Additional options for C&D recycling should be considered to minimize landfill disposal and thereby preserve landfill disposal capacity. To increase C&D recycling, the County could implement recycling requirements for certain materials that not only include diversion incentives or mandates but also encourage location of facilities to provide convenient drop-off opportunities.

7.12 Disaster Debris Management

This section addresses management and disposal of wastes generated during disasters within the County.

7.12.1 Regulations and Guidelines

Natural and man-made disasters can result in unanticipated debris that inhibits or obstructs emergency services and overwhelms normal County capabilities. Debris should be cleared immediately after a disaster to allow emergency vehicles to respond to life-threatening situations. Once vehicle access is restored, the subsequent removal and disposal of remaining debris allows the community to recover more quickly from a disaster.

Creating a plan to effectively address disaster debris can help protect the health and safety of the community. Successful implementation of such a plan can facilitate the speed and reduce the cost of recovery, as well as the ability to obtain federal financial assistance for recovery efforts.

The County adopted the Disaster Debris Action Plan in February 2009 to provide a framework for local government and other entities to clear, remove, and dispose of debris generated during a public emergency within the County. The plan includes the islands of Maui, Molokaʻi, and Lānaʻi. The current plan is being updated by the County.

Numerous resources that provide guidance for the development of disaster debris management plans are available. The EPA updated *Planning for Natural Disaster*

Debris[1] as a tool to help local communities to create such a plan. Another guidance tool is the Federal Emergency Management Agency's (FEMA) *Public Assistance Program and Policy Guide, Appendix D: Debris Management Plan Job Aid*[2]. Both of these documents are available online and provide guidance that could assist the County in updating its Disaster Debris Action Plan.

7.12.2 Current Practice

Maui County's Emergency Management Department has prepared a Comprehensive Emergency Management Plan (CEMP). The County Disaster Debris Action Plan is included as a base document to the CEMP to:

- Provide organizational structure, guidance, and standardized guidelines for the clearance, removal, and disposal of debris caused by a major debris-generating event.
- Establish the most efficient and cost-effective methods to resolve disaster debris removal and disposal issues.
- Implement and coordinate private sector debris removal and disposal contracts to maximize cleanup efficiencies.
- Expedite debris removal and disposal efforts that provide visible signs of recovery designed to mitigate threats to the health, safety, and welfare of County residents.
- Coordinate partnering relationships through communications and pre-planning with County, state, and federal agencies that have debris management responsibilities.

7.12.3 Planning Issues

The County Disaster Debris Action Plan was last updated in 2009, and EPA and FEMA regulatory guidance was recently updated. The County is currently updating the Disaster Debris Action Plan to meet the EPA and FEMA revised regulatory guidance.

7.13 Lead Acid Batteries

This section addresses management of lead acid batteries generated within the County.

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[1] EPA. 2019. Planning for Natural Debris. EPA 530-F-19-003. April 2019. https://www.epa.gov/sites/default/files/2019-05/documents/final_pndd_guidance_0.pdf.

[2] FEMA. 2020. *Public Assistance Program and Policy Guide, Appendix D: Debris Management Plan Job Aid.* Version 4. FP 104-009-2. https://www.fema.gov/sites/default/files/documents/fema_pappg-v4-updated-links_policy_6-1-2020.pdf.

7.13.1 Regulations and Guidelines

HRS 342I prohibits the disposal of lead acid batteries in household garbage and landfills or on public and private properties, grounds, or waters. Lead acid battery retailers and wholesalers are required to accept lead acid batteries from customers for recycling in a quantity at least equal to the number of new batteries purchased and if the electrolyte is intact.

7.13.2 Current Practice

Retailers and wholesalers in the County currently accept lead acid batteries for recycling for a fee. Hammerhead Metals Recycling also accepts lead acid batteries for recycling at no cost. The County accepts lead acid batteries at scheduled collection events on Lānaʻi, in Hana, and in Central Maui at no cost. The Olowalu Recycling and Refuse Convenience Center accepts them for a fee and the Molokaʻi Metals Facility accepts them at no cost for residents. Additional information on HHW collection events can be found in Chapter 6 – Household Hazardous Waste and Electronic Waste.

7.13.3 Planning Issues

Current lead acid battery collection and recycling practices are generally adequate and should be maintained.

7.14 Litter and Illegal Dumping

This section addresses litter and illegal dumping within the County.

7.14.1 Regulations and Guidelines

The DOH is responsible for regulatory compliance and issuance of fines for illegal dumping and littering in accordance with HRS 342H. State regulations regarding illegal dumping and littering include the following practices:

- Everyone is responsible for properly removing solid wastes to facilities permitted by the DOH.
- Anyone including property owners, lessees, contractors, and waste haulers may be subject to administrative, civil, or criminal penalties and held responsible for property cleanup.
- Illegal dumpers may be subject to enforcement action and administrative and civil penalties of up to $10,000 per day for each offense (HRS 342H-9).
- Those who knowingly dispose of between 1 and 10 cubic yards of solid waste are subject to criminal penalties of up to $25,000 per day for each offense (HRS 342H-39).
- It is a class C felony to knowingly dispose of solid waste equal to or greater than 10 cubic yards anywhere other than a permitted solid waste management system without the written approval of the Director of the DOH (HRS 342H-37).

- Each day of violation is a separate offense.
- The County is also responsible for materials that are illegally dumped on County property and road rights-of-way.

7.14.2 Current Practice

The County currently contracts with Mālama Maui Nui for community-based litter control, recycling beautification, and community improvement projects. Additional information on the program can be found on their website at:

https://www.malamamauinui.org/.

County citizens are also encouraged to contact the Maui Police Department to express concerns or report illegal dumping or littering.

7.14.2.1 Highway Beautification and Disposal of Abandoned or Derelict Vehicles Revolving Fund

In accordance with HRS 286-51(b), the County's Director of Finance collects an additional annual fee for each vehicle registration and places it in this fund to be used for carcass removal and highway beautification and to defray the cost of disposition and other activities related to abandoned vehicles. This fund also supports two full-time equivalent personnel for EP&S and helps fund their operations and services.

7.14.2.2 Maui County Highways Division Roadside Litter Pickup

The County Highways Division sends a crew with a dump truck to pick up roadside litter. This effort is funded by the EP&S Division.

7.14.2.3 Teens On Call to Maintain Pāʻia Bypass

The Highway Beautification Fund supports litter cleanup efforts by Teens On Call from the bypass from Hana Highway to Baldwin Avenue in Pāʻia.

7.14.2.4 Adopt-A-Highway

Adopt-A-Highway is a public service program that recruits volunteers from any organization or business to help pick up litter along state highways. Volunteers must clean up a 2-mile stretch of highway at least four times per year for 2 years.

7.14.3 Planning Issues

Funding for litter and illegal dumping control is provided through a contractual arrangement between the County and Mālama Maui Nui. This contract should be reviewed and updated on a regular basis to ensure that funding is adequate and that illegal dumps and litter are removed and disposed of appropriately. The County could consider initiating a grant process to community groups for litter and illegal dump cleanups with waivers issued from the County-owned landfills.

7.15 Mattresses

This section addresses disposal of mattresses generated within the County.

7.15.1 Regulations and Guidelines

Mattresses represent a small part of the waste stream but can be problematic due to their size. There are currently no regulations directed at recycling or disposal of mattresses in the state or County.

7.15.2 Current Practice

Customers with mattresses are referred to the County landfills for disposal.

7.15.3 Planning Issues

Current mattress disposal practices are generally adequate and should be maintained. Additional opportunities for recycling of mattresses should be considered, if they become available, including EPR legislation to eliminate mattresses from disposal in the County landfills and preserve valuable landfill space.

7.16 Petroleum-Contaminated Soils

This section addresses disposal of petroleum-contaminated soils (PCS) generated within the County.

7.16.1 Regulations and Guidelines

PCS can contain fuel oil, gasoline, diesel, or other volatile hydrocarbons in concentrations below dangerous waste levels, but greater than the cleanup levels established by the DOH. Small quantities of PCS may be disposed of as solid waste in an approved landfill. Depending on the contamination level, large quantities of PCS may need to be treated to remove or destroy the contamination. Treatment processes include aeration, bioremediation, thermal stripping, and incineration.

7.16.2 Current Practice

The County accepts PCS at the landfills (except for the Hana Landfill) in accordance with the facility's SWM Permit. The generator must complete a soil profiling application that describes the source of the soil and reports test results for specific contaminants. Soils that contain chemicals listed in the Toxic Substances Control Act (TSCA) or regulated hazardous waste such as polychlorinated biphenyls (PCBs) are not accepted.

7.16.3 Planning Issues

Current management and disposal practices are generally adequate to handle the volume of PCS generated within the County.

7.17 Pharmaceuticals

This section addresses disposal of pharmaceuticals generated within the County.

7.17.1 Regulations and Guidelines

Generally, two types of pharmaceuticals are of interest to Maui County waste management: (1) controlled substances (prescription drugs and illegal drugs) and (2) over-the-counter, nonprescription substances (e.g., aspirin, vitamins, other health supplements, cold medicines). Controlled substances are covered by their own regulations, which do not address disposal other than to prevent their reuse. Over-the-counter substances are not specifically addressed by solid waste regulations.

7.17.2 Current Practice

The National Prescription Drug Take Back Initiative is a federal program designed to provide a safe, convenient, and responsible means for citizens to dispose of unused prescription drugs and to educate the public about the potential for their abuse. Since 2010, public participation in the Initiative has resulted in the collection and disposal of over 56,000 pounds of unused/expired prescription medications in Hawai‘i. Vaping devices with batteries removed are also accepted.

National Prescription Drug Take Back Day is held annually on Maui. Medical disposal boxes are located at local drug stores in Kahului, Kīhei, and Lāhainā and also at Maui Police Department stations in Wailuku, Kīhei, Lāhainā, Hana, Moloka‘i, and Lāna‘i.

7.17.3 Planning Issues

Current pharmaceutical waste management and disposal practices in the County are generally adequate.

7.18 Sewage Sludge

This section addresses disposal of sewage sludge wastes generated from private and municipal WWTPs within the County.

7.18.1 Regulations and Guidelines

Sewage sludge is the residual, semi-solid material that is produced as a byproduct during treatment at a WWTP or on-site sanitation system (e.g., septic tank). Sewage sludge generated in the County is generally low in heavy metals and toxic chemicals due to lack of heavy industry and is not considered a hazardous material. The sludge is tested by the Wastewater Reclamation Division.

7.18.2 Current Practice

Currently, the County accepts dewatered sewage sludge at the landfills and mixes the material with green waste, used as a bulking agent, in accordance with the Solid Waste Management Permit issued to each landfill by the DOH. The material is then disposed

of in the landfill. Prior to the implementation of this practice, the County co-composted this waste stream.

7.18.3 Planning Issues

Current waste management and disposal practices for sewage sludge waste are in a temporary handling situation while the County pursues additional methods for recycling or composting these materials. Additional information on composting can be found in Chapter 4 – Recycling, Bioconversion, and Markets.

7.19 Tires

This section addresses tire disposal within the County.

7.19.1 Regulations and Guidelines

HRS 342I, Part II, defines a motor vehicle tire as “any tire that is used or designed for use on a motorized vehicle including but not limited to an automobile, bus, motorcycle, truck or heavy equipment.” HRS 342I, Part II, also prohibits the disposal of motor vehicle tires in municipal solid waste and requires tire retailers to charge a disposal fee when new tires are purchased to cover costs of the old tires. Used motor vehicle tires must be recycled through an authorized tire recycler permitted by the DOH.

7.19.2 Current Practice

Retailers are required to take back used tires when new ones are purchased. Waste (used) motor vehicle tires can be taken to E-H International; Molokaʻi Metals; Maui Tire Recycling, LLC; or the Olowalu Recycling and Refuse Convenience Center and are accepted for a fee. The County currently bans disposal of tires at landfill facilities.

7.19.3 Planning Issues

Recycling practices for tires are generally adequate. The areas of primary concern are large tire stockpiles, loads of tires that are illegally dumped on public or private property, and small quantities of tires stored by residents and businesses for disposal or recycling at an indeterminate date. Enforcement of tire recycling at the state level is currently inadequate, and state funding for implementation of a residential tire disposal program should be considered. DOH should also consider enhancing retail enforcement for recycling and closing the loophole on tires that are ordered online. The County could consider implementing a residential tire disposal program to prevent illegal dumping and exploring additional technology, as it becomes available and affordable, for recycling and re-use of tires.

7.20 Used Motor Oil

This section addresses used motor oil management within the County.

7.20.1 Regulations and Guidelines

HAR 11-279 provides the standards for the management of used motor oil in the state. The DOH presumes that used motor oil is recycled.

7.20.2 Current Practice

The County currently accepts uncontaminated, used motor oil from residents (up to 2 gallons per day) at each landfill facility and the Olowalu Recycling and Refuse Center. In addition, the NAPA Auto Parts stores in Kahului, Wailuku, Lāhainā, and Kīhei also accept used motor oil. Motor oil accepted at all sites is recycled; motor oil that is contaminated is processed as HHW.

7.20.3 Planning Issues

Current used motor oil recycling and disposal practices are generally adequate and should be maintained.

7.21 Status of Previous Recommendations

The status of the recommendations made by the 2009 Plan can be found in Appendix B.

7.22 Alternatives and Evaluations

Existing service gaps and other issues related to special wastes are discussed below.

7.22.1 General Alternatives

Collection programs may be required or desired in the future for materials that cannot be fully anticipated at this time. As these needs arise or are identified, options should be evaluated, and feasible cost-effective solutions should be implemented as appropriate. Possible steps that could be taken include the following:

- **Increased education**: Generators who are the sources of the waste stream could be educated further to promote safe handling and disposal or recycling practices.
- **Collection programs**: Additional or new collection programs could be developed, or existing ones could be expanded to include additional materials or sources.
- **Extended Producer Responsibility**: Product EPR programs could be considered or supported to address specific waste materials at the federal and state levels.

7.22.2 Construction and Demolition Debris Recycling Alternatives

There are currently few opportunities for C&D recycling, although specific types of C&D materials (e.g., asphalt, concrete, rocks and soil) can be diverted to a single recovery operation in the County. In general, reuse and recycling options for C&D wastes could include:

- **Salvage for on-site and off-site reuse**: This option generally applies to demolition projects, although a small quantity of reusable materials is also generated at construction sites. To be effective, salvaging requires pre-demolition and removal of reusable materials, which in return requires additional time and steps in a project's schedule. Off-site reuse could be accomplished through a variety of means, including reuse stores, non-profit organizations, and private efforts.
- **On-site crushing and grinding for reuse and recycling**: This generally applies to concrete and asphalt, which could be crushed to serve as road base or replace other fill materials. In some cases, wood and other materials could also be handled on site.
- **Source-separation for off-site processing**: Source separation at C&D sites could allow for recycling of wood, cardboard, and other materials.
- **Mixed C&D processing off-site**: This option would require a significant investment in one or more facilities that are properly equipped and operated to process and market C&D waste.
- **Central site for recycling and reuse**: An ideal option could be a facility or a group of local facilities that combine reuse and recycling as appropriate for the materials. These facilities could sell salvaged products (e.g., doors, windows, and cabinets), and could crush or grind other materials (e.g., concrete and wood) for use as aggregate or landscaping material.
- **Collection depots at disposal facilities**: Collection containers for reusable and/or recyclable C&D materials at solid waste facilities could be used to gather these materials for transfer to a central processing or salvage facility. Transportation costs can be a significant barrier, however, since the recovered materials typically have a low monetary value.

The County could partner with the Habitat for Humanity Maui to salvage and divert recyclable materials received at facilities. Materials that could be recycled and resold through the Habitat for Humanity ReStore could be set aside for pickup, or customers could be redirected to the Habitat for Humanity ReStore.

Contractors and homeowners could benefit from more information about the potentially hazardous materials that can be uncovered during demolition activities. Information could include proper handling and disposal, and potential health impacts. Disposers of C&D waste can most easily identify potential hazards if they separate their demolished waste. Others can learn about the hazards to which they are exposing themselves through County-provided brochures. Contractors and homeowners could be given a brochure when they apply for a permit.

7.22.3 Evaluation of Alternative Strategies

For the most part, management practices for special wastes in the County are adequate, although some programs could be enhanced and added to increase recycling and diversion from the County landfills.

7.23 Recommended Actions

The following options are recommended implementation for special wastes:

SW1) Continue and expand programs to recycle and dispose of special wastes through a cooperative effort between the County, state, and private recycling and processing facilities.

SW2) Update the County Disaster Debris Action Plan to meet EPA and FEMA revised regulatory guidance.

SW3) Promote proper reuse, recycling, and disposal of C&D as appropriate.

SW4) Support EPR for specific waste materials such as mattresses, and carpet and padding.

SW5) Explore additional technologies, as they become available and affordable, that promote tire recycling programs.

SW6) Explore best practices and implementation of an action plan that considers increasing regional infrastructure, collection sites and events for specific special wastes as appropriate.

SW7) Provide adequate staffing for creation of a comprehensive system to enforce illegal dumping, littering and abandoned vehicles, including a structure for issuance of fines for non-compliance.

8 Collection and Transfer

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8 Collection and Transfer

This chapter discusses existing programs and facilities, identifies relevant planning issues, and develops and evaluates alternative strategies for MSW collection and transfer.

8.1 Background

This section provides information on the regulations and authorities that govern MSW collection and transfer operations, facilities, and issues.

8.1.1 Local Rules and Regulations

The following local rules and regulations govern collection and transfer within the County:

- Maui County Department of Public Works and Waste Management, Title MC-15, Subtitle 01, Chapter 108 Rules for Refuse Collection
- County of Maui Code of Ordinances, Chapter 8.04 Refuse Collection and Landfills
- HAR Title 11 Department of Health, Chapter 58.1 Solid Waste Management Control, Subchapter 31 Transfer Stations

8.2 Existing Conditions

The following sections provide information on existing collection and transfer operations.

8.2.1 Solid Waste Collection

8.2.1.1 County Solid Waste Collection

The County provides waste collection service for single-family residential properties serviced by roads or streets meeting County standards (which excludes gated communities). The County does not currently provide waste collection for commercial accounts including businesses, apartments, and condominium complexes. In FY2020, the County serviced approximately 27,650 of the estimated 54,500 permanent resident households located within the County.

Table 8-1 provides the number of residential accounts serviced by the County, by collection area, in FY2020.

Table 8-1. County Residential Collection Area Accounts	
Collection Area	**Accounts Serviced (FY2020)**
Central Maui	14,200
Upcountry	9,200
West Side	2,800
Hana	150
Moloka‘i	500
Lāna‘i	800
Total	**27,650**

Figure 8-1 provides an illustration of the residential solid waste collection areas serviced by the County.

Figure 8-1. Maui County Residential Solid Waste Collection Areas

The County has one service level—192 gallons per week—for residential collection on the island of Maui. Service consists of either automated collection of one 96-gallon cart twice per week on either Monday and Thursday or Tuesday and Friday, or manual collection once per week of up to six 32-gallon containers.

County collection on the isIand of Moloka‘i is manual collection once per week of up to six 32-gallon containers, and collection on the island of Lāna‘i is automated collection once per week of one 96-gallon cart.

The charged fee for curbside refuse collection service is $34 per month to participating residents on Maui and Moloka‘i, and $17 per month to participating residents on Lāna‘i.

The County is currently not providing curbside collection of residential recyclables or organics. Organics and recyclables collection was formerly implemented as a pilot project for approximately 8 years but was discontinued in 2020 due to operational and budget issues. Chapter 4 – Recycling, Bioconversion, and Markets provides additional information on recycling and organics programs.

County residential collections operate with a staff of approximately 45 employees. Figure 8-2 provides an organizational chart for collection staffing by position.

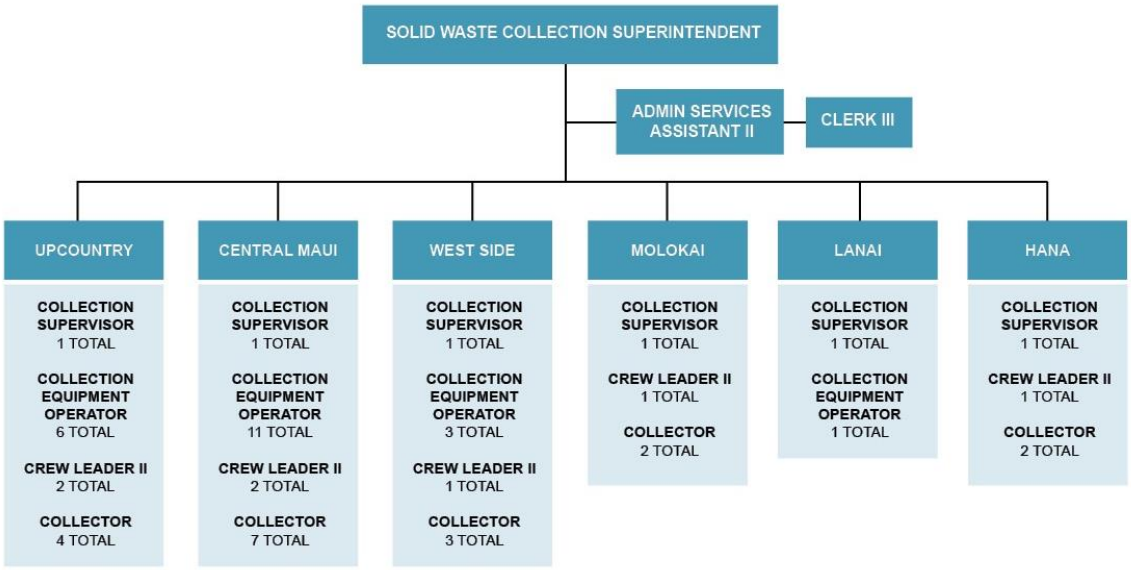

Figure 8-2. County Residential Collection Organizational Chart

The County presently owns and operates 30 residential collection vehicles, including 20 automated side-load trucks, 8 manual rear-load trucks, and 2 mini rear-load trucks.

8.2.1.2 Private Solid Waste Collection

Two major and several smaller, private companies provide solid waste collection services in the County. The two major companies are as follows:

- Waste Pro Hawai‘i (announced acquisition of Aloha Waste Systems on April 1, 2023)
- Maui Disposal

The two major companies contract directly with residents and commercial businesses located outside of County residential collection areas.

8.2.1.3 County Refuse Collections Baseyards

The County owns and operates several refuse collection baseyards on Maui.

Figure 8-3. Wailuku Baseyard

The Wailuku Baseyard is located at 1827 Kaʻohu Street, Wailuku, as illustrated on Figure 8-3, and provides curbside collection services for the Central Maui Collection Area 4. Approximately 14,200 of the 27,650 households with curbside collection are serviced from the baseyard.

Figure 8-4. Makawao Baseyard

The Makawao Baseyard is located at 1293 Makawao Avenue, Makawao, as illustrated on Figure 8-4, and provides collection services for Maui Upcountry Collection Area 5. Approximately 9,200 households are serviced from the baseyard.

The Lāhainā Baseyard is located at the Lāhainā WWTP, 3300 Honoapiʻilani Highway, Lāhainā, and provides collection services for Maui Westside Collection Area 3. Approximately 2,800 households are serviced from the baseyard.

The Hana Baseyard is located at 4611 Hana Highway, Hana, and is shared with the County Highways Division. Collection services for Hana Collection Area 6 are provided from the baseyard. Collection operations are performed by Highways Division personnel.

Curbside collection services for Lānaʻi and Molokaʻi are performed from baseyards located at the Lānaʻi and Molokaʻi Landfills. Landfill personnel are responsible for collection services, and collection equipment is serviced at each landfill site.

The County utilizes Highways Division facilities and personnel for the majority of collection equipment repair and maintenance; the remainder of these services are contracted through private companies.

8.2.2 Solid Waste Transfer

The County's solid waste transfer system consists of one drop-box facility, the Olowalu Recycling and Refuse Convenience Center located off the Honoapi'ilani Highway and adjacent to the closed Olowalu Landfill. The facility accepts MSW from residential self-haul customers in 40-cubic-yard containers and transfers the waste to the CML for disposal. Designated areas/containers are set aside for drop-off of recyclable materials, green waste (yard waste), and used motor oil. The facility is owned by the County and is operated and staffed under contract to a private firm. There is currently no charge for self-haul customers to utilize the facility.

Figure 8-5. Olowalu Recycling and Refuse Convenience Center

Table 8-2 provides an overview of materials received at the Olowalu Recycling and Refuse Convenience Center in FY2019, FY2020, FY2021 and FY2022.

Table 8-2. Olowalu Recycling and Refuse Convenience Center Materials Accepted (tons)

Fiscal Year	MSW	Green Waste	Scrap Metal	Aluminum/ Tin	Glass	Plastic	OCC	Paper	Used Motor Oil (gallons)
2019[1]	2,949	2,059	0	0	43	6	80	8	665
2020	3,805	2,342	0	0	50	5	56	6	0
2021	3,470	1,667	0	0	45	5	72	0	1,355
2022	2,957	1,488	0	0	36	5	105	2	1,610

[1]Excludes volumes for July and August. Subcontracted collections started in September 2018.

8.3 Status of Previous Recommendations

The status of the recommendations made by the 2009 Plan can be found in Appendix B.

8.4 Alternatives and Evaluations

Existing service gaps and other issues related to collection and transfer are evaluated below.

8.4.1 Solid Waste Collection

Overall, the County's residential curbside collection program is operating satisfactorily; collection is provided in a timely manner and with minimal customer

complaints, and the County implements improvements in efficiency as technology advances.

The County is currently replacing (as feasible) all remaining manual pickup accounts with automated carts to reduce worker injuries and misuse of services (i.e., unpaid bags added at the curb by non-account holders).

The County could improve collection services by installing fleet routing software and supporting hardware. This addition could improve tracking of customer inventory and ensure that service is provided to only paid accounts, help combine collections and landfill billing/reporting into one interfaced accounting/back office system, and facilitate other route optimization and billing improvements.

8.4.2 Bulky Items Collection

With the exception of appliances, the County currently does not provide collection of bulky items. See Chapter 7 – Special Wastes for additional information on collection and disposal of appliances. Bulky items are collected by self-haulers and private-party pick-up services or waste collection companies and are disposed of at the County landfills.

8.4.3 Alternative Fuel Collection Vehicles

There is increasing momentum in the use of fuels other than traditional diesel and gasoline to power waste collection vehicles and other facility machinery. Biogas, which is composed of approximately 65 percent methane and 35 percent carbon dioxide, is generated from landfills and anaerobic digestion facilities. Biogas generated from these types of waste management facilities can be cleaned and purified to produce a renewable natural gas (RNG) that contains approximately 95 percent methane. The RNG is compressed to produce Compressed Natural Gas (CNG), which can be used directly as a fuel for waste collection vehicles adapted for CNG (natural gas vehicles).

Liquefied Natural Gas (LNG) is another fuel type produced from RNG through a process in which the RNG is converted into a liquefied form and used in LNG vehicles. A natural gas vehicle uses fuel in either CNG or LNG form.

The only major difference between CNG- and LNG-powered vehicles and traditional vehicles is the engine (the remainder of the vehicle is the same). Capital costs are required to convert the vehicles' engines to use CNG or LNG (CNG vehicles are the more common of the two) and install a CNG or LNG fueling station at the fleet base yard. Capital and operational costs are also required to convert landfill gas to an RNG if it is utilized as an alternative fuel source.

Typical payback for CNG fleet conversion is approximately 10 years, and cost recovery can be built into collection contracts. CNG and LNG have similar fuel economies compared to conventional fuels, and use of the two fuel types has

become more affordable with advances in technology and lower natural gas costs compared to diesel fuel.

Biodiesel is also a fuel source that could be considered for use in a waste management collections fleet. Biodiesel is a renewable, biodegradable fuel manufactured from agricultural oils including soybean oil, recycled cooking oil, and animal fats. Pacific Biodiesel currently operates manufacturing facilities in Hawai‘i and produces liquid biofuels for resale. In addition, electric-powered collection vehicles are being developed for heavy truck applications and could be considered when the technology is proven and placed into service in the solid waste industry.

The County collects landfill gas at the CML through a series of wells and a flare system. The County is considering installation of a landfill-gas-to-energy project, whereby the landfill gas will be treated and used either as an RNG fuel to power a generator and produce electricity or as an alternative fuel to power vehicles. Additional information about the CML landfill gas-to-energy project is provided in Chapter 9 – Residuals Management and Disposal.

The adequacy and availability of alternative fuels would need to be fully understood on each island before the County considers use of non-traditional fuels in their collection vehicles. The County could complete an operational and cost evaluation if alternative fuels become more reliable and available on the islands. The County should monitor waste industry trends and uses of alternative fuels and consider their use in the County collection fleet if justifiable.

8.4.4 Curbside Recycling

Curbside recycling is not currently implemented in the County. The relationship between collection and recycling is described in Chapter 4 – Recycling, Bioconversion, and Markets.

8.4.5 Rate Study

Adequate funding should be provided to maintain curbside collection services and equipment, which is one of the primary responsibilities of solid waste management in the County. The current rates charged for curbside collection of waste should be assessed to ensure that they cover existing and future collection, disposal, and equipment costs. A rate study would provide the opportunity for decision-makers to review costs by program, provide a better understanding of collection frequency impacts on rates and diversion program scenarios, and support rate adjustment as necessary. In addition, an assessment of the Olowalu Recycling and Refuse Convenience Center costs and customer base could help determine the best cost recovery approach for operation of the facility.

8.4.6 Pay-As-You Throw

Pay-As-You-Throw (PAYT) programs, also known as unit or variable-rate pricing, can contribute to economic stability, environmental sustainability, and equity, as residents are charged based on the amount of waste they dispose of, thereby encouraging reuse and recycling practices. Residents are charged only for the quantity of refuse placed into the curbside collection carts. Municipalities often charge extra for other materials set out for collection (e.g., recyclables, bulky items, and organics).

PAYT typically consists of proportional pricing where residents are charged on a per-unit basis for disposed refuse (standard containers) or by variable rate pricing where the fee is based on the size of container they choose (typically for refuse only). Municipalities have also implemented financial incentives into their programs, including collecting recyclables, organics, or yard waste "free of charge." Most often, the charge for collecting these types of materials is a smaller flat fee included in the PAYT collection rate.

There are different approaches to PAYT, including Variable Rate Carts, Overflow, Stickers/Tags, Bags, and Weight-based at the curb (future potential). For Variable Rate Carts, residents choose from different-size carts, and the cost increases with cart size. For Overflow, residents pay a flat fee that covers everything that can fit into a certain size cart and pay extra (usually by the bag) to dispose of anything that does not fit into that cart. The Overflow approach does not work well with automated collection. For Stickers/Tags, residents pay by the bag, affixing a pre-paid tag or sticker to each bag of refuse. For Bags, residents dispose of their waste in specialized bags clearly marked with the municipal seal or other unique information/instructions. There has been minimal progress in adapting a weight scale system on an automated side loader collection vehicle to take advantage of a Weight-based, at-the-curb approach. Weighing in motion, which would be required for collection efficiency, is costly and difficult to accomplish accurately, which keeps weight-based PAYT out of reach using current automated cart systems.

Establishing rates for different cart sizes for a PAYT program using the Variable Rate Carts method is based in part on the cost of collection and disposal, and in part on the community's desire to incentivize/disincentivize behavior in the way waste is managed by its residents.

The County could consider a PAYT approach for Variable Rate Carts and implement curbside recycling and organics collection to incentivize recycling and reduce dependence on landfilling as the method of disposal. Additional information on PAYT approaches is included in Chapter 4 – Recycling, Bioconversion, and Markets.

8.4.7 Evaluation and Location of Fleet Baseyards

The County's Highway Division baseyards house their vehicles and equipment in addition to the County refuse trucks. As the County population and service needs expand for waste and recyclable materials collection, the current baseyards may not be adequate in functionality, location, and efficiency to provide the level of service necessary to maintain the programs. The County could consider implementing a facility master planning process that takes into account the baseyard locations, population/household growth, and fleet baseyard sizing to improve collections and fleet maintenance efficiencies. As part of that planning process, the Solid Waste Division and the Highway Division could collaborate to encourage discussion on potential expansion, new locations, and new roles and responsibilities of fleet baseyards.

8.4.8 Transfer Station Facility Needs

The Olowalu Recycling and Refuse Convenience Center is the only operating facility in the County that serves as a self-haul transfer/drop-box station, including drop-off of source-separated recyclables, green waste, and motor oil. Providing facilities that meet the needs of the population will be critical to ensuring that adequate disposal and recycling services are available. A transfer station facility assessment could help the County determine the need for and proper location of transfer station facilities that provide sufficient disposal opportunities for residents that would help eliminate illegal dumping while protecting the environment that is crucial to Maui County.

8.5 Recommended Actions

The following recommendations are made for collection and transfer (CT) operations, programs, and facilities:

CT1) Install fleet routing software and supporting hardware to provide improved collection services.

CT2) Conduct a rate study to understand the real program costs and ensure that rates are covering collection system costs and disposal at an adequate level.

CT3) Consider evaluating collection vehicle conversion to alternative fuels or electric vehicles when conditions in the County make it feasible.

CT4) Consider implementation of a PAYT rate structure to incentivize recycling and reduce dependence on landfilling as the method of disposal.

CT5) Consider developing a facility master plan that takes into account the fleet baseyards to ensure proper support for collections services and equipment maintenance into the future.

CT6) Complete a transfer station facility assessment to assist with needs, location(s), and ensure sufficient long-term disposal and recycling opportunities for County residents.

Residuals Management and Disposal

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9 Residuals Management and Disposal

This chapter discusses existing residuals management and disposal facilities and practices, identifies relevant planning issues to meet County and state goals, and develops and evaluates alternative strategies.

9.1 Background

This section provides information on the regulations and authorities that govern residuals management and disposal facilities, programs, and issues.

9.1.1 State Legislation, Regulations and Guidelines for Residuals Management and Disposal

This chapter provides an update of the County's residual management and disposal system regulated by HAR 11-58.1 and County Rules, Chapter 15-3. Municipal solid waste disposal facilities are required to obtain a SWM permit from the DOH and renew the permit every 5 years. Permit conditions require facility operators to submit an Annual Operating Report (AOR) to the DOH each fiscal year. The AOR outlines the types and amounts of waste received, average daily disposal rates, and other operating data.

Facilities that serve as waste salvage and recycling operations are also subject to HRS 342H and HAR 11-58.1.

9.2 Existing Program Elements

The following sections provide background information on existing residuals management and disposal facilities. The County currently owns and operates four integrated solid waste management facilities (landfills): the Central Maui Landfill, Hana Landfill, Lānaʻi Landfill, and Molokaʻi-Naiwa Landfill. Table 9-1 provides an overview of filled waste capacity and equivalent operating years, waste disposal in FY2022, remaining permitted disposal capacity, and total permitted capacity for each landfill. Additional information for each landfill is provided in the proceeding sections. Estimated waste generation and composition breakdown is described in Chapter 2 – Waste Stream.

Table 9-1. Summary of County Landfill Waste Disposal Capacity (as of July 2022)

MSW Landfill	Filled Capacity		Disposal Capacity FY2022		Remaining Capacity		Total[1]	
	CY	Years	CY	Years	CY	Years	CY	Years
Central Maui Landfill	8,112,800	35.0	363,000	1.0	636,000	2.0	10,236,700	38.0
Hana Landfill	273,432	36.0	4,192	1.0	251,722	42.0	529,346	78.0
Lānaʻi Landfill	694,461	50.0	12,708	1.0	254,081	16.5	961,250	66.5
Molokaʻi-Naiwa Landfill	438,282	28.2	15,205	1.0	37,619	2.4	466,704	31.6

[1]Total volume includes filled, developed and undeveloped permitted disposal capacity.

County landfill operations are conducted with a staff of approximately 50 employees. Shown in Figure 9-1 is an organizational chart for landfill staff by position.

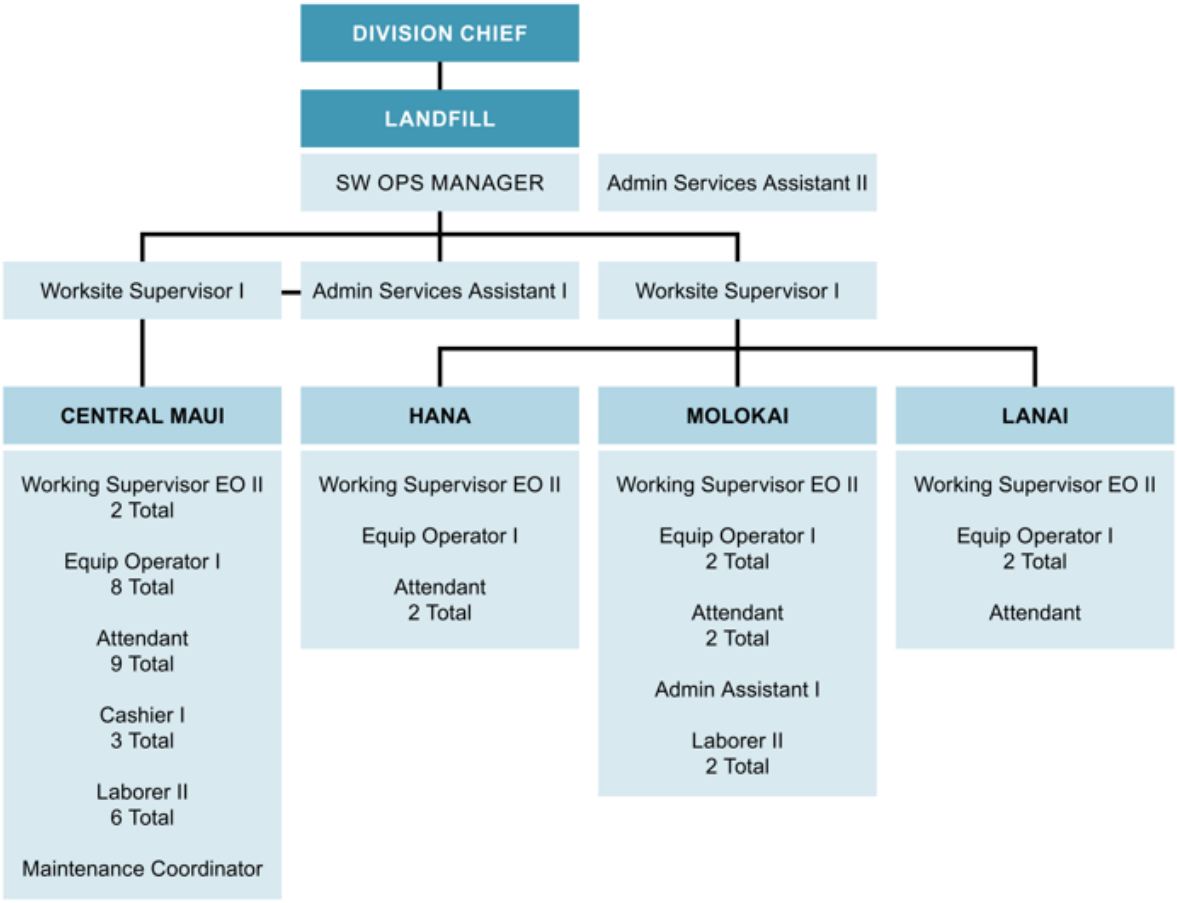

Figure 9-1. County Landfill Organizational Chart

The County owns and operates heavy equipment including refuse compactors, dozers, loaders, dump trucks, water trucks, and other types of equipment to maintain landfill operations at each facility. Additional information on operational equipment and energy balance planning requirements, in compliance with HRS 342G, is provided in Chapter 10 – Energy Balance and Emissions.

9.2.1 Central Maui Landfill

The CML is located approximately 2.5 miles southeast of the Kahului Airport (physical address: 1 Pūlehu Road, Puʻunēnē, Maui). The landfill is permitted by the DOH through SWM Permit No. LF-0074-13. The landfill accepts MSW, asbestos and other special wastes, C&D debris, and other non-hazardous materials. Operating times are Monday through Saturday from 6:00 a.m. to 3:00 p.m. CML also provides drop-off facilities for residential recycling, green waste, and used motor oil.

The CML was designed and permitted in six phases (I through VI) of development comprised of approximately 112 acres of disposal area. Phases I, II, and III are

separated from Phases IV, V, and VI by Kalialinui Gulch. Phases I and II (42 acres) began disposal operations in 1987 and were closed in 2006. Phase IV-A began operations in November 2005, and Phase IV-B began operations in March 2007 (18 acres combined). The Phase V area (19 acres) is comprised of three development phases placed into service between 2010 and 2019. The Phase III-A area (8.5 acres) was developed in 2021 and began receiving waste in late 2021. The County anticipates development of the Phase III-B area (8.5 acres) to begin in 2023; when placed into service, it will provide an additional 8 years of capacity at the facility. The Phase VI area (16 acres) development will follow Phase III, contingent on County acquisition of the property.

In 2020, the County was required to terminate the green waste, biosolids, and FOG composting operations performed by Maui EKO Systems, under contract with the County, to allow for development of the Phase III-A disposal area. Based on this change in operations, Maui EKO Systems is currently contracted to mix the waste streams (aka compost premix) utilizing land within the undeveloped Phase III-B area and to transport mixed materials to the active disposal area for landfilling. The County is currently in the process of relocating the composting operations from the CML active landfill site. Additional information on organics handling is described in Chapter 4 – Recycling, Bioconversion, and Markets.

In FY2020, 73,337 tons of compost premix material was landfilled, accounting for approximately 25 percent of the total tonnage disposed of at the CML. Table 9-2 provides an overview of materials accepted for disposal at the landfill in FY2022. In FY2022, the CML accepted approximately 96 percent of all materials disposed in the County.

Table 9-2. Central Maui Landfill Waste Disposal Volumes (FY2022)

Waste Type	Waste Disposed (Tons)
MSW	184,330
C&D Debris	26,305
Special Waste	110
Other MSW (e.g., recycling residuals, special events)	11,857
Compost Premix	73,337
Total	**295,939**

The CML is equipped with a landfill gas collection and control system to manage landfill gas produced from decomposition of waste disposed of in the landfill. The County is currently designing a new landfill gas flaring station and pursuing proposals from third-party developers to utilize the collected landfill gas as fuel for generation of electricity (landfill gas-to-energy project). Figure 9-2 shows an overview of the CML facility.

Figure 9-2. Central Maui Landfill

9.2.2 Hana Landfill

The Hana Landfill (HL) is located one-half mile north of the town of Hana on Waikoloa Road just off the Hana Highway (physical address: 35 Waikoloa Road). The landfill accepts MSW, green waste, certain types of special wastes, C&D debris, and other non-hazardous materials. Operating times are Tuesday through Saturday from 8:00 a.m. to 2:30 p.m.

Disposal operations began at the HL in 1969, and it is the only disposal facility for the East Maui area. The HL was designed and permitted on approximately 29 acres, authorized under State Executive Order No. 3304, with an additional 45-acre buffer zone granted through various land-use permits. The landfill has an estimated remaining life of 42 years at current disposal volumes. Table 9-3 provides an overview of materials accepted for disposal at the facility in FY2022. In FY2022, the HL accepted less than 1 percent of all materials disposed of in the County.

Table 9-3. Hana Landfill Waste Disposal Volumes (FY2022)

Waste Type	Waste Disposed (Tons)
MSW	1,108
Green Waste	271[1]
Total	**1,379**

[1] Green waste is currently received at the landfill and transported to the CML for mulching.

The HL also provides drop-off facilities for residential recyclables and green waste. The landfill hosts up to four electronics and special wastes collection events per year, including collection of white goods, scrap metal, auto tires and batteries, used motor oil, and propane tanks. Figure 9-3 shows an overview of the HL facility.

Figure 9-3. Hana Landfill

9.2.3 Lānaʻi Landfill

The Lānaʻi Landfill (LL) is located on the southwestern side of the island of Lānaʻi, approximately 1 mile northwest of the Lānaʻi Airport between Kaumalapau Highway and the Kalamaiki Gulch. The landfill accepts MSW, green waste, asbestos and other special wastes, C&D debris, and other non-hazardous materials. Operating times are Tuesday through Saturday from 8:00 a.m. to 2:30 p.m.

Disposal operations began at the LL in 1969, and it is the only disposal facility for the island of Lānaʻi. The landfill is designed and permitted on approximately 35.8 acres, 17.5 of which are utilized for waste disposal. The landfill has an estimated remaining life of 16.5 years at current disposal volumes. Table 9-4 provides an overview of materials accepted for disposal at the facility in FY2022. In FY2022, the landfill accepted approximately 1 percent of all materials disposed in the County.

Table 9-4. Lānaʻi Landfill Waste Disposal Volume (FY2022)	
Waste Type	**Waste Disposed (Tons)**
MSW	3,343
C&D	197
Special Waste	9
Sludge (from Lānaʻi City WWTP)	156
Green Waste	19[1]
Total	**3,724**

[1]Green waste received and composted by Pūlama Lānaʻi.

Residential green waste is accepted and transported off-site to a private company (Pūlama Lānaʻi) for composting. Figure 9-4 shows an overview of the LL facility.

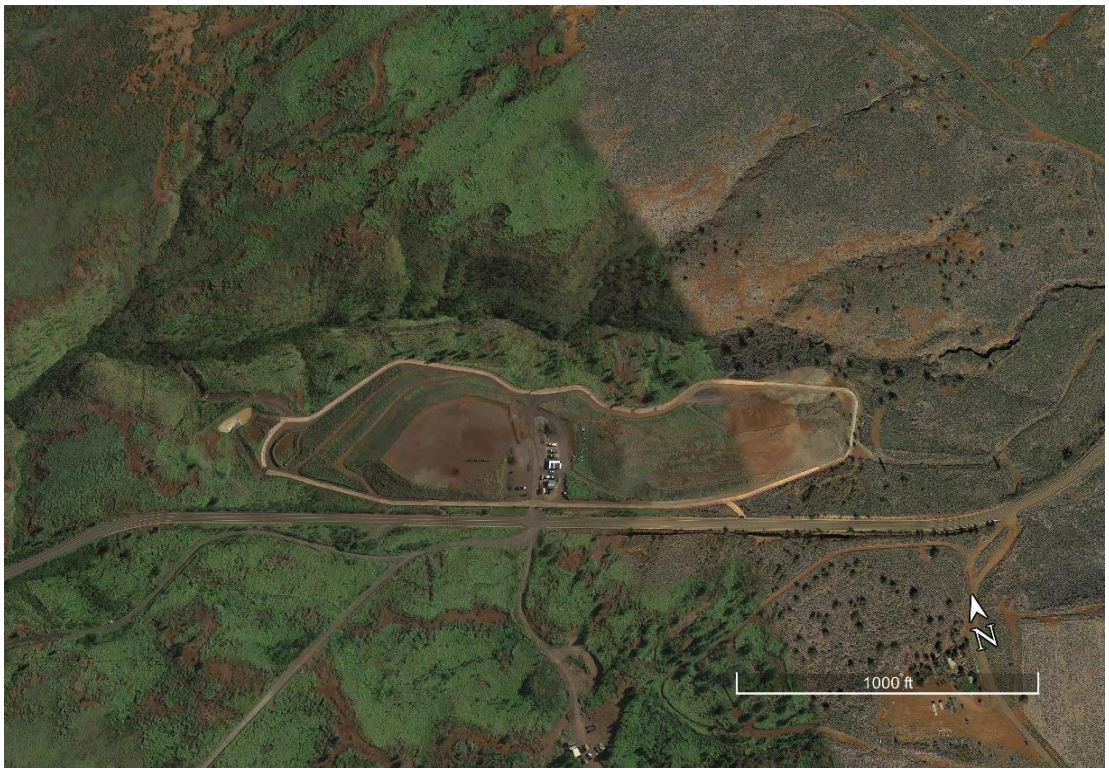

Figure 9-4. Lānaʻi Landfill

9.2.4 Molokaʻi-Naiwa Landfill

The Molokaʻi-Naiwa Landfill (MNL) is located on the southern side of the island of Molokaʻi, adjacent to the Maunaloa Highway between mile markers 3 and 4. The landfill accepts MSW, green waste, asbestos and other special wastes, C&D debris, and other non-hazardous materials. Operating times are Tuesday through Saturday from 8:00 a.m. to 2:30 p.m.

Disposal operations began at the MNL in 1993, and it is the only disposal facility for the island of Molokaʻi. The MNL was developed to replace the Kalamaʻula Landfill, which reached capacity and was closed in 1993. The landfill is designed and permitted on approximately 37 acres, 12 of which are utilized for waste disposal. Phase 1 disposal operations began in 1993. Subsequent Phases 2 through 4 were constructed and placed into operation from 1997 through 2015. Phase 5 began construction in 2022 and will be placed into operation in 2023. Phase 5 and future Phase 6 will provide an additional 10 years of disposal capacity to the remaining capacity in Phases 1 through 4 (2.4 years). Table 9-5 provides an overview of materials accepted for disposal at the facility in FY2022. In FY2022, MNL accepted approximately 2 percent of all materials disposed in the County.

Table 9-5. Molokaʻi-Naiwa Landfill Waste Disposal Volumes (FY2022)

Waste Type	Waste Disposed (Tons)
MSW	6,138
C&D	149
Special Waste	2
Green Waste	874[1]
Total	**3,724**

[1]Green waste received and mulched for pickup by County residents.

The MNL also provides drop-off facilities for residential recyclables and special wastes including electronics, used motor oil, paint, white goods, scrap metals, auto tires, auto batteries, and propane tanks. Green waste is processed into mulch for pickup by commercial businesses and residents. Figure 9-5 shows an overview of the MNL facility.

Figure 9-5. Molokaʻi-Naiwa Landfill

9.3 Status of Previous Recommendations

The status of the recommendations made by the 2009 Plan can be found in Appendix B.

9.4 Alternatives and Evaluations

Existing service gaps and other issues connected to residuals management and disposal are evaluated below.

9.4.1 Central Maui Landfill

Disposing of waste in landfills is one part of an integrated waste management system. Today's landfills must meet stringent design, operation, and closure standards established under the EPA RCRA Subtitle D regulations and HAR 11-58.1. The state and federal rules and regulations are designed to protect human health and the environment in management of MSW by requiring minimum design and operation standards, including landfill siting restrictions, minimum standards for base and closure covers systems, leachate collection and recovery controls, landfill gas collection and controls, and environmental monitoring systems.

The CML is the cornerstone of current solid waste disposal services that are provided to community partners and residents in the County. The landfill is anticipated to reach final disposal capacity in 2033 once the final Phase III-B disposal area is developed. This date assumes acquisition of the Phase VI area, or other areas, are unsuccessful. Recognizing this future limitation for landfill capacity on the island of Maui and the time required to permit and develop a new landfill (10 plus years), the following present viable opportunities for future waste disposal needs in the County:

- WTE development on Maui
- Development of a new Subtitle D landfill on Maui
- Waste export
- Landfill mining

9.4.1.1 Waste Processing and Conversion Technologies

Several waste processing and conversion technologies are available for consideration in evaluating long-term MSW management options for the County. Waste processing and conversion technology options are typically grouped into the following main technology classes:

- Thermal technologies
  - Direct combustion
  - Gasification
  - Plasma arc gasification
  - Pyrolysis
- Biological technologies
  - Aerobic composting
  - Anaerobic digestion
- Chemical technologies
  - Hydrolysis
  - Catalytic and thermal depolymerization
- Mechanical technologies
  - Autoclave/steam classification
  - Advanced materials recovery
  - Refuse derived fuel production

The technologies are also classified as emerging or traditional depending on the level of commercial development. Emerging technologies are typically small-scale laboratory type operations that have not been operated on a commercial basis as a

full-scale, complete process, whereupon traditional technologies have been commercially developed and proven to reliably achieve an anticipated level of performance. The level of commercial development and economic feasibility makes some technologies less attractive than others. The following emerging technologies do not have a proven history of commercial development and are not recommended for further consideration:

- Plasma arc gasification
- Pyrolysis
- Hydrolysis
- Catalytic and thermal depolymerization
- Autoclaving

Differing technologies have limitations with respect to the MSW feedstock that can be processed. Anaerobic digestion and composting, for example, can affect only the organic portion of the waste stream and should be considered as a partial solution to processing the County's full waste stream. Other technologies have been commercially developed in Europe, Asia and other countries, however, the technologies are not considered economically feasible for development in the U.S. Gasification, for example, has been commercially developed in Japan and other countries, but has not been developed in North America. Landfill disposal costs in the U.S. are relatively inexpensive in comparison to technology costs and typically make the technologies economically unjustifiable. In addition, some technologies are not suited to process the entire waste spectrum and require extensive upfront processing of the waste stream. As such, technologies that are not recommended for further consideration include:

- Gasification
- Mechanical biological treatment

Waste processing and conversion technologies for County consideration are limited due to implementation costs, limitations in processing the generated waste stream, economic viability, and community acceptance.

9.4.1.2 Waste-to-Energy Development

Direct combustion of waste, referred to as WTE or energy from waste, involves the complete oxidation of a fuel by combustion under controlled conditions. The heat generated from the combustion process is recovered in a boiler to generate steam, which can be used directly for heating/industrial purposes or passed through a steam turbine-generator to create electricity.

There are several types of boilers used in direct combustion technologies; the most popular include (1) mass burn with a grate system, (2) stoker-fired, and (3) fluidized bed. Mass burn technology has been the standard in the U.S. for many years, primarily

because it does not require significant, if any, front-end processing of the waste. MSW is fed directly into a combustion system with very little pre-processing other than the removal of specific large bulky items (e.g., white goods, large furniture items).

An ash residue consisting of combined fly ash and bottom ash is generated from combustion of waste. Most direct combustion facilities in the U.S. combine the fly and bottom ash in ratios that allow the ash to be landfilled as a nonhazardous material. Approximately 25 to 30 percent of the infeed waste stream will end up as ash and non-combustible material at the outfeed and require landfilling. Ferrous and nonferrous metals can also be recovered from the ash to reduce the disposal volume.

Development of a WTE facility, paired with a new landfill, is a possibility for long-term disposal in the County. If the County decides to consider this option, the following should be considered:

- Additional research to determine costs and financial implications for implementation.
- Potential for energy sales.
- Ability to site both a WTE facility and a landfill capable of handling ash and residuals for disposal.
- Options for pre-processing of waste to remove recyclables from the feedstock.
- Public outreach efforts to determine community acceptance.
- Alignment with County and state climate action and resiliency plans to ensure that WTE technology does not contribute to greenhouse gas emissions or other airborne pollutants.

9.4.1.3 New Subtitle D Landfill

The County could consider siting a new landfill on Maui at a location other than the current CML facility. Siting a new landfill is estimated to take 10 years or more and would include:

- Siting and land acquisition
- Permitting
- Design
- Construction

Implementing a landfill siting process is recommended if a new landfill option is considered by the County. The process could include; establishing a community-based task force to assist with the site selection process; identifying sites that meet minimum federal, state, and local regulatory criteria; completing a site ranking exercise; and selecting a recommended site(s) for consideration by the Mayor. The

City and County of Honolulu recently completed a similar landfill siting process and would be a helpful resource if the option is pursued.

If this option is selected by the County, the siting process should begin within the next year to ensure completion and operation of a new landfill facility prior to the CML reaching final capacity.

9.4.1.4 Waste Export

An additional long-term disposal option for consideration is the export of waste off island. This option was previously explored by the County several years ago and could be reevaluated to address current federal, state, and local conditions. Export options that could be considered include:

- Waste export to landfills on the U.S. mainland.
- Discussion with the City and County of Honolulu for export to the H-POWER WTE facility.
- Discussion with the County of Kauai and Hawaii for export and disposal to their MSW landfills.

All options would require additional infrastructure and contractual investments, including handling and transportation infrastructure to containerize, truck and ship the waste; establishment of shipping and disposal contractual obligations; permitting and disposal facility end destination approval; and long-term capacity agreements.

If this option is selected, the County should perform additional research into mainland facilities that could accept the wastes and have the needed landfill capacity, enter discussions with the City and County of Honolulu, and County of Kauai and Hawaii, and further evaluation of implementation and costs.

9.4.1.5 Landfill Mining

The County could investigate the feasibility of mining portions of the CML for potential recovery and recycling of metals and other materials that would recover valuable landfill disposal capacity.

Landfill mining can create localized environmental health and safety impacts, including odors, release of leachate and landfill gas, and uncovering special wastes and unknown hazardous wastes. In addition, recoverable materials are oftentimes degraded and contaminated from being landfilled and do not provide opportunities for ease of recycling. With the current recycling markets and difficulties with moving recyclables to market, additional studies would need to be completed to determine if landfill mining is an option for County consideration at the CML.

9.4.2 Other Landfill Capacity

All other landfills that service the County, Hana, Lānaʻi and Molokaʻi-Naiwa landfills, have sufficient landfill capacity through this planning period to provide for the disposal

needs of the areas served. It should be recognized that a minimum of 10 years is needed to permit, design, and construct a new landfill facility in the state. Landfill planning through a master planning process would need to begin in year 5 (2028) of this Plan to accommodate disposal needs currently served through the CML, LL, and MNL. In addition, with the current single entity private ownership of the majority of Lānaʻi, future disposal options will need to be coordinated with the owner to ensure sufficient future capacity can be developed that meets all party needs.

9.4.3 Enterprise Zones

In partnership with the state, the County contains EZs aimed at incentivizing business, job retention, and job creation in selected areas of the County. HRS 342G-25 requires that an EZ component be part of the facility capacity and siting elements of the Plan.

Reviewing the potential to site solid waste disposal facilities should be considered as options and studied further. Additional information on EZs can be found in Chapter 4 – Recycling, Bioconversion and Markets.

9.5 Recommended Actions

The following recommendations are being made for residuals management and disposal:

RMD1) Evaluate and implement programs, sustainable options, and strategies that reduce materials being landfilled to preserve landfill capacity and extend the life expectancy of all County disposal facilities.

RMD2) Provide for future residual management and disposal needs through development of a disposal master plan that considers opportunities available to the County for waste disposal over a 30-year period. The master plan would take into consideration options for all current landfill facilities and provide options for community engagement and alignment with community planning.

RMD3) Implement disposal options that ensure sufficient long-term opportunities for County residents.

RMD4) Consider cost-effective options that align with state and County goals for climate action planning and resiliency when considering disposal technologies for implementation, including exploration of options with low carbon emissions and WTE and waste to fuel technologies.

RMD5) Recognize that Lānaʻi is currently largely privately owned and that future waste disposal needs should be a joint effort between the private sector and the County.

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10 Energy Balance and Emissions

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10 Energy Balance and Emissions

This chapter discusses and evaluates key components of the County's existing solid waste management system and the effects of implementing Plan recommendations on reducing energy usage, emissions, and dependency on fossil fuels.

10.1 Background

This section provides information on the regulations and authorities that govern the energy balance and emissions component of the Plan.

10.1.1 State Regulations and Guidelines

HRS 342G requires that each Plan contain an energy component describing solid waste management programs that incorporate ways to increase the energy efficiency of the solid waste management process, including the assessment of energy and fuel-production options, composting, anaerobic digestion, acid hydrolysis, production of liquid fuels, incineration, or a combination thereof. The energy component must identify and assess the following:

- The amount of energy input including but not limited to electrical power, gasoline, diesel fuel, coal, natural gas, propane, kerosene, and heating oil required by the Plan to accomplish collection, recycling, composting, bioconversion, waste handling, disposal, and landfilling activities.
- The amount of energy produced from waste, including electricity, natural gas, hydrogen, and liquid fuels such as ethanol and methanol.
- The net energy use or energy production of the solid waste program. Where feasible, the assessment must include estimates of energy used in the original manufacture of goods handled in the program. National averages of energy consumed may be incorporated in the estimates.
- Methods by which energy use may be decreased, or net energy or fuels production may be increased.

In addition to the HRS requirements, the Aloha+ Challenge includes the following goals:

- Increase renewable energy in the electricity section to 40 percent, with 30 percent energy efficiency by 2030. Work toward 100 percent clean energy by 2045.
- By 2030, reduce total annual fossil fuel use below the 2008 level.

These goals align with State HB 623, which sets 100 percent Renewable Portfolio Standards for the electricity sector by 2045.

10.1.2 Increased Diversion Scenario

The EPA's Waste Reduction Model (WARM) is one of the best tools available to estimate energy usage and GHG emissions associated with waste prevention, recycling, and composting because it lends universality and comparability to the analyses performed with the model. The emissions factors that underline the WARM are useful for estimating lifecycle emissions and energy balance associated with specific materials. Although the WARM remains one of the best options available to estimate emissions reductions and energy usage, the model has limitations. It should be viewed as a tool for evaluating possible waste management scenarios through comparison of emissions reduction potentials of source-reducing or recycling materials versus landfilling or incineration. As such, it is useful in setting programmatic direction.

The following parameters were established for the WARM to understand the energy and emissions inputs required to operate the County's solid waste management system and the net energy usage and emissions generated from the system:

- FY2019 waste tonnages were utilized as the baseline as described in Chapter 2 – Waste Stream.
- Waste composition study data and estimated 2019 waste stream composition information was utilized as presented in Table 2-4 in Chapter 2 – Waste Stream. In cases where the waste composition category was not an option for input in the WARM, the category was converted to the equivalent WARM category.
- The WARM does not allow input data for marine transport of materials; therefore, transportation modeling of recyclables to overseas markets was not performed.
- Compostable paper, film wrap, and non-recoverable paper were not included in the diversion quantities because there are no recyclable markets for the materials.
- A 30 percent capture rate was applied against organics currently diverted for landfill disposal.
- Segregated organics were diverted as a whole and at a capture rate of 100 percent since they are already segregated.
- The WARM does not recognize biosolids as a waste stream; therefore, they were not included.
- Pallets and clean lumber were modeled as "dimensional lumber" in accordance with EPA guidance.
- Fats, oils, and greases were modeled as food in accordance with according to EPA guidance.

10.2 Energy Balance Estimate

The WARM can be used to estimate energy generation and usage of baseline and alternative waste management practices, including source reduction, recycling,

combustion, composting, anaerobic digestion, and landfilling. The WARM performs a lifecycle analysis for a given waste system and accounts for many of the processes required to support that waste system. Energy usage estimates developed by the WARM are presented in millions of British Thermal Units (MMBtu). The scenarios presented in Table 10-1 represent energy use associated with managing 1 short ton of MSW, which is calculated by comparing the baseline scenario to a hypothetical case using FY2019 data and diversion assumptions and the recommended strategies and implementation plans described in Chapter 12 – Implementation Plan.

Table 10-1. Energy Balance from Alternative Waste Management Scenarios (MMBtu)

Material	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Tons Anaerobically Digested	Total MMBtu
Corrugated Containers	-	5,536.53	5,646.47	-	NA	NA	(82,104.85)
Newspaper	-	2,103.62	2,145.38	-	NA	NA	(34,104.56)
Office Paper	-	996.11	1,015.89	-	NA	NA	(9,769.29)
Mixed Paper (general)	-	-	21,694.00	-	NA	NA	5,819.92
Mixed Paper (primarily residential)	-	7,529.75	7,679.25	-	NA	NA	(152,782.49)
Food Waste	-	NA	28,805.70	-	18,164.30	-	20,933.86
Yard Trimmings	NA	NA	22,700.30	-	83,409.68	-	27,649.03
Branches	NA	NA	224.00	-	-	-	60.09
HDPE	-	86.88	1,255.12	-	NA	NA	(3,553.83)
LDPE	-	NA	10,735.00	-	NA	NA	2,879.91
PET	-	86.88	1,255.12	-	NA	NA	(2,147.06)
Mixed Plastics	-	912.22	13,177.78	-	NA	NA	(28,412.66)
Electronic Peripherals	-	-	447.00	-	NA	NA	119.92
Mixed Electronics	NA	-	3,355.00	-	NA	NA	900.06
Aluminum Cans	-	326.09	791.91	-	NA	NA	(49,602.31)
Steel Cans	-	521.80	1,267.20	-	NA	NA	(10,078.41)
Mixed Metals	-	2,218.16	5,386.84	-	NA	NA	(146,173.24)
Glass	-	-	6,710.00	-	NA	NA	1,800.11
Carpet	-	-	224.00	-	NA	NA	60.09
Dimensional Lumber	2,348.40	-	13,083.60	-	NA	NA	(13,684.99)
Mixed Organics	NA	NA	1,789.00	-	-	-	479.94
Mixed MSW	NA	NA	29,522.00	-	NA	NA	7,919.96

Table 10-1. Energy Balance from Alternative Waste Management Scenarios (MMBtu)							
Material	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Tons Anaerobically Digested	Total MMBtu
Total							(545,118.04)
Total MMBtu is equivalent to…							
Conserving			**5,950**	Households' Annual Energy Consumption			
Conserving			**93,824**	Barrels of Oil			
Conserving			**4,525,590**	Gallons of Gasoline			

Note: HDPE = high-density polyethylene; LDPE = low-density polyethylene; PET = polyethylene terephthalate.

10.3 Greenhouse Gas Emissions Estimate

While not required by HRS 342, GHG emissions reductions were also evaluated utilizing the WARM. The WARM was used to estimate GHG emissions of the baseline and alternative waste management practices outlined in the Plan. The model calculates emissions in metric tons of carbon dioxide equivalent and metric tons of carbon dioxide equivalent ($MTCO_2E$) across 34 material types commonly found in MSW. The emissions shown in Table 10-2 represent the GHG emissions associated with managing 1 short ton of MSW and are calculated by comparing the baseline scenario to a hypothetical case using FY2019 data and diversion assumptions, and the recommended strategies and implementation plans described in Chapter 12 – Implementation Plan.

Table 10-2. GHG Emissions from Alternative Waste Management Scenario ($MTCO_2E$)							
Material	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Tons Anaerobically Digested	Total $MTCO_2E$
Corrugated Containers	-	5,536.53	5,646.47	-	NA	NA	(15,009.82)
Newspaper	-	2,103.62	2,145.38	-	NA	NA	(7,337.59)
Office Paper	-	996.11	1,015.89	-	NA	NA	(1,380.00)
Mixed Paper (general)	-	-	21,694.00	-	NA	NA	5,829.31
Mixed Paper (primarily residential)	-	7,529.75	7,679.25	-	NA	NA	(25,151.89)
Food Waste	-	NA	28,805.70	-	18,164.30	-	14,199.50
Yard Trimmings	NA	NA	22,700.30	-	83,409.68	-	(8,084.30)
Branches	NA	NA	224.00	-	-	-	(89.72)
HDPE	-	86.88	1,255.12	-	NA	NA	(40.48)
LDPE	-	NA	10,735.00	-	NA	NA	217.43

Table 10-2. GHG Emissions from Alternative Waste Management Scenario ($MTCO_2E$)

Material	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Tons Anaerobically Digested	Total $MTCO_2E$
PET	-	86.88	1,255.12	-	NA	NA	(64.57)
Mixed Plastics	-	912.22	13,177.78	-	NA	NA	(577.38)
Electronic Peripherals	-	-	447.00	-	NA	NA	9.05
Mixed Electronics	NA	-	3,355.00	-	NA	NA	67.95
Aluminum Cans	-	326.09	791.91	-	NA	NA	(2,960.30)
Steel Cans	-	521.80	1,267.20	-	NA	NA	(930.31)
Mixed Metals	-	2,218.16	5,386.84	-	NA	NA	(9,631.20)
Glass	-	-	6,710.00	-	NA	NA	135.91
Carpet	-	-	224.00	-	NA	NA	4.54
Dimensional Lumber	2,348.40	-	13,083.60	-	NA	NA	(18,201.45)
Mixed Organics	NA	NA	1,789.00	-	-	-	425.15
Mixed MSW	NA	NA	29,522.00	-	NA	NA	12,594.39
Total							**(77,211.76)**
This is equivalent to…							
Removing annual emissions from			**16,393**	Passenger Vehicles			
Conserving			**8,688,169**	Gallons of Gasoline			
Conserving			**3,217,157**	Cylinders of Propane Used for Home Barbeques			
Conserving			**0.00433%**	Annual CO_2 Emissions from the U.S. Transportation Sector			
Conserving			**0.00427%**	Annual CO_2 Emissions from the U.S. Electricity Sector			

10.4 Conclusions

Results of the WARM energy balance and GHG emissions estimates show that there are less energy use and GHG emissions for materials recommended to be recycled and composted by the Plan than there are for the same materials to be landfilled. The results emphasize the benefits of increased recycling and composting in the County.

The WARM results also support promotion of sustainability and the County's Climate Action and Resiliency Plan, which focuses on climate mitigation, decarbonization, and adaptation through initiatives related to environmental protections, energy and clean transportation, green buildings, and resilient housing.

The Aloha+ Challenge goals for reducing dependency on fossil fuels are also supported by the WARM results shown in Table 11-1. Additional information on the Aloha+ Challenge can be found in Chapter 4 – Recycling, Bioconversion, and Markets.

During review of the WARM models for energy balance and GHG calculations, it was recognized that there are aspects of the County's waste management practices that are not modeled due to the WARM's inability to calculate the impacts on carbon emissions from marine transport of recyclables from Hawai'i to the continental U.S or Asia. The WARM model does not calculate for marine transport and is not included in the energy balance tables.

11 Administration and Financing

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11 Administration and Financing

11.1 Introduction

This Chapter addresses the administrative and financing activities related to management of solid waste and recycling materials in the County.

11.2 Background

The County and other organizations and agencies are responsible for providing local enforcement of federal, state, and County laws and regulations that guide the planning, operation, and maintenance of the County's solid waste management system. Local enforcement ensures that the solid waste management system meets applicable standards for the protection of human health and the environment.

11.3 Existing Conditions

Administrative responsibility for components of the County's solid waste management system is currently assigned to the DEM and state and federal government organizations. Responsibilities of each organization are described in the following sections.

11.3.1 Maui County – Department of Environmental Management

HRS 342G assigns the County the primary responsibility for managing solid waste, solid waste management practices, and processing methods in their order of priority including source reduction, recycling, and bioconversion (including composting), and landfilling, and incineration. Solid waste programs, as defined in HRS 342G, include "the particular combination of waste management methods selected by each county and designed to achieve the objectives of the state and county integrated solid waste management plans."

The County exercises its solid waste responsibilities through the DEM, Solid Waste Division, and the EP&S Division.

The Solid Waste Division is responsible for management of the overall solid waste system, including residential refuse collection and landfill operations. In addition, the Solid Waste Division manages capital improvement projects, operations, engineering, regulatory compliance support, permit review processing, all fiscal activities, billing and collection of residential and commercial refuse accounts, and safety and training objectives. The Solid Waste Division consists of approximately 107 employees and operates four County-owned landfills and maintains six closed landfills; provides residential refuse collection to more than 27,000 accounts and 2,700 routes per year; manages 17 land use and environmental permits; conducts associated environmental monitoring, reporting, and regulatory compliance countywide; and landfills over

275,000 tons per year of MSW and processes over 28,000 tons per year of C&D debris.

The EP&S Division manages the programs that guide efforts to optimize opportunities for environmental initiatives, natural resource protections, sustainability, conservation, and restoration. Programs managed include waste reduction and diversion of waste from landfilling, environmental grant programs, sustainability education, and partnerships with environmental agencies and organizations. The EP&S Division also administers the Abandoned Vehicle, "Tow and Scrap", Plastic Bag Reduction, and Plastic Free Maui County programs.

Figure 11-1 illustrates the DEM administrative organizational structure. Additional information on the organizational structure of solid waste collection and disposal operations is described in Chapter 8 – Collection and Transfer and Chapter 9 – Residuals Management and Disposal.

The DEM and the Solid Waste and EP&S Divisions are funded by fees collected at the landfills, a recycling surcharge assessed for commercial solid waste, subsidies from the County General Fund, vehicle registration fees for Highway Beautification and Abandoned Vehicles and Disposal revolving funds, and grants and revenue distributions from the state.

11.3.1.1 Revenues[3]

Solid Waste Management Fund

The FY2023 estimated revenues for the Solid Waste Management Fund (SWM Fund) are $51.9 million, an increase of $18.0 million (52.9 percent) from the FY2022 Adopted Budget. The SWM Fund represents 3.8 percent of the Total County Fund revenues (General Fund, Special Revenue Funds and Enterprise Funds). Fees associated with landfill disposal and refuse collection are the major sources of revenues for the SWM Fund. The SWM Fund is projected to be non-self- sufficient in FY2023 and will need to be subsidized by the County General Fund in the amount of $3.6 million. Appendix C contains related sections of the County FY2023 Council Adopted Budget.

Landfill Disposal Fees

Landfill disposal fees (landfill tipping and permit fees) are collected as charges for current services. The FY2023 estimated revenues of $13.5 million for landfill disposal fees is a decrease of $0.8 million (5.5 percent) from the FY2022 Adopted Budget. Despite the increase in landfill tipping fees from $104 to $106 per ton in FY2022, the FY2023 revenue stream is still projected to decrease, due mainly to less tonnage

[3] Information from County of Maui FY2023 Council Adopted Budget.

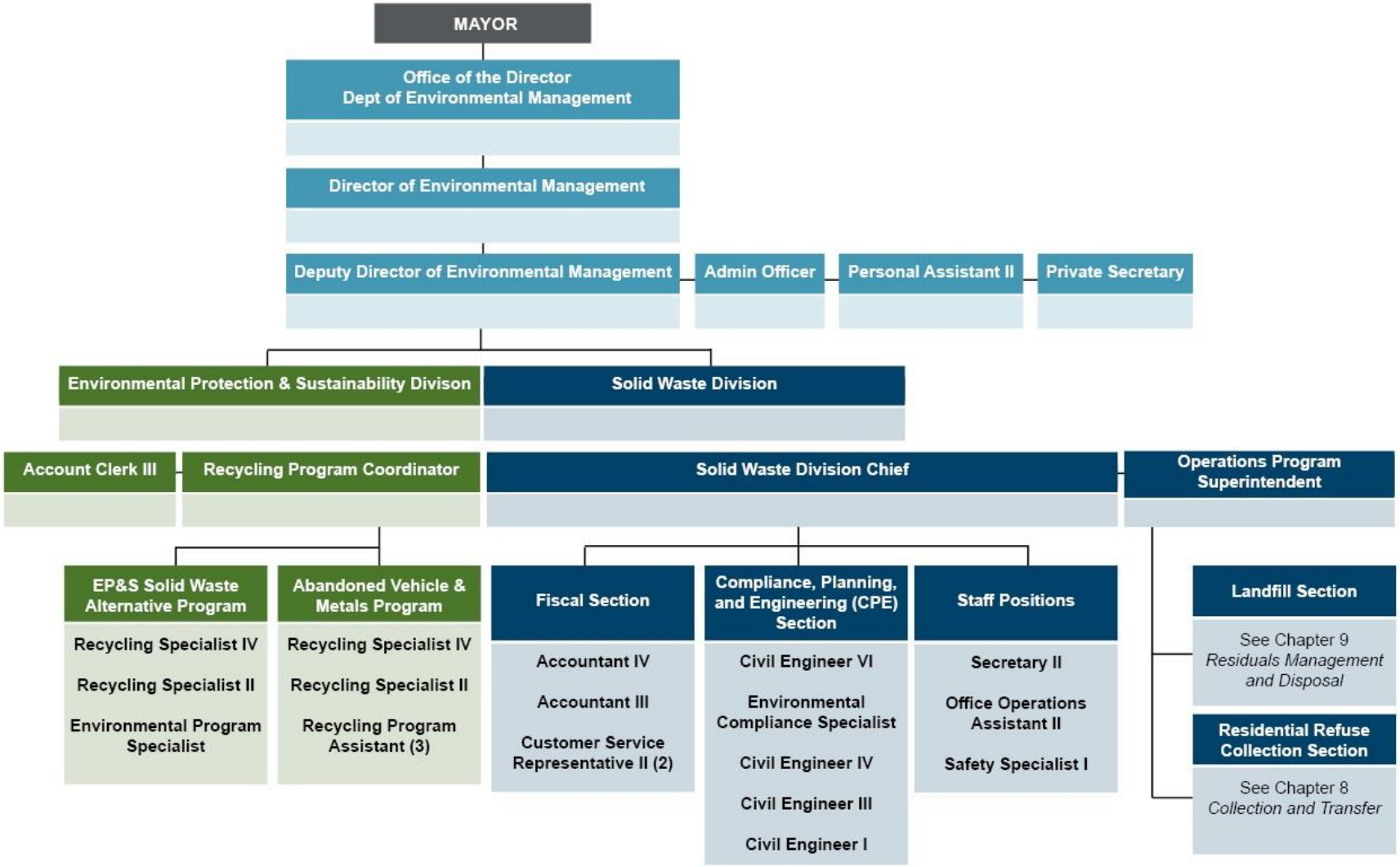

Figure 11-1. Maui County DEM – Solid Waste and EP&S Divisions Administrative Organization Chart

collection from increased recycling and other diversion. The FY2023 estimated revenues for landfill disposal fees represent 38.7 percent of the SWM Fund and 1.5 percent of the County General Fund total revenues. Appendix C contains related sections of the County FY2023 Council Adopted Budget.

Refuse Collection Fees

Refuse collection fees are collected as charges for current services. These services are estimated to generate $10.7 million in revenue for FY2023, a decrease of $100,000 (0.9 percent) from the FY2022 Adopted Budget. The slight decrease in projected revenues in FY2023 is attributed to an anticipated increase in delinquent accounts. The estimated revenues from refuse collection fees represent 30.7 percent of the SWM Fund and 1.2 percent of the County General Fund total revenues. Appendix C contains related sections of the County FY2023 Council Adopted Budget.

EP&S Fund

The EP&S Fund collects fees as follows:

- A $10 recycling surcharge assessed on each ton of commercial solid waste delivered to all County landfills: estimated to total $1,527,740 in FY2023.
- Green waste ($40/ton), biosolids ($106/ton), and FOG (fats, oils, and grease) ($50/ton) assessed per ton of materials hauled: estimated to total $862,110 in FY2023.
- Highway Beautification and Abandoned Vehicles: $10/annual vehicle registration (total unknown).
- Disposal of Vehicles: $25/annual vehicle registration (total unknown).

The EP&S Division received State grant subsidies in the amount of $223,800 in FY2023 to support the following programs:

- Department of Health:
    - Electronic waste collection: $99,000
    - Glass recycling programs: $124,800

The EP&S Fund is also projected to be non-self-sufficient in FY2023 and will need to be subsidized by the County General Fund. Appendix C contains related sections of the County F2023 Council Adopted Budget

11.3.1.2 Expenditures[4]

Actual and estimated expenditures for the SWM and EP&S Funds are presented by expenditure category and fiscal year in Table 11-1. Appendix C contains related sections of the County FY2023 Council Adopted Budget.

Table 11-1. Maui County Solid Waste and EP&S Divisions Fund Expenditures

Expense Type	FY2021 Actual	FY2022 Adopted Budget	FY2023 Adopted Budget
SWM Fund - Administration Program			
Salaries and Wages	$983,696	$1,151,566	$1,195,431
Operations	$8,363,788	$9,166,090	$9,418,475
Transfer Out	$4,515,838	$4,870,899	$5,957,882
Equipment	$-4,968	$21,530	$9,530
Total Solid Waste Administration Program Expenses	**$13,858,353**	**$15,210,085**	**$16,581,318**
SWM Fund - Operations Program			
Salaries and Wages	$5,495,572	$6,133,284	$6,373,729
Operations	$5,962,116	$7,944,674	$7,944,674
Transfer Out	$75,548	$340,000	$150,000
Equipment	$526,501	$3,860	$1,046,360
Total Solid Waste Operations Program Expenses	**$12,059,736**	**$14,421,818**	**$15,514,763**
EP&S Fund			
Salaries and Wages	$198,213	$277,665	$285,642
Operations	$7,609,109	$7,135,219	$9,169,240
Transfer Out	$3,127,217	$627,217	$600,000
Equipment	$4,142	$2,000	$152,000
Total EP&S Fund Expenses	**$10,938,679**	**$8,042,101**	**$10,206,882**
EP&S Grant Revenue Fund			
Salaries and Wages	$0	$0	$61,549
Operations	$223,800	$820,000	$938,819
Transfer Out	$0	$0	$0
Equipment	$0	$0	$7,500
Total EP&S Grant Revenue Fund Expenses	**$223,800**	**$820,000**	**$1,007,868**

[4] Information from County of Maui FY2023 Council Adopted Budget.

Table 11-1. Maui County Solid Waste and EP&S Divisions Fund Expenditures			
Expense Type	**FY2021 Actual**	**FY2022 Adopted Budget**	**FY2023 Adopted Budget**
EP&S Revolving Fund			
Salaries and Wages	$85,923	$288,746	$300,273
Operations	$1,520,231	$2,416,935	$2,426,935
Transfer Out	$0	$0	$0
Equipment	$0	$0	$115,000
Total EP&S Grant Revenue Fund Expenses	**$1,606,154**	**$2,705,681**	**$2,842,208**
Total All Solid Waste and EP&S Expenses	**$38,686,722**	**$41,199,685**	**$46,153,039**

11.3.2 Maui County Solid Waste Advisory Committee

The Mayor appointed the SWAC to assist in the development of solid waste management and recycling programs and policies. The appointed SWAC consists of nine members representing the following industry affiliations:

- Environmental education
- Remote representative
- Recycling/energy industry
- County Department of Environmental Management
- Agriculture/composting industry
- Recycling/metals industry
- County council member
- Construction industry and inert waste recycling
- Hospitality/tourism industry
- Private sector solid waste industry

Responsibilities of the SWAC include the following:

- Attend SWAC meetings virtually.
- Contribute ideas based on their respective knowledge and experience.
- Come prepared to each meeting ready to discuss comments and suggestions.
- Recognize that all SWAC members are equals in the Plan update process.
- Actively listen and participate in meetings, respecting other members' contributions.

- Collaborate and be prepared to resolve differences.
- Assist with meeting efficiency by reviewing materials in advance.
- Be sensitive about sharing information with persons outside of SWAC.
- Follow standards of the Hawai‘i Sunshine Law.

Additional information regarding the SWAC appointments can be found in Appendix A and in Chapter 1 – Introduction and Background.

11.3.3 Hawai‘i State Department of Health

The DOH, through HRS 342G-24, assigns primary responsibility for solid waste planning to local governments and gives each county the task of setting up a coordinated solid waste management plan that emphasizes development of recommended waste management strategies. The County is required to revise the Plan once every 10 years, provided that an interim status report on the implementation of the Plan is submitted 5 years after the original submission.

11.3.4 United States Environmental Protection Agency

At the federal level, the RCRA of 1976, as amended by the Solid Waste Disposal Act Amendments of 1980 (42 U.S. Code 6901-6987), is the primary body of legislation addressing solid waste. Subtitle D of the RCRA deals with non-hazardous solid waste disposal and requires the development of a state comprehensive solid waste management program that outlines the authorities of local, state, and regional agencies. Subtitle D requires the state program to prohibit “open dumps” and provide that solid waste is handled in an environmentally sound manner.

11.4 Status of Previous Recommendations

The status of the recommendations made by the 2009 Plan can be found in Appendix B.

11.5 Alternatives and Evaluations

Existing service gaps and other issues related to administration and financing components of solid waste management are discussed below.

11.5.1 Long-Term Funding Needs

Financial resources are necessary to provide for the continuation of recycling and hazardous waste diversion and education programs; for repairs, maintenance, and construction of solid waste facilities; for curbside collection operations; and to ensure compliance with new and more stringent rules and regulations governing solid waste management. These financial resources are typically provided by taxes, solid waste tipping fees, grants, or any combination of these sources.

Solid waste funding for recycling and educational programs in the County currently relies on tipping fees assessed at the solid waste management facilities and funding provided by the DOH and County General Fund. Additional funding options (grouped by category) and the associated implementation entities are provided in Table 11-2.

Table 11-2. Potential Funding Methods for Solid Waste Management

Potential Funding Methods	Implementation Entity		
	County	State	Private Sector
User Fees, Rates, Surcharges			
1. Cost-of-Service-Based Rates	X		X
2. Other Volume-Based Rates	X		
3. Fixed Per-Customer Service Rates	X		X
4. Collection Rate Surcharges	X		
5. Planning Fees	X		
6. Weight or Volume-Based Disposal Fees	X		X
7. Fixed Per-Customer Disposal Fees	X		X
8. Disposal Surcharges	X		
Taxes			
9. State Litter Tax		X	
10. Mandatory Collection	X		
11. Utility Tax	X		
Other			
12. Enforcement Fines/Penalties	X	X	
13. Sales of Recyclable Materials	X		X
14. Recycling Fees/Charges	X	X	X
15. Sales of Recovered Energy	X		X
16. General Fund Revenues	X		
17. Bond Financing	X		(X)

Note: X = Implementing authority, (X) = potentially benefits from funding method but cannot implement it.

11.5.2 Staffing

Adequate funding should be provided to maintain and/or increase staff at County levels, as needed, to ensure that the County's solid waste management system is managed to protect public health and the environment and meet the needs of County residents.

11.5.3 Six-Year Capital Improvement Program

The County DEM, Solid Waste Division, has adopted a Six-Year Capital Improvement Program (CIP) for FY2023 through FY2028. The CIP provides $15.5 million in funds for FY2023 and $28.5 million over the 6-year timeframe. Appendix C contains related sections of the County FY2023 Council Adopted Budget.

Adequate funding for the recommendations in this Plan is critical for project implementation and should be prioritized as the Plan is approved and adopted.

11.6 Recommended Actions

The following recommended actions were selected by the SWAC for implementation:

AE1) Provide adequate funding to maintain or increase staff at county levels, as needed.

AE2) Consider pursuing the additional funding strategies listed in Table 11-2 that can be implemented by the County directly and independently from other alternatives.

AE3) Provide adequate funding for the Plan recommendations as outlined in the County DEM Solid Waste Division Six-Year Capital Improvement Project Schedule.

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12 Implementation Plan

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12 Implementation Plan

This chapter provides information about the priorities and costs of implementing the recommendations made in this Plan. It also includes information on Plan review and updates over the next 10-year period.

12.1 Plan Recommendations, Implementation Responsibility, Priority and Estimated Costs

Recommendations made in previous chapters of the Plan are listed in Table 12-1 for reference and discussion in this chapter. Table 12-1 lists the responsible parties, priorities, and estimated additional costs to implement each recommendation. More specific details of the listed recommendations can be found in the respective Plan chapters.

When reviewing Table 12-1, it should be noted that costs for implementing capital improvements are addressed separately in the DEM Six-Year Capital Improvement Project Schedule provided in Appendix C. In addition, as outlined in the recommendations, additional staffing will be needed to implement any new programming. Upon adoption of the Plan, the County will further prioritize program implementation for approval by the County Council.

Table 12-1. Summary of Plan Recommendations, Implementation Responsibility, Priority, and Estimated Costs

Recommendation	Implementation Responsibility	Priority	Estimated Costs
Chapter 3 – Source Reduction and Reuse			
SR1) Continue to implement and revise a long-term waste management strategy that recommends waste reduction, reuse, recycling, recovery, and residual disposal to correlate with the County's mission statement, goals and objectives relating to solid waste handling.	Maui County	Existing	Staff time
SR2) Partner with the hospitality industry to support their current waste reduction efforts and expand as appropriate.	Maui County and Hospitality Industry	Medium	Staff time
SR3) Expand the County source reduction and education program to incorporate opportunities and program availability for new and existing outreach efforts.	Maui County	Medium	$300,000 per year to add staffing[1]
SR4) Support and promote reuse events and programs.	Maui County and Stakeholders	Existing	Staff time

Table 12-1. Summary of Plan Recommendations, Implementation Responsibility, Priority, and Estimated Costs

Recommendation	Implementation Responsibility	Priority	Estimated Costs
SR5) Support programs, forums or other methods, such as existing reuse and reusable materials exchange programs to facilitate business materials exchanges.	Maui County and Stakeholders	Existing	Staff time[1]
SR6) Promote and support food waste prevention collection and distribution programs in the County.	Maui County and Stakeholders	Existing	Staff time
SR7) Participate, support and monitor state and federal legislation regarding source reduction initiatives, as appropriate, for the County.	Maui County	Existing	Staff time
SR8) Continue to promote and support County procurement policies and procedures that promote environmentally preferable purchasing and waste reduction methods.	Maui County	Existing	Staff time
SR9) Promote data collection to establish baseline metrics for promoting waste reduction programs.	Maui County and Private Industry	Medium	Staff time[1]
Chapter 4 – Recycling, Bioconversion, and Markets			
RBM1) Establish a minimum waste diversion/recycling goal of 60 percent for this planning period.	Maui County, Stakeholders, Private Industry	Existing	Staff time[1]
RBM2) Focus additional recycling and diversion efforts on organic waste, food waste, plastics, cardboard, mixed and recyclable paper, and C&D debris that represent a significant percentage of the landfill disposed volume.	Maui County, State of Hawaii, Stakeholders, Private Industry	High	Staff Time[1]
RBM3) Promote and adopt zero waste policies and initiatives that encourage extended producer responsibility and strive to achieve zero waste goals.	Maui County	Existing	Staff time
RBM4) Conduct a waste composition study to provide data that tracks progress towards waste diversion and recycling program performance, refines existing programs, and identifies new program opportunities.	Maui County	High	$150,000
RBM5) Implement recommendations from the Organics Management Plan, as appropriate.	Maui County	High	Dependent on recommendations implemented. Costs for implementation to be included in the DEM 6-year capital improvement schedule

Table 12-1. Summary of Plan Recommendations, Implementation Responsibility, Priority, and Estimated Costs

Recommendation	Implementation Responsibility	Priority	Estimated Costs
RBM6) Complete a curbside recycling program and MRF facility implementation study that evaluates public-private partnerships and facility construction, maintenance, operations, and product marketing costs.	Maui County, Private Industry and Stakeholders	High	$100,000 Study cost Costs for implementation to be included in the DEM 6-year capital improvement schedule
RBM7) Work cooperatively with the hospitality industry, community events, multifamily dwellings and the commercial sector to implement recycling programs and opportunities.	Maui County, Hospitality Industry, Stakeholders and Private Industry	Medium	Staff time[1]
RBM8) Promote edible food waste prevention to assist community partners in collecting surplus edible food for distribution to those in need.	Maui County and Stakeholders	Existing	Staff time[1]
RBM9) Provide adequate County staffing levels and resources to implement and continue selected recycling and bioconversion programs.	Maui County	High	Cost dependent on recommendations implemented. See recommendation SR3 for staffing addition.[1]
RBM10) The County office of CCRS, and the Solid Waste and EP&S Divisions should work cooperatively to develop and promote new programs that encourage recovery and reuse of materials and support climate change initiatives.	Maui County	Existing	Staff time
RBM11) Incentivize recycling and diversion businesses to locate within the state and County designated Enterprise Zones.	Maui County and State of Hawai‘i	Existing	Staff time
RBM12) Continue to support and participate in the State HI-5 DBC program, the glass advance deposit fee program, and the Electronic Waste and Television Collection program.	Maui County, State of Hawai‘i, Stakeholders and Private Industry	Existing	Staff time
RBM13) Continue with the distribution of County grant funds to support innovative recycling programs in the County.	Maui County and Stakeholders	Existing	$500,000 per FY
RBM14) Address the Jones Act restrictions on recycling commodity shipping through advocating and support of modifications that would promote recycling.	Maui County and State of Hawai‘i	Existing	Staff time
RBM15) Implement a data collection methodology and reporting structure to capture materials recycled from all sectors in the County.	Maui County	Medium	$25,000[1]

Table 12-1. Summary of Plan Recommendations, Implementation Responsibility, Priority, and Estimated Costs

Recommendation	Implementation Responsibility	Priority	Estimated Costs
RBM16) Consider and support technology that enhances or expands materials for recycling.	Maui County	Existing	Staff time
Chapter 5 – Education and Outreach			
EO1) Maintain current educational programs, as appropriate, and provide adequate staffing for implementation of additional education and outreach programs and opportunities.	Maui County	Existing	Additional staffing for programs accounted for above[1]
EO2) Refresh educational materials and seek to harmonize messaging.	Maui County, Stakeholders, and Private Industry	High	$20,000
EO3) Distribute informational mailings to households and businesses.	Maui County, Stakeholders and Private Industry	Existing	Staff time and cost for mailing
EO4) Update and expand on digital education through websites, social media, and newsletters.	Maui County	High	$25,000
EO5) Refresh residential food waste reduction campaigns.	Maui County	Medium	$15,000[1]
EO6) Consider implementing a Master Composter training program.	Maui County and Stakeholders	Low	$10,000 per year
EO7) Consider implementing a multifamily recycling toolkit.	Maui County	Medium	$10,000[1]
EO8) Provide multifamily technical assistance as waste reduction and recycling options become available.	Maui County	Medium	Staff time[1]
EO9) Consider the expansion of business technical assistance including support and assistance on how to start a recycling business in the County.	Maui County	Low	Staff time[1]
EO10) Consider offering school technical assistance.	Maui County	Low	Staff time[1]
EO11) Provide information at disposal sites and disposal site websites.	Maui County	Existing	Staff time
EO12) Provide education materials online and at the permit counter describing ways to reduce C&D debris and increase diversion.	Maui County	Low	$5,000[1]

Table 12-1. Summary of Plan Recommendations, Implementation Responsibility, Priority, and Estimated Costs

Recommendation	Implementation Responsibility	Priority	Estimated Costs
EO13) Work cooperatively with County staff and programs, private waste haulers, private non-profit groups, volunteers and youth groups, the hospitality industry, and the commercial sector to develop and refresh education and outreach programs for implementation.	Maui County, Private Industry, Non-Profit Groups, Hospitality Industry, Commercial Business, and Stakeholders	High	$25,000
EO14) Continue to monitor and maintain the County See Click Fix website for reporting of littering, illegal dumping and abandoned vehicle complaints.	Maui County	Existing	Staff time
EO15) Provide education and outreach opportunities for littering and illegal dumping and abandoned vehicles.	Maui County, Non-Profit Groups and Stakeholders	High	$25,000
Chapter 6 – Household Hazardous Waste and Electronic Waste			
HHW1) Continue to promote safe handling and proper disposal of HHW and E-Waste through the County's website and other forms of media.	Maui County	Existing	Staff time
HHW2) Consider constructing the permanent HHW and E-Waste Collection and Storage Facility if cost-effective.	Maui County	Medium	$1,500,000 Costs for implementation to be included in the DEM 6-year capital improvement schedule
HHW3) Continue to host HHW and E-Waste collection events until a permanent HHW and E-Waste Collection Facility is constructed. Evaluate the cost effectiveness of continuing the collection events if a facility is constructed.	Maui County	High	$100,000 Costs for implementation to be included in the DEM 6-year capital improvement schedule
HHW4) Support statewide legislation and funding efforts for producer responsibility initiatives and program implementation.	Maui County, Private Industry, Non-Profit Groups, Hospitality Industry, Commercial Business, and Stakeholders	Existing	Staff time
HHW5) Consider implementing lithium battery and solar PV collection and recycling programs as guidelines and technologies are developed.	Maui County	Medium	Staff time plus program costs estimated at $600,000 per year

Table 12-1. Summary of Plan Recommendations, Implementation Responsibility, Priority, and Estimated Costs

Recommendation	Implementation Responsibility	Priority	Estimated Costs
Chapter 7 – Special Wastes			
SW1) Continue and expand programs to recycle and dispose of special wastes through a cooperative effort between the County, state, and private recycling and processing facilities.	Maui County, State of Hawai'i, Private Industry and Stakeholders	Existing	Staff time
SW2) Update the County Disaster Debris Action Plan to meet EPA and FEMA revised regulatory guidance.	Maui County	High	$100,000
SW3) Promote proper reuse, recycling, and disposal of C&D debris as appropriate.	Maui County	Existing	Staff time[1]
SW4) Support EPR for specific waste materials such as mattresses, and carpet and padding.	Maui County and State of Hawai'i	Existing	Staff time[1]
SW5) Explore additional technologies, as they become available and affordable, that promote tire recycling programs.	Maui County	Existing	Staff time[1]
SW6) Explore best practices and implementation of an action plan that considers increasing regional infrastructure, collection sites and events for specific special wastes as appropriate.	Maui County, Private Industry, Non-Profit Groups, Hospitality Industry, Commercial Business, and Stakeholders	High	$50,000 Costs for implementation to be included in the DEM 6-year capital improvement schedule
SW7) Provide adequate staffing for creation of a comprehensive system to enforce illegal dumping, littering and abandoned vehicles, including a structure for issuance of fines for non-compliance.	Maui County	High	Staff time[1]
Chapter 8 – Collection and Transfer			
CT1) Install fleet routing software and supporting hardware to provide improved collection services.	Maui County	High	$350,000
CT2) Conduct a rate study to understand the real program costs and ensure that rates are covering collection system and disposal costs at adequate levels.	Maui County	Medium	$75,000
CT3) Consider evaluating collection vehicle conversion to alternative fuels or electric vehicles when conditions in the County make it feasible.	Maui County	Existing	Staff time

Table 12-1. Summary of Plan Recommendations, Implementation Responsibility, Priority, and Estimated Costs

Recommendation	Implementation Responsibility	Priority	Estimated Costs
CT4) Consider implementation of a PAYT rate structure to incentivize recycling and reduce dependence on landfilling as the method of disposal.	Maui County	Existing	Staff time
CT5) Consider developing a facility master plan that takes into account the fleet baseyards to ensure proper support for collections services and equipment maintenance into the future	Maui County	Medium	$75,000 Costs for implementation to be included in the DEM 6-year capital improvement schedule
CT6) Complete a transfer station facility assessment to assist with needs, location(s), and ensure sufficient long-term disposal and recycling opportunities for County residents.	Maui County	High	$75,000 Costs for implementation to be included in the DEM 6-year capital improvement schedule
Chapter 9 – Residuals Management and Disposal			
RMD1) Evaluate and implement programs, sustainable options, and strategies that reduce materials being landfilled to preserve landfill capacity and extend the life expectancy of all County disposal facilities.	Maui County, Private Industry, Non-Profit Groups, Hospitality Industry, Commercial Business, and Stakeholders	Existing	Staff time[1]
RMD2) Provide for future residual management and disposal needs through development of a disposal master plan that considers opportunities available to the County for waste disposal over a 30-year period. The master plan would take into consideration options for all current landfill facilities and provide options for community engagement and alignment with community planning.	Maui County	High	$125,000
RMD3) Implement disposal options that ensure sufficient long-term opportunities for County residents.	Maui County	Existing	Staff time
RMD4) Consider cost-effective options that align with state and County goals for climate action planning and resiliency when considering disposal technologies for implementation, including exploration of options with low carbon emissions and waste to energy/waste to fuel technologies.	Maui County	Existing	Staff time

Table 12-1. Summary of Plan Recommendations, Implementation Responsibility, Priority, and Estimated Costs

Recommendation	Implementation Responsibility	Priority	Estimated Costs
RMD5) Recognize that Lānaʻi is currently largely privately owned and that future waste disposal needs should be a joint effort between the private sector and the County.	Maui County and Private Sector	Existing	Staff time
Chapter 10 – Administration and Financing			
AE1) Provide adequate funding to maintain or increase staff at County levels, as needed.	Maui County	High	As needed[1]
AE2) Consider pursuing additional funding strategies listed in Table 11-2 that can be implemented by the County directly and independently from other alternatives.	Maui County	Medium	Staff time
AE3) Provide adequate funding for Plan recommendations as outlined in the DEM Solid Waste Division Six-Year Capital Improvement Project Schedule.	Maui County	High	As outlined in Six-Year Capital Improvement Project Schedule

[1]Staffing for these recommendations will require additional staff. It is anticipated that up to three additional staff will be needed to implement program recommendations at an estimated cost of $300,000.

12.2 Ten-Year Implementation Program

Solid waste management in the County will continue to evolve based on changes in population; demographics; local, state, and national economies; regulations; and advancements in waste handling and recycling. Fortunately, the County's current solid waste management system is functioning effectively.

Updating the Plan every 10 years requires significant effort on the part of the County to compile information and data to assess the existing solid waste system and develop a feasible plan for the next 10 years and beyond. The process for this 10-year Plan update began in January 2022 with the appointment of the SWAC to guide the Plan's direction and ensure that it provides a holistic reflection of the priorities of Maui. Twelve SWAC meetings were held to discuss and solicit feedback on the Plan's content, and multiple drafts were issued for stakeholder reviews. The Plan must be approved by the DOH and then adopted by the County.

The Plan will be reviewed in 2028 (5-year review) to evaluate the status of the County solid waste management system and the recommendations made in the Plan and to determine if additional modifications should be considered as the waste and recycling industry in the County evolves.

12.3 Draft Plan Review

The County provided the Draft Plan for review to stakeholders. Comments were received from the SWAC during Meeting No. 12 held on April 11, 2023. Comments were received from the DOH on April 11, 2024. Written DOH comments received and County responses are included as Appendix D.

A public hearing notice was published in the Honolulu Star Advertiser on June 6, 2024, and the public was invited to comment on the Draft Plan. Written comments were open for submittal through July 19, 2024. The public hearing was held on the Draft Plan on July 17, 2024. There were no public attendees present and no public testimony given. While no written testimony was received prior to and following the public hearing, County Resolution No. 24-118 was received during the comment period and was requested by County Council to be added to public comments. Resolution comments and County responses are included as Appendix D.

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Appendix A
SWAC Information

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MICHAEL P. VICTORINO
Mayor

ERIC A. NAKAGAWA, P.E.
Director

SHAYNE R. AGAWA, P.E.
Deputy Director

MICHAEL P. RATTE
Solid Waste Division

SCOTT R. ROLLINS, P.E.
Wastewater Reclamation Division

TAMARA L. FARNSWORTH
Environmental Protection &
Sustainability Division

COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793

July 21, 2021

MEMO TO: HONORABLE MICHAEL P. VICTORINO, MAYOR

FROM: ERIC A. NAKAGAWA, P.E., DIRECTOR OF ENVIRONMENTAL MANAGEMENT

SUBJECT: **SOLID WASTE ADVISORY COMMITTEE APPOINTMENTS**

The County of Maui (County), Department of Environmental Management (DEM), Solid Waste Division is initiating the process to update the County's Integrated Solid Waste Management Plan (ISWMP). The last ISWMP was adopted in 2009 and provided a roadmap of recommended strategies for managing and/or reducing municipal solid waste (MSW), source reduction/recycling, household hazardous waste (HHW), and special wastes generated in the County through recycling, reduction, reuse, and other technologies, while also planning for future infrastructure and capital needs.

The County ISWMP must meet the requirements of Hawaii Revised Statute (HRS) Section 342G to address current and future solid waste management needs and opportunities, and provide a framework for implementation. The County has contracted the services of HDR, Engineering, Inc. to assist the County with the ISWMP update process. In developing an ISWMP, the County is required to form a Solid Waste Advisory Committee (SWAC) appointed by the Mayor to confirm that the ISWMP identifies and addresses goals and objectives unique to solid waste issues in the County. The purpose of this letter is to outline the goals of the ISWMP, roles and responsibilities of the SWAC, and engage you and your staff in the process of selecting and approving members of the SWAC. We have identified an initial list of SWAC members that are presented in this letter for your review and consideration.

The DEM has developed the following mission statement for the ISWMP:

"The County of Maui and its citizens recognize that protecting air, land, and water through effective, fiscally prudent, and sustainable solid waste management practices improves the quality of life while valuing and preserving human health, environmental quality, and natural resources."

The goals of the ISWMP will be broken into four categories: infrastructure and system, sustainability, education, and outside influences.

- Infrastructure and system goals of the ISWMP can be summarized as ensuring cost-effectiveness, efficiency, resiliency, and compliance of the solid waste system by providing the infrastructure necessary to support it.

- Sustainability goals of the ISWMP can be summarized as managing waste as a resource, considering environmental impacts, ensuring that the solid waste system has an equitable and sustainable funding mechanism, and ensuring that the County's development community is invested in more sustainable development practices.

- Education goals of the ISWMP can be summarized as encouraging County citizens to be mindful about the impacts of their consumption and disposal choices, as well as being responsible when it comes to what they produce, consume, and the amount of waste they generate.

- Lastly, the outside influences goals of the ISWMP can be summarized as supporting less wasteful packaging practices, incorporating Zero Waste principles, and supporting changes to Federal and State regulations/policies that support increased recycling opportunities and waste diversion.

The role of the SWAC is outlined in HRS 342G-22 as follows:

Development of county integrated solid waste management plans. *(a) Prior to preparing a plan, each county shall form an advisory committee appointed by the mayor. The county advisory committee may be composed of representatives from citizen organizations, industry, the private solid waste industry operating within the county, the private recycling or scrap material processing industry operating within the county, the county coordinator, and any other persons deemed appropriate by the mayor. The county advisory committee shall review the plan during its preparation, make suggestions, and propose any changes it believes are appropriate. Input from the SWAC is necessary to confirm that the ISWMP identifies and addresses goals and objectives unique to solid waste issues in the County for the next ten-year period.*

It is anticipated SWAC member participation will be required for a minimum of 12 months, with participation in monthly meetings for approximately 1 to 2 hours. The following are typical responsibilities of SWAC members:

- Attend ISWMP SWAC meetings (virtually or in-person).
- Contribute ideas based on respective knowledge and experience.
- Come prepared to each meeting ready to discuss your comments and suggestions.
- Recognize that all SWAC members are equals in the ISWMP update process.
- Actively listen and participate in meetings, respecting other members' contributions.
- Collaborate and be prepared to resolve differences.
- Assist with meeting efficiency by reviewing meeting materials in advance.
- Be sensitive about sharing information with persons outside the SWAC.

All SWAC meetings will be held in compliance with the Hawaii Sunshine Law (HRS Chapter 92) which sets standards for open public meetings. Requirements include:

- All meetings must be open to the public and provide opportunity for public testimony.
- SWAC members may not discuss committee business with each other outside of meetings.
- The SWAC may not consider matters not identified in the published agenda during meetings.
- SWAC members are free to discuss committee business with non-committee members who are not covered by the Sunshine Law.

The County will provide SWAC members with meeting materials for review one week in advance of each meeting. Feedback from SWAC members will be incorporated (as appropriate) into the Draft ISWMP.

The Department of Environmental Management recommends the following for the SWAC:

1. Roger Yamagata, Maui Disposal, solid waste industry representative
   rogeryamagata@mauiwaste.com
   Alternate: Mike Petersen, Waste Pro Hawaii
   mpetersen@wasteprohawaii.com

2. Pete Sullivan, P.B. Sullivan Construction, construction industry representative
   pete@pbsullivanconst.com
   Alternate: Dwayne Betsill, Betsill Brothers Construction
   dwayne@bbcmaui.com

3. Rubens Fonseca, Maui EKO Systems, agriculture/composting industry representative
   Rubens.mauieko@gmail.com
   Alternate: Mahi Pono representative

4. Mike White, GM, Kaanapali Beach Hotel as hospitality/tourism industry representative
   mwhite@kbhmaui.com
   Alternate: Sherry Duong, Maui Visitor's Bureau
   maui@hvcb.org

5. Nick Garofalo, Schnitzer Steel, as metals recycling industry representative
   ngarofalo@schn.com

6. Keiki-Pua Dancil, SVP of Government Affairs, Pulama Lanai as remote representative
   kdancil@pulamalanai.com

7. Lauren Blickley, Zerowaste Maui Coalition as recycling industry representative
   zerowastemauicoalition@gmail.com
   Alternate: Jennifer Chirico, CEO and Founder, Sustainable Pacific
   info@sustypacific.com

8. Gabrielle Schuerger, Malama Maui Nui as environmental organization representative
   info@MMNui.org

9. Tamara Farnsworth, County of Maui Recycling Coordinator
   Tamara.Farnsworth@mauicounty.gov

Solid Waste Division will be represented by their project managers with HDR as consultant. Please confirm the proposed list with the Department so that we can schedule the first meeting of the SWAC after their notification.

The County will provide SWAC members with meeting materials for review one week in advance of each meeting. Feedback from SWAC members will be incorporated (as appropriate) into the Draft ISWMP.

Sincerely,

Digitally signed by Eric A. Nakagawa, P.E.
DN: cn=Eric A. Nakagawa, P.E., o=County of Maui, ou=Director of Environmental Management, email=eric.nakagawa@co.maui.hi.us, c=US
Date: 2021.08.02 09:18:38 -10'00'

ERIC A. NAKAGAWA, P.E.
Director of Environmental Management

MICHAEL P. VICTORINO
Mayor

ERIC A. NAKAGAWA, P.E.
Director

SHAYNE R. AGAWA, P.E.
Deputy Director

MICHAEL KEHANO, P.E.
Solid Waste Division

SCOTT R. ROLLINS, P.E.
Wastewater Reclamation Division

TAMARA L. FARNSWORTH
Environmental Protection &
Sustainability Division

COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2145 KAOHU STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793

January 20, 2022

MEMO TO: SOLID WASTE ADVISORY COMMITTEE MEMBERS:
Roger Yamagata, Maui Disposal, rogeryamagata@mauiwaste.com
Peter Sullivan, P.B. Sullivan Construction, pete@pbsullivanconst.com
Rubens Fonseca, Maui EKO Systems, Rubens.mauieko@gmail.com
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Alex deRoode, County Energy Commissioner, Alexander.deRoode@co.maui.hi.us
Gabrielle Schuerger, Malama Maui Nui, ed@mmnui.org
Tamara Farnsworth, County Recycling Coordinator, Tamara.Farnsworth@mauicounty.gov
Malia Cahill, Executive Director, Maui Huliau, info@mauihuliau.org
YukiLei Sugimura, Maui County Council, Infrastructure and Transportation Committee Chair, YukiLei.Sugimura@mauicounty.us

FROM: for ERIC A. NAKAGAWA, P.E., DIRECTOR OF ENVIRONMENTAL MANAGEMENT

Digitally signed by Shayne R. Agawa
DN: cn=Shayne R. Agawa, o=Deputy Director, ou=Department of Environmental Management, email=shayne.agawa@co.maui.hi.us, c=US
Date: 2022.01.20 15:56:44 -10'00'

SUBJECT: SWAC MEMBER WELCOME AND PARTICIPATION PROCEDURES

Honorable Mayor Michael P. Victorino has approved your appointment to the Maui County Solid Waste Advisory Committee (SWAC) to assist the County in preparation of their Integrated Solid Waste Management Plan (ISWMP). The ISWMP will identify goals, measures and implementation methods for management of the County's solid waste over the next 10 years.

Responsibilities are anticipated to include:

- Attend ISWMP SWAC meetings virtually.
- Contribute ideas based on your respective knowledge and experience.
- Come prepared to each meeting ready to discuss your comments and suggestions.
- Recognize that all SWAC members are equals in the ISWMP update process.
- Actively listen and participate in meetings, respecting other members' contributions.
- Collaborate and be prepared to resolve differences.
- Assist with meeting efficiency by reviewing materials in advance.
- Be sensitive about sharing information with persons outside of SWAC.
- Follow standards of the Hawaii Sunshine Law (HRS Chapter 92).

The proposed schedule follows. All meetings will be by remote connection.

Maui County Solid Waste Advisory Committee Schedule – Proposed (Subject to Change)		
SWAC Workshops (Webex Meetings) (ISWMP Sections in Parentheses)	**Proposed Date**	
1. Kickoff Meeting	Tue	February 8, 2022 2pm to 4pm
2. Introduction and Background (1) Waste Stream (2)	Tue	March 8, 2022 2pm to 4pm
3. Household Hazardous Waste and Electronics (6) Special Wastes (7)	Tue	April 12, 2022 2pm to 4pm
4. Collection and Transfer (8) Residuals Management and Disposal (9)	Tue	May 10, 2022 2pm to 4pm
5. Source Reduction (3) Recycling, Bioconversion and Markets (4)	Tue	June 14, 2022 2pm to 4pm
6. Education and Outreach (5) Administration, Financing and Implementation (10)	Tue	July 12, 2022 2pm to 4pm
7. Draft Plan	Tue	August 9, 2022 2pm to 4pm
8. **Final Draft Plan**	Tue	September 13, 2022 2pm to 4pm
9. Public Hearing/Council Meeting	Tue	October 7, 2022 9am

Proposed participation procedures are as follows:

- A Meeting Agenda will be posted within 7 days of the scheduled meeting on the County website: https://mauicounty.gov/1017/Solid-Waste-Refuse-Services-and-Informat
- The County will email SWAC members meeting materials for review in advance of each meeting and post all information on the County website.
- Webex meeting invitations will be emailed a week ahead of the meeting date to SWAC participants. A link will be posted at the County website for public participation.
- SWAC members are requested to respond to the invitation prior to the meeting.
- SWAC members are requested to email written comments on the monthly topic to Elaine.Baker@mauicounty.gov no later than one week after the meeting date.

If you have questions, please email them to Elaine.Baker@mauicounty.gov.

SWAC Welcome - 2

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Appendix B
2009 ISWMP Recommendation Status

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Appendix B – Status of 2009 ISWMP Recommendations

During development of the 2009 ISWMP, five potential scenarios for developing the County's solid waste management system were considered as follows:

- **Scenario I –** Keeps operations as they are now with no changes. This is referred to as the Status Quo and is based on the full cost of capital and operations for fiscal year 2006.
- **Scenario II –** Uses the Status Quo numbers for FY 2006 and applies capital and operations costs of programs that drive diversion up to 60 percent. These programs included, but are not limited to, household hazardous waste collection, a materials recovery facility (MRF), construction and demolition (C&D) MRF, curbside green waste and recycling collection, and a new convenience/recycling center in the Hana regions, with landfill as the disposal point for the remaining 40 percent.
- **Scenario III –** Builds on Scenario 2 by adding a waste-to energy (WTE) facility that generates electricity for use and sale while still keeping the diversion rate at 60 percent.
- **Scenario IV –** Takes Scenario 3 and replaces the WTE facility with a gasification plant. It also placed the landfills on Lānaʻi and Molokaʻi on "Standby with Permit," meaning these landfills will maintain their solid waste permit but not regularly receive any municipal solid waste (MSW). They would be on standby to handle disaster debris and other emergencies.
- **Scenario V –** Take Scenario 4 and increases the diversion rate from 60 to 75 percent and eliminates an alternative disposal facility such as a WTE and gasification plant. A reuse facility is added to this scenario as are ordinances requiring diversion in the business sector community.

The cost for each scenario was developed using a financial model that produced comparable results. After reviewing these scenarios, the Solid Waste Resource Advisory Committee and Solid Waste Division staff selected Scenario III to develop into the 2009 ISWMP. The following Table provides the status of recommendations from the 2009 ISWMP.

Status of 2009 Integrated Solid Waste Management Plan Recommendations

Recommendations Scenario III – Implementation of Programs and Facilities to Drive Diversion to 60 percent	Status
Department of Environmental Management and Solid Waste Division **Additional Recommendations**	
Evaluate land needed for increased compost operations resulting from improved diversion programs.	Ongoing
Evaluate standby options for Lānaʻi and Molokaʻi landfills while maintaining and improving recycling collection and processing, including event-based collection of HHW.	Completed Evaluation
Specify the year 2013 to complete legislation for commercial recycling mandates.	Implemented Targeted Recycling Bans
Add from Scenario V the creation of mandates for recycling of commercially produced food waste.	Not Implemented
Add from Scenario V the enforcement component for commercial recycling.	Not Implemented
Scenario III - Recommended Facilities	
Centrally Located Solid Waste Campus on Maui to consolidate facilities and shorten communications and transportation links.	Ongoing
Single-Stream Materials Recovery Facility.	Private Sector Implementation
Solid Waste Fleet Maintenance Center.	Ongoing
Permanent Household Hazardous Waste Facility.	Ongoing
C&D Materials Recovery Facility.	Ongoing
Olowalu Transfer Station.	Implemented
Hana Transfer Station.	Ongoing
WasteTec Facility to convert residue from recycling and non-recyclable materials to energy.	Initiated
Scenario III - Program Implementation Recommendations	
Refuse collected once per week in a cart. Discontinue manual collection and have only automated and semi-automated collection	Not Implemented
Single-stream marketable recyclables collected once every other week in a cart.	Implemented/Discontinued in 2020
Yard and large green waste collection pilot using carts, paper bags, or bundled and/or called in by route drivers if within volume and size restrictions and collected every other week.	Not Implemented

Status of 2009 Integrated Solid Waste Management Plan Recommendations

Recommendations Scenario III – Implementation of Programs and Facilities to Drive Diversion to 60 percent	Status
Bulky collection on a call-in basis within ordinance limits.	Not Implemented
White goods collection, expanded to include all metals, on a call-in basis.	Implemented White Goods Collection
Establish a consolidated citizens' call center.	Not Implemented
Education and outreach programs to support program implementation.	Ongoing

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Appendix C
Related Sections FY2023 Council Adopted Budget

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4-Year Comparison: Special Revenue Funds Schedule by Sub-Fund (in Thousands)

Figure 4-5

MAJOR SOURCES	FY 2020 ACTUAL	FY 2021 ACTUAL	FY 2022 ADOPTED	FY 2023 ADOPTED	CHANGE AMOUNT	CHANGE PERCENT
BIKEWAY FUND:						
FROM TAXES, FEES AND ASSESSMENTS						
LICENSES & PERMITS	$72.8	$98.8	$0.0	$0.0	$0.0	n/a
FROM OTHER SOURCES						
CARRY-OVER SAVINGS	$151.3	$114.3	$0.0	$0.0	$0.0	n/a
INTERFUND TRANSFERS	$0.0	$127.8	$0.0	$0.0	$0.0	n/a
TOTAL BIKEWAY FUND	**$224.1**	**$340.9**	**$0.0**	**$0.0**	**$0.0**	**n/a**
EP&S FUND:						
FROM TAXES, FEES AND ASSESSMENTS						
CHARGES FOR CURRENT SERVICES	$6,100.1	$1,973.7	$2,154.1	$2,358.8	$204.7	9.5%
FROM OTHER SOURCES						
CARRY-OVER SAVINGS	$6,466.9	-$524.4	$898.1	-$1,279.9	-$2,177.9	-242.5%
INTERFUND TRANSFERS	$4,263.2	$1,973.6	$4,989.9	$9,127.9	$4,138.0	82.9%
TOTAL EP&S FUND	**$16,830.3**	**$3,423.0**	**$8,042.1**	**$10,206.9**	**$2,164.8**	**26.9%**
HIGHWAY FUND:						
FROM TAXES, FEES AND ASSESSMENTS						
CHARGES FOR CURRENT SERVICES	$2,400.0	$2,356.6	$2,400.0	$1,600.0	-$800.0	-33.3%
FUEL & FRANCHISE TAXES	$25,447.6	$20,833.3	$23,500.0	$22,980.0	-$520.0	-2.2%
LICENSES & PERMITS	$25,512.7	$26,655.3	$25,517.7	$26,020.0	$502.3	2.0%
MISCELLANEOUS	$0.0	$0.0	$0.0	$0.0	$0.0	n/a
SPECIAL ASSESSMENTS	$0.0	$0.0	$0.0	$0.0	$0.0	n/a
FROM OTHER SOURCES						
BOND/LAPSED BOND	$0.0	$0.0	$25,622.9	$30,850.0	$5,227.1	20.4%
CARRY-OVER SAVINGS	$13,055.7	$18,436.6	$1,574.1	$17,264.6	$15,690.5	996.8%
INTERFUND CHARGES	$1,144.2	$150.5	$415.0	$225.0	-$190.0	-45.8%
INTERFUND TRANSFERS	$0.0	$0.0	$0.0	$0.0	$0.0	n/a
TOTAL HIGHWAY FUND	**$67,560.1**	**$68,432.4**	**$79,029.7**	**$98,939.6**	**$19,909.9**	**25.2%**
LIQUOR FUND:						
FROM TAXES, FEES AND ASSESSMENTS						
LICENSES & PERMITS	$2,211.0	$2,692.3	$2,426.8	$2,539.8	$113.0	4.7%
FROM OTHER SOURCES						
CARRY-OVER SAVINGS	$1,038.8	$1,532.1	$674.2	$858.0	$183.8	27.3%
INTERFUND TRANSFERS	$0.0	$0.0	$0.0	$0.0	$0.0	n/a
TOTAL LIQUOR FUND	**$3,249.8**	**$4,224.5**	**$3,101.0**	**$3,397.7**	**$296.8**	**9.6%**
SOLID WASTE MANAGEMENT FUND:						
FROM TAXES, FEES AND ASSESSMENTS						
CHARGES FOR CURRENT SERVICES	$24,413.0	$22,101.9	$25,083.8	$24,200.0	-$883.8	-3.5%
MISCELLANEOUS	$8.5	$0.0	$0.0	$0.0	$0.0	n/a
OTHER INTERGOVERNMENTAL	$0.0	$0.0	$0.0	$0.0	$0.0	n/a
FROM OTHER SOURCES						
BOND/LAPSED BOND	$0.0	$0.0	$3,555.0	$17,070.0	$13,515.0	380.2%
CARRY-OVER SAVINGS	$880.1	$6,053.1	-$451.1	$5,320.3	$5,771.4	-1279.5%
INTERFUND TRANSFERS	$1,756.3	$8,755.6	$5,769.2	$5,325.7	-$443.4	-7.7%
TOTAL SOLID WASTE FUND	**$27,058.0**	**$36,910.5**	**$33,956.9**	**$51,916.1**	**$17,959.2**	**52.9%**
SEWER FUND:						
FROM TAXES, FEES AND ASSESSMENTS						
CHARGES FOR CURRENT SERVICES	$58,042.2	$51,550.1	$53,320.6	$61,630.7	$8,310.1	15.6%
MISCELLANEOUS	$362.2	$40.5	$40.8	$40.8	$0.0	n/a
OTHER INTERGOVERNMENTAL	$17,139.4	$5,892.9	$12,900.0	$14,500.0	$1,600.0	12.4%
SPECIAL ASSESSMENTS	$1,387.0	$120.6	$0.0	$0.0	$0.0	n/a
FROM OTHER SOURCES						
BOND/LAPSED BOND	$0.0	$0.0	$20,450.0	$16,400.0	-$4,050.0	-19.8%
CARRY-OVER SAVINGS	$9,573.3	$23,731.2	$5,521.3	$19,259.1	$13,737.8	248.8%
INTERFUND TRANSFERS	$0.0	$0.0	$0.0	$0.0	$0.0	n/a
TOTAL WASTEWATER FUND	**$86,504.1**	**$81,335.3**	**$92,232.7**	**$111,830.6**	**$19,597.9**	**21.2%**
TOTAL SPECIAL REVENUE FUNDS	**$201,426.4**	**$194,666.6**	**$216,362.4**	**$276,290.9**	**$59,928.5**	**27.7%**

Note: True sum may be different due to rounding.

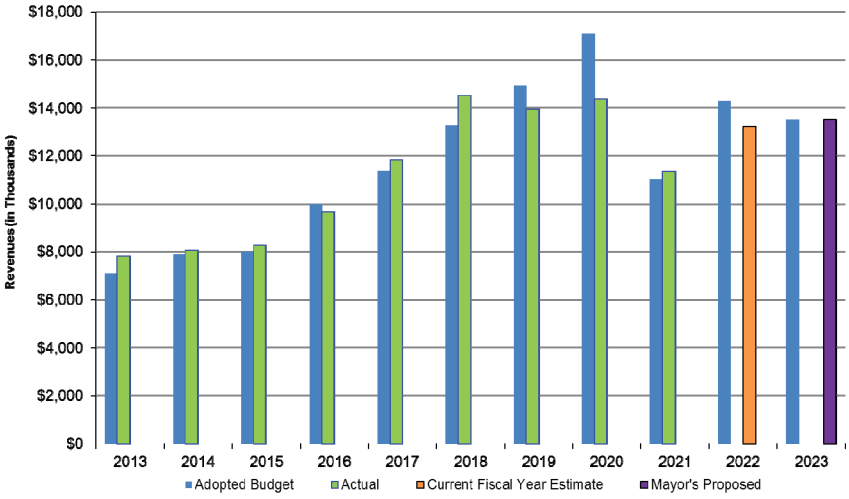
The $61.6 million in estimated revenues from sewer user fees for FY 2023 represents an increase of $8.3 million or 15.6 percent from FY 2022 Adopted Budget. The projected increase in sewer user fees' revenues is primarily due to the 3 percent rate hike. The sewer user fees will contribute to approximately 64.6 percent of the FY 2023 total Sewer Fund revenues and 6.7 percent of the total County Funds revenues.

Solid Waste Management Fund

The FY 2023 estimated revenues for the Solid Waste Management Fund are $34.8 million, an increase of $4.4 million or 14.6 percent from FY 2022 Adopted Budget. The Solid Waste Fund represents 3.8 percent of the total County Funds estimated revenues. Fees associated with landfill disposal and refuse collection are the major sources of revenues for this fund. For FY 2023, the Solid Waste Management Fund is projected to be non-self-sufficient and thereby, will be subsidized by the General Fund in the amount of $3.6 million.

Figure 4-25

Landfill Tipping and Permit Fees



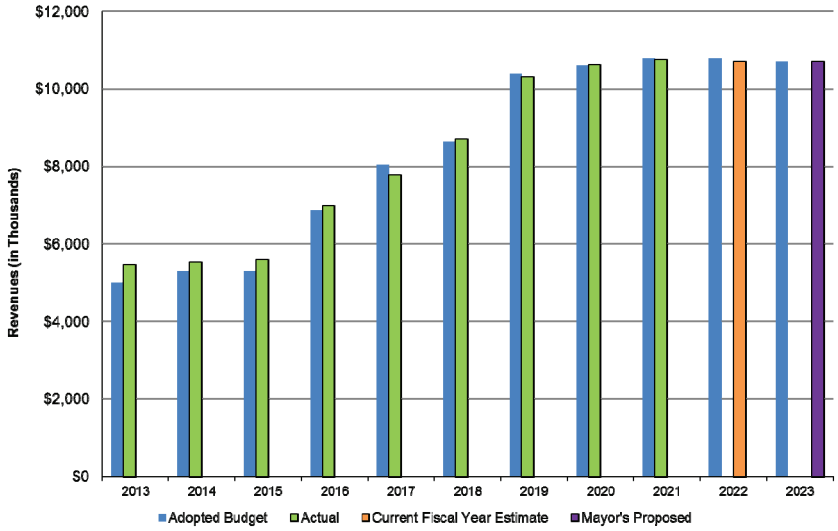
Landfill Disposal Fees

Landfill disposal fees (landfill tipping and permit fees) are collected as charges for current services. The FY 2023 estimated revenues of $13.5 million for landfill disposal fees, are a slight decrease by $0.8 million or 5.5 percent from the FY 2022 Adopted Budget. Despite the rate increase in landfill tipping fees from $104 to $106 per ton, this revenue stream is still projected to decrease, mainly due to less tonnage collection.

The FY 2023 estimated revenues for the landfill disposal fees represent 38.7 percent of the total Solid Waste Management Fund, or 1.5 percent of the total County Funds revenues.

Figure 4-26

Refuse Collection Fees



Refuse Collection Fees

Refuse collection fees are collected as charges for current services. This service is projected to generate $10.7 million in FY 2023 estimated revenues, a slight decrease of $100,000 or 0.9 percent from the FY 2022 Adopted Budget. The slight decrease in projected revenues from refuse collection fees in FY 2023 can be attributable to higher delinquent accounts.

4-Year Comparison: Operating Expenditures Schedule by Major Fund (in Thousands)

Figure 4-7

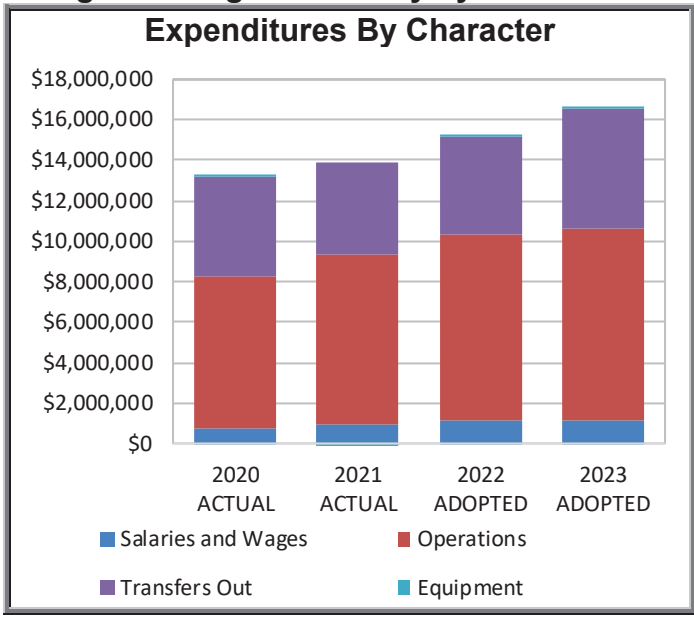
MAJOR USES	FY 2020 ACTUAL	FY 2021 ACTUAL	FY 2022 ADOPTED	FY 2023 ADOPTED	CHANGE AMOUNT	CHANGE PERCENT
GENERAL FUND						
OPERATING EXPENDITURES						
Culture and Recreation						
Parks and Recreation	$30,109.7	$29,881.1	$35,938.4	$38,614.7	$2,676.2	7.4%
General Government						
Agriculture	$0	$0	$0	$1,754.0	$1,754.0	n/a
Corporation Counsel	$3,991.2	$3,773.1	$4,287.5	$4,483.7	$196.2	4.6%
Environmental Management	$592.1	$620.4	$647.0	$647.0	$0.0	0.0%
Finance	$178,366.0	$181,523.2	$217,377.2	$268,405.6	$51,028.5	23.5%
Management	$12,477.0	$15,573.9	$15,314.4	$22,321.8	$7,007.4	45.8%
Office of the Mayor	$18,034.8	$19,322.7	$20,888.9	$29,053.7	$8,164.7	39.1%
Personnel Services	$1,538.6	$1,423.5	$1,889.4	$2,166.4	$277.0	14.7%
Planning	$6,762.4	$6,297.6	$6,961.7	$7,368.1	$406.5	5.8%
Public Works	$10,704.2	$9,974.5	$13,143.9	$14,932.0	$1,788.0	13.6%
Highways, Streets, and Transportation						
Transportation	$8,474.6	$7,018.2	$7,348.3	$12,157.0	$4,808.7	65.4%
Legislative						
County Clerk	$1,240.6	$1,091.4	$2,089.4	$2,156.2	$66.8	3.2%
County Council	$6,413.9	$7,262.8	$9,001.6	$10,075.2	$1,073.6	11.9%
Public Safety						
Emergency Management Agency	$664.3	$630.7	$1,112.4	$1,150.4	$38.0	3.4%
Fire and Public Safety	$40,785.5	$41,946.2	$45,597.0	$48,525.6	$2,928.6	6.4%
Police	$55,072.2	$58,214.4	$63,030.9	$68,262.0	$5,231.1	8.3%
Prosecuting Attorney	$6,505.3	$6,571.3	$8,018.6	$8,215.6	$197.0	2.5%
Sanitation						
Environmental Management	$0.0	$0.0	$0.0	$0.0	$0.0	n/a
Social Welfare						
Housing and Human Concerns	$23,851.8	$24,001.4	$28,906.6	$33,595.8	$4,689.2	16.2%
TOTAL GENERAL FUND	**$405,584.0**	**$415,126.3**	**$481,553.2**	**$573,884.7**	**$92,331.5**	**19.2%**
SPECIAL REVENUE FUNDS						
OPERATING EXPENDITURES						
Highways, Streets, and Transportation						
Public Works	$32,748.7	$27,679.3	$33,303.0	$44,201.3	$10,898.3	32.7%
Transportation	$14,505.0	$8,240.5	$7,873.3	$8,738.3	$865.0	11.0%
Sanitation						
Environmental Management	$83,863.2	$76,780.9	$84,556.7	$98,633.5	$14,076.8	16.6%
Social Welfare						
Liquor Control	$2,586.3	$2,199.0	$3,101.0	$3,397.7	$296.8	9.6%
TOTAL SPECIAL REVENUE FUNDS	**$133,703.2**	**$114,899.7**	**$128,834.0**	**$154,970.9**	**$26,136.9**	**20.3%**
ENTERPRISE FUNDS						
OPERATING EXPENDITURES						
Culture and Recreation						
Parks and Recreation	-$300.3	$0.0	$0.0	$0.0	$0.0	n/a
Water Supply						
Water Supply	$62,201.0	$61,628.7	$72,813.8	$77,048.1	$4,234.3	5.8%
TOTAL ENTERPRISE FUNDS	**$61,900.7**	**$61,628.7**	**$72,813.8**	**$77,048.1**	**$4,234.3**	**5.8%**
TOTAL COUNTY FUNDS	**$601,187.9**	**$591,654.7**	**$683,201.1**	**$805,903.8**	**$122,702.7**	**18.0%**

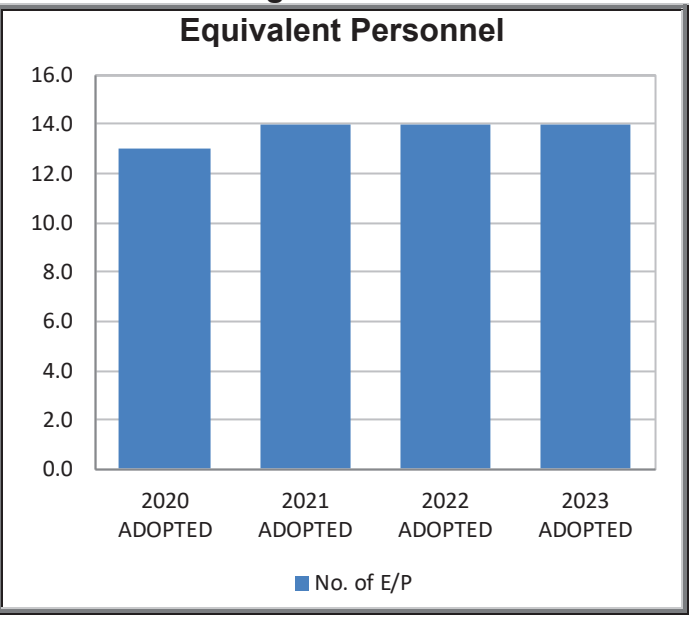
Note: True sum may be different due to rounding.

Section 11.3.1.1 Revenues

Solid Waste Administration Program

Program Budget Summary by Fiscal Year – Solid Waste Management Fund





Expenditures Summary by Character & Object – Solid Waste Management Fund

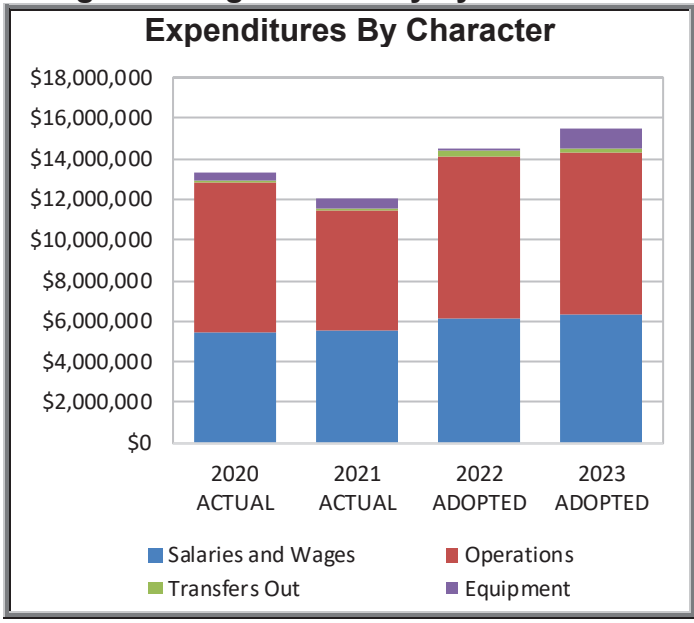
CHARACTER/ OBJECT DESCRIPTION	2020 ACTUAL	2021 ACTUAL	2022 ADOPTED	2023 ADOPTED	CHANGE AMOUNT	CHANGE PERCENT
Salaries and Wages						
OTHER PREMIUM PAY	$76,815	$80,187	$52,500	$106,925	$54,425	103.7%
WAGES & SALARIES	$695,411	$903,508	$1,099,066	$1,088,506	-$10,560	-1.0%
Salaries and Wages Total	**$772,226**	**$983,696**	**$1,151,566**	**$1,195,431**	**$43,865**	**3.8%**
Operations						
MATERIALS & SUPPLIES	$25,567	$19,589	$19,816	$19,816	$0	0.0%
OTHER COSTS	$220,671	$216,616	$261,565	$261,565	$0	0.0%
SERVICES	$14,803	$23,684	$18,500	$18,500	$0	0.0%
TRAVEL	$3,755	$1,316	$6,041	$6,041	$0	0.0%
UTILITIES	$5,098	$7,673	$2,850	$2,850	$0	0.0%
INTERFUND COST RECLASSIFICATION	$7,199,197	$8,094,911	$8,857,318	$9,109,703	$252,385	2.8%
Operations Total	**$7,469,090**	**$8,363,788**	**$9,166,090**	**$9,418,475**	**$252,385**	**2.8%**
Transfers Out						
GENERAL FUND	$4,970,006	$4,515,838	$4,870,899	$5,957,882	$1,086,983	**22.3%**
Transfers Out Total	**$4,970,006**	**$4,515,838**	**$4,870,899**	**$5,957,882**	**$1,086,983**	**22.3%**
Equipment						
LEASE PURCHASES	$13,632	-$4,968	$9,530	$9,530	$0	0.0%
MACHINERY & EQUIPMENT	$19,032	$0	$12,000	$0	-$12,000	-100.0%
Equipment Total	**$32,664**	**-$4,968**	**$21,530**	**$9,530**	**-$12,000**	**-55.7%**
Program Total	**$13,243,986**	**$13,858,353**	**$15,210,085**	**$16,581,318**	**$1,371,233**	**9.0%**

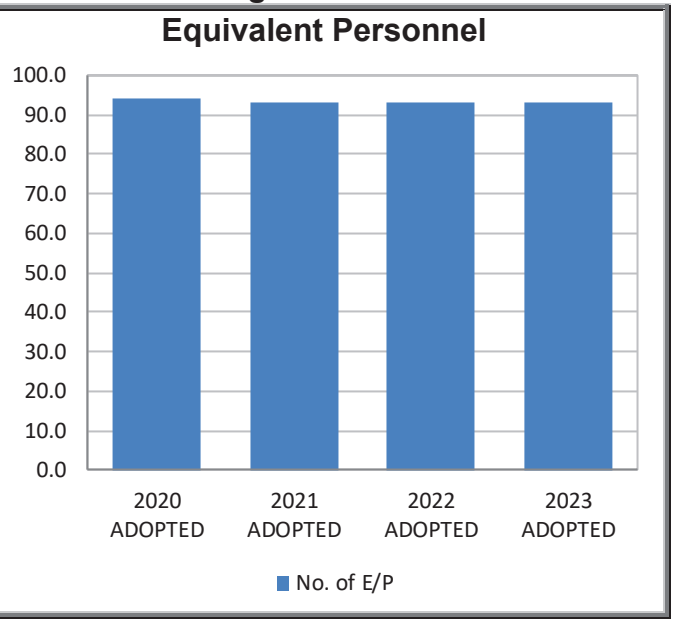
**Note: Expenditures include fringe benefits, overhead, and debt service costs.

Table 11-1 SWM Fund - Administration Program

Solid Waste Operations Program

Program Budget Summary by Fiscal Year – Solid Waste Management Fund





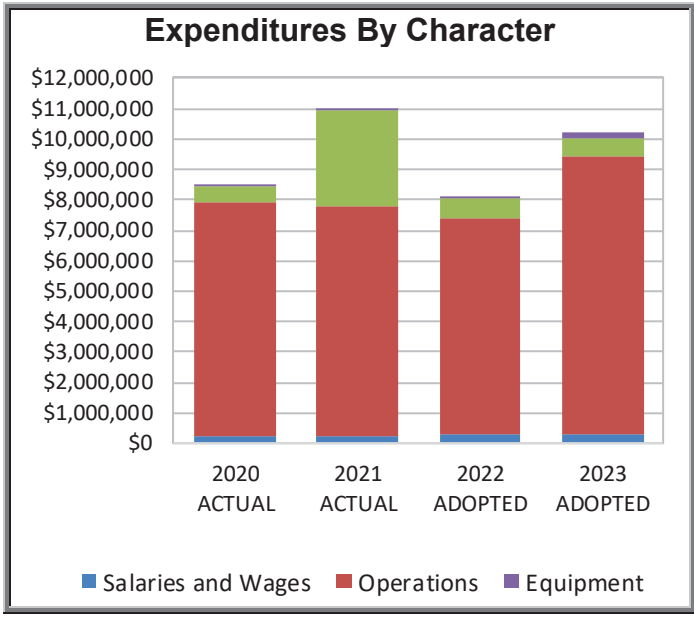
Expenditures Summary by Character & Object – Solid Waste Management Fund

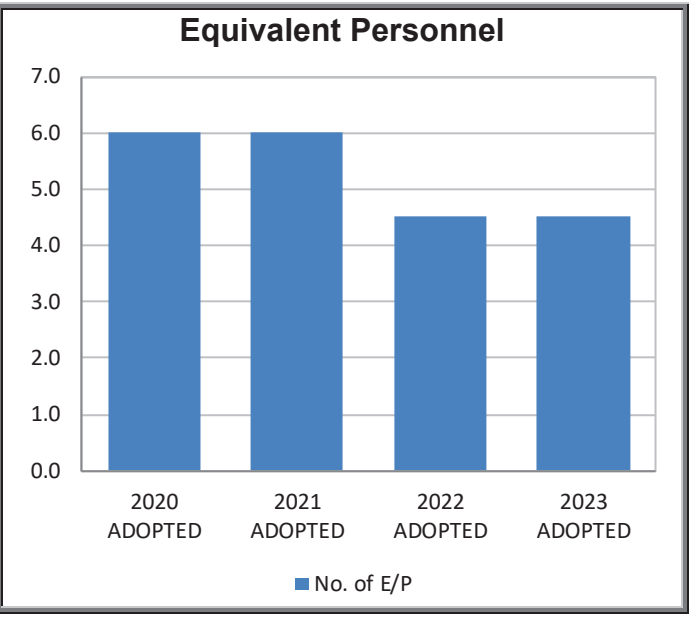
CHARACTER/ OBJECT DESCRIPTION	2020 ACTUAL	2021 ACTUAL	2022 ADOPTED	2023 ADOPTED	CHANGE AMOUNT	CHANGE PERCENT
Salaries and Wages						
OTHER PREMIUM PAY	$836,468	$712,527	$791,412	$1,057,237	$265,825	33.6%
WAGES & SALARIES	$4,599,381	$4,783,044	$5,341,872	$5,316,492	-$25,380	-0.5%
Salaries and Wages Total	**$5,435,849**	**$5,495,572**	**$6,133,284**	**$6,373,729**	**$240,445**	**3.9%**
Operations						
MATERIALS & SUPPLIES	$1,525,039	$1,601,307	$1,982,734	$1,982,734	$0	0.0%
OTHER COSTS	$2,344,570	$1,867,928	$2,626,725	$2,626,725	$0	0.0%
SERVICES	$3,336,786	$2,382,693	$3,187,629	$3,187,629	$0	0.0%
TRAVEL	$45,138	$18,454	$25,755	$25,755	$0	0.0%
UTILITIES	$108,639	$91,733	$121,831	$121,831	$0	0.0%
Operations Total	**$7,360,172**	**$5,962,116**	**$7,944,674**	**$7,944,674**	**$0**	**0.0%**
Countywide Expenditures						
OTHER COSTS	$28,797	$0	$0	$0	$0	0.0%
Transfers Out Total	**$28,797**	**$0**	**$0**	**$0**	**$0**	**0.0%**
Transfers Out						
OTHER GOVERNMENTAL FUNDS	$0	$75,548	$0	$100,000	$100,000	0.0%
SPECIAL REVENUE FUNDS	$188,525	$0	$340,000	$50,000	-$290,000	-85.3%
Transfers Out Total	**$188,525**	**$75,548**	**$340,000**	**$150,000**	**-$190,000**	**-55.9%**
Equipment						
LEASE PURCHASES	$1,357	$3,380	$3,860	$3,860	$0	0.0%
MACHINERY & EQUIPMENT	$316,668	$523,121	$0	$1,042,500	$1,042,500	0.0%
Equipment Total	**$318,024**	**$526,501**	**$3,860**	**$1,046,360**	**$1,042,500**	**27007.8%**
Program Total	**$13,331,368**	**$12,059,736**	**$14,421,818**	**$15,514,763**	**$1,092,945**	**7.6%**

Table 11-1 SWM Fund - Operations Program

Environmental Protection and Sustainability Program

Program Budget Summary by Fiscal Year – Environmental Protection and Sustainability Fund





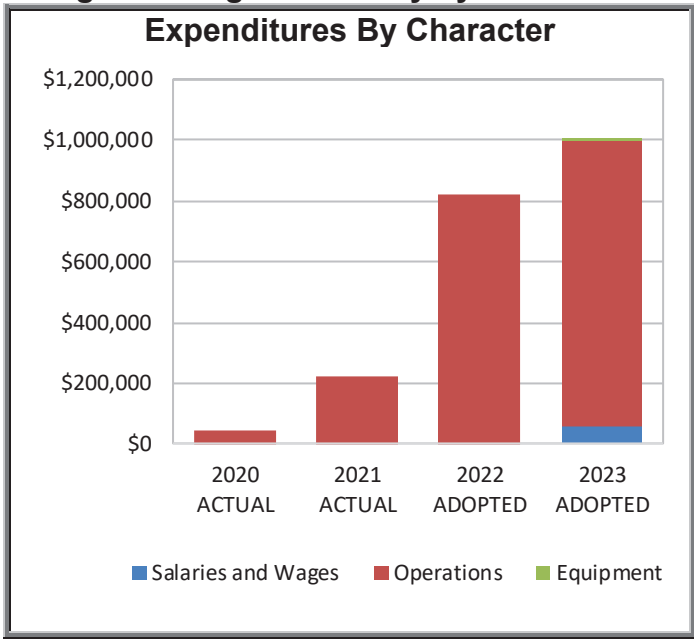
Expenditure Summary by Character & Object – Environmental Protection and Sustainability Fund

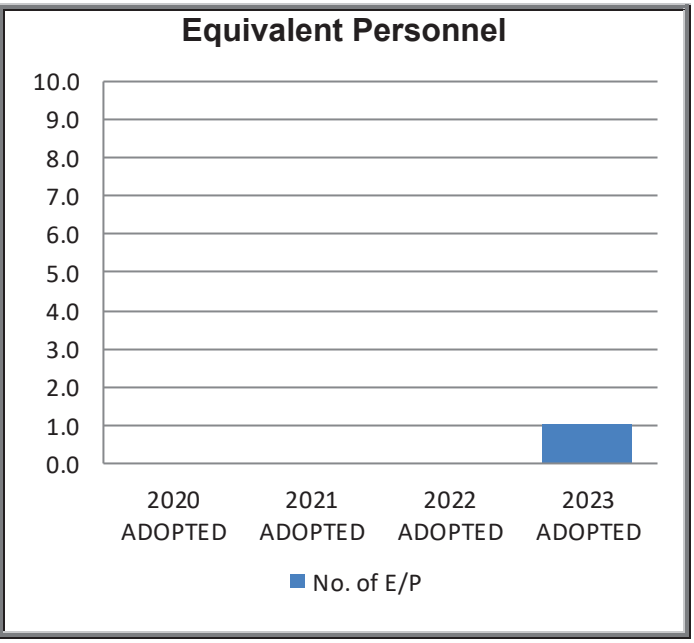
CHARACTER/ OBJECT DESCRIPTION	2020 ACTUAL	2021 ACTUAL	2022 ADOPTED	2023 ADOPTED	CHANGE AMOUNT	CHANGE PERCENT
Salaries and Wages						
OTHER PREMIUM PAY	$23,364	$8,668	$11,787	$24,828	$13,041	110.6%
WAGES & SALARIES	$176,370	$189,545	$265,878	$260,814	-$5,064	-1.9%
Salaries and Wages Total	**$199,733**	**$198,213**	**$277,665**	**$285,642**	**$7,977**	**2.9%**
Operations						
MATERIALS & SUPPLIES	$29,765	$34,872	$64,813	$165,513	$100,700	155.4%
OTHER COSTS	$934,533	$1,078,737	$1,103,852	$1,439,352	$335,500	30.4%
SERVICES	$6,471,145	$6,222,880	$5,601,600	$7,196,307	$1,594,707	28.5%
TRAVEL	$3,854	$3,852	$4,858	$4,858	$0	0.0%
UTILITIES	$3,399	$3,959	$6,073	$4,072	-$2,001	-32.9%
INTERFUND COST RECLASSIFICATION	$252,765	$264,809	$354,023	$359,138	$5,115	1.4%
Operations Total	**$7,695,460**	**$7,609,109**	**$7,135,219**	**$9,169,240**	**$2,034,021**	**28.5%**
Transfer Out						
OTHER GOVERNMENTAL FUNDS	$0	$3,127,217	$0	$0	$0	0.0%
SPECIAL REVENUE FUNDS	$568,620	$0	$627,217	$600,000	-$27,217	-4.3%
Equipment Total	**$568,620**	**$3,127,217**	**$627,217**	**$600,000**	**-$27,217**	**-4.3%**
Equipment						
LEASE PURCHASES	$1,119	$1,119	$2,000	$2,000	$0	0.0%
MACHINERY & EQUIPMENT	$0	$3,024	$0	$150,000	$150,000	0.0%
Equipment Total	**$1,119**	**$4,142**	**$2,000**	**$152,000**	**$150,000**	**7500.0%**
Program Total	**$8,464,932**	**$10,938,681**	**$8,042,101**	**$10,206,882**	**$2,164,781**	**26.9%**

Table 11-1 EP&S Fund

Environmental Protection and Sustainability Program

Program Budget Summary by Fiscal Year – Grant Revenue Fund





Expenditure Summary by Character & Object – Grant Revenue Fund

CHARACTER/ OBJECT DESCRIPTION	2020 ACTUAL	2021 ACTUAL	2022 ADOPTED	2023 ADOPTED	CHANGE AMOUNT	CHANGE PERCENT
Salaries and Wages						
OTHER PREMIUM PAY	$0	$0	$0	$8,485	$8,485	0.0%
WAGES & SALARIES	$0	$0	$0	$53,064	$53,064	0.0%
Salaries and Wages Total	**$0**	**$0**	**$0**	**$61,549**	**$61,549**	**0.0%**
Operations						
OTHER COSTS	-$115,390	$124,800	$420,000	$495,000	$75,000	17.9%
SERVICES	$0	$146,983	$0	$0	$0	0.0%
SPECIAL PROJECTS	$160,000	-$47,983	$400,000	$400,000	$0	0.0%
TRAVEL	$0	$0	$0	$8,500	$8,500	0.0%
INTERFUND COST RECLASSIFICATION	$0	$0	$0	$35,319	$35,319	0.0%
Operations Total	**$44,610**	**$223,800**	**$820,000**	**$938,819**	**$118,819**	**14.5%**
Equipment						
MACHINERY & EQUIPMENT	$0	$0	$0	$7,500	$7,500	0.0%
Equipment Total	**$0**	**$0**	**$0**	**$7,500**	**$7,500**	**0.0%**
Program Total	**$44,610**	**$223,800**	**$820,000**	**$1,007,868**	**$187,868**	**22.9%**

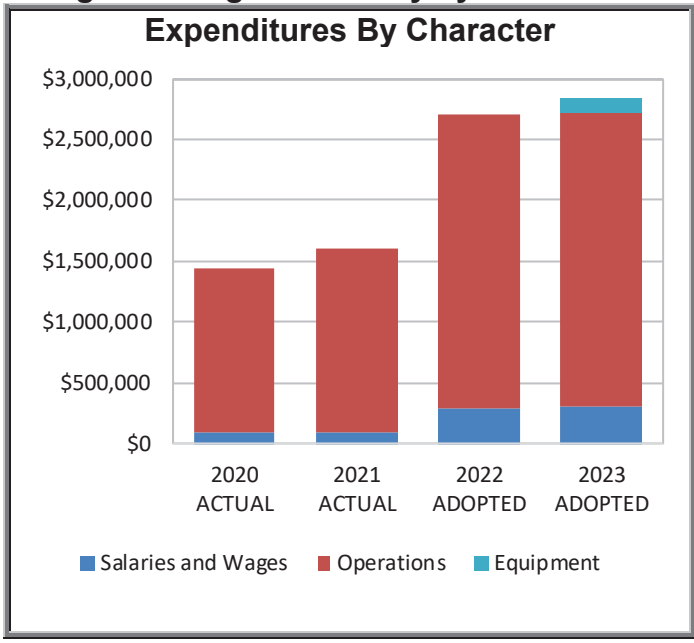
Table 11-1 EP&S Grant Revenue Fund

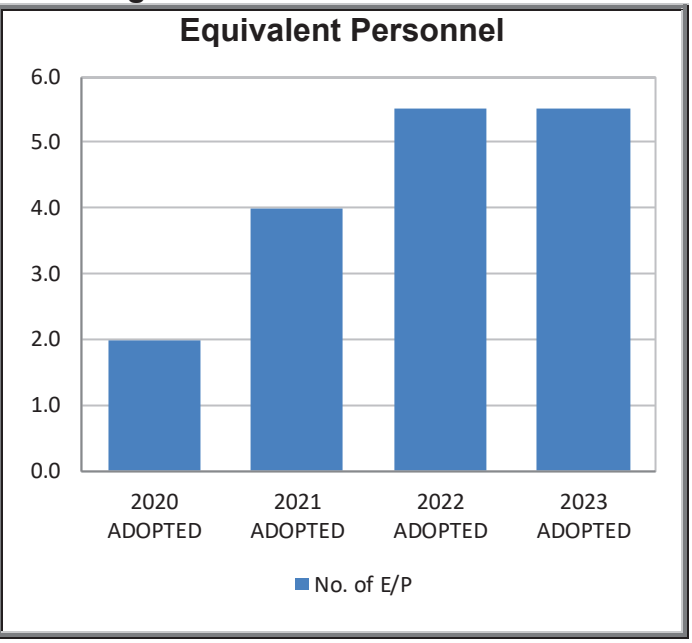
Equivalent Personnel Summary by Position Title – Grant Revenue Fund

POSITION TITLE	2020 ADOPTED	2021 ADOPTED	2022 ADOPTED	2023 ADOPTED	CHANGE AMOUNT	CHANGE PERCENT
Environmental Program Specialist I	0.0	0.0	0.0	1.0	1.0	0.0%
Program Total	**0.0**	**0.0**	**0.0**	**1.0**	**1.0**	**0.0%**

Environmental Protection and Sustainability Program

Program Budget Summary by Fiscal Year – Revolving Fund





Expenditure Summary by Character & Object – Revolving Fund

CHARACTER/ OBJECT DESCRIPTION	2020 ACTUAL	2021 ACTUAL	2022 ADOPTED	2023 ADOPTED	CHANGE AMOUNT	CHANGE PERCENT
Salaries and Wages						
OTHER PREMIUM PAY	$3,348	$400	$11,600	$25,347	$13,747	118.5%
WAGES & SALARIES	$94,012	$85,523	$277,146	$274,926	-$2,220	-0.8%
Salaries and Wages Total	**$97,360**	**$85,923**	**$288,746**	**$300,273**	**$11,527**	**4.0%**
Operations						
MATERIALS & SUPPLIES	$13,119	$2,462	$18,800	$18,800	$0	0.0%
OTHER COSTS	$216,051	$229,087	$287,500	$297,500	$10,000	3.5%
SERVICES	$1,104,644	$1,287,116	$2,104,907	$2,104,907	$0	0.0%
TRAVEL	$1,096	$0	$2,100	$2,100	$0	0.0%
UTILITIES	$1,904	$1,565	$3,628	$3,628	$0	0.0%
Operations Total	**$1,336,813**	**$1,520,230**	**$2,416,935**	**$2,426,935**	**$10,000**	**0.4%**
Equipment						
MACHINERY & EQUIPMENT	$0	$0	$0	$115,000	$115,000	0.0%
Equipment Total	**$0**	**$0**	**$0**	**$115,000**	**$115,000**	**0.0%**
Program Total	**$1,434,173**	**$1,606,154**	**$2,705,681**	**$2,842,208**	**$136,527**	**5.0%**

Table 11-1 EP&S Revolving Fund

Equivalent Personnel Summary by Position Title – Revolving Fund

POSITION TITLE	2020 ADOPTED	2021 ADOPTED	2022 ADOPTED	2023 ADOPTED	CHANGE AMOUNT	CHANGE PERCENT
Account Clerk III	0.0	0.0	0.5	0.5	0.0	0.0%
Recycling Program Assistant	1.0	3.0	3.0	3.0	0.0	0.0%
Recycling Specialist III	0.0	0.0	1.0	1.0	0.0	0.0%
Recycling Specialist V	1.0	1.0	1.0	1.0	0.0	0.0%
Program Total	**2.0**	**4.0**	**5.5**	**5.5**	**0.0**	**0.0%**

PROJECT DETAIL BY DEPARTMENT

					$ in 1000's		
					Fiscal Year		
District	Project Type	CBS No	Project Name	Fund	2023	2024-2028	6-Yr Total
Countywide	Sanitation	CBS-3182	Environmental Compliance System Design and Construction	SW	500	2,500	3,000
	Sewer	CBS-1119	Countywide Environmental Protection Agency (EPA) Compliance Wastewater Reclamation Facility Renovation Projects	WF	4,000	8,000	12,000
		CBS-1128	Countywide Wastewater System Modifications	WF	1,500	5,000	6,500
		CBS-1132	Countywide Environmental Protection Agency (EPA) Compliance Projects	WF	1,500	3,000	4,500
Kihei-Makena		CBS-3199	Kihei Wastewater Pump Station No. 4 Modification/Upgrade	WF	200	2,000	2,200
		CBS-3563	Kihei No. 3 Force Main Replacement	GB	4,800	0	4,800
		CBS-5026	Kihei Wastewater Reclamation Facility Grit System Replacement	GB	4,000	0	4,000
		CBS-5520	Kihei Land Application System	WF	1,500	0	1,500
		CBS-5521	North Kihei Reuse Distribution Expansion	OG	600	0	600
				SRF	0	4,000	4,000
				WF	400	0	400
		CBS-7246	North Kihei R-1 Line Replacement	WF	1,900	0	1,900
		CBS-7247	Kihei Laboratory Building Replacement	WF	1,000	0	1,000
		CBS-7264	Maalaea Regional Wastewater System	SRF	9,500	0	9,500
Lanai	Sanitation	CBS-7238	Lanai Landfill Groundwater Monitoring Exemption	SW	250	0	250
	Sewer	CBS-7250	Lanai Wastewater Treatment Pond Renovations	WF	2,000	0	2,000
Paia-Haiku		CBS-3207	Paia Wastewater Pump Station Modifications	WF	150	1,500	1,650
		CBS-4588	Sprecklesville Force Main Replacement	GB	3,600	0	3,600
Wailuku-Kahului	Sanitation	CBS-2721	CML Operations Facilities	GB	0	5,000	5,000
				SW	250	350	600
		CBS-3567	Central Maui Landfill Land Purchase	GB	0	500	500
				SW	150	0	150

					$ in 1000's		
					Fiscal Year		
District	Project Type	CBS No	Project Name	Fund	2023	2024-2028	6-Yr Total
		CBS-6634	CML Ph II/III Interface Development	GB	700	3,500	4,200
		CBS-6635	CML Ph III-B Lateral Expansion	GB	10,000	0	10,000
		CBS-6639	Central Maui Landfill Gas Collection System Reliability	GB	2,000	0	2,000
		CBS-6640	Central Maui Landfill Comprehensive EIS	SW	500	1,200	1,700
		CBS-7252	Interim County of Maui Greenwaste and Biosolids Management	SW	1,100	0	1,100
	Sewer	CBS-1131	Wailuku-Kahului Environmental Protection Agency (EPA) Compliance Sewer Rehabilitation	WF	1,000	5,000	6,000
		CBS-2323	Wailuku Wastewater Pump Station Modifications	GB	0	8,000	8,000
				WF	500	1,500	2,000
		CBS-3204	Upper Waiko Road Sewer Extension	WF	150	2,000	2,150
		CBS-5526	Waiehu Kou Wastewater Pump Station Modifications	WF	200	2,000	2,200
		CBS-6083	Waikapu/Wailuku Diversion Pump Station and Force Main	GB	0	9,000	9,000
				WF	1,000	1,000	2,000
		CBS-6084	Waikapu/Wailuku Diversion Gravity Sewer	GB	0	14,000	14,000
				WF	1,000	0	1,000
West Maui		CBS-1124	West Maui Recycled Water System Expansion	OG	1,080	0	1,080
				SRF	5,000	0	5,000
		CBS-1167	Napili No. 1 Force Main Replacement	GB	0	3,700	3,700
				WF	400	0	400
		CBS-1174	Napili No. 4 Force Main Replacement	WF	500	0	500
		CBS-1178	Napili Wastewater Pump Station No. 2 Modifications	GB	4,000	0	4,000
		CBS-1179	Napili Wastewater Pump Station No. 3 Modifications	WF	230	0	230
		CBS-1180	Napili Wastewater Pump Station No. 4 Modifications	WF	370	0	370
		CBS-1968	Honoapiilani Highway Recycled Water Lateral Installation	WF	800	0	800
		CBS-3572	Lahaina Wastewater Reclamation Facility Concrete Rehabilitation	WF	500	0	500

Appendix D
Comments Received and Responses

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State of Hawai'i Department of Health Response to Comments (Dated April 11, 2024)			
Comment Number	**Plan Section #/Title**	**Comment**	**County of Maui Response**
1	Section 3.1.1 Source Reduction and Reuse	Please note that the 342G hierarchy differs from the U.S Environmental Protection Agency's (EPA's) in that it does not include energy recovery.	Comment noted. EPA Energy Recovery includes incineration which is also part of HRS 342G waste hierarchy. No change to Plan.
2	Section 3.1.1.1 Deposit Beverage Container Program	Please note that the Deposit Beverage Container (DBC) Program is a recycling and not a reuse program.	The title has been updated to include "Material Recycling" as opposed to "Material Reuse".
3	Section 3.1.1.1 Hawaii Electronic Waste and Television Recycling and Recovery	Please note that the E-Waste program is a recycling program and not a reuse program.	The title has been updated to include "Material Recycling" as opposed to "Source Reduction".
4	Section 3.1.1.1 2022 HB1640 HD2 SD1 CD1 amends 339D-4	For simplicity the measure that amended HRS Ch. 339D can be referred to as Act 151 (2022). We also not that in addition to the changes noted Act 151 also requires the electronics manufacturers to fund the collection and recycling of the used devices.	This section was updated to reflect the following: "In 2022, amendments were added as Act 151 (2022), which were transmitted to the Governor on May 4, 2022, and became effective July 1, 2022. The 2022 amendments establish electronic device manufacturer recycling goals, record keeping and reporting requirements for manufacturers and collections, require collectors to register with the Department of Health, and require manufacturers to fund the collection and recycling of used devices."
5	Section 4.2.1 State of Hawaii Recycling Programs	The Department also administers the Glass Advance Disposal Fee Program. Under which we contract with the County of Maui to support the collection and recycling of non-DBC glass containers.	Section 4.2.1.2, "Glass Advance Disposal Fee Program", was added to include mention of this program.

State of Hawai'i Department of Health Response to Comments (Dated April 11, 2024)			
Comment Number	**Plan Section #/Title**	**Comment**	**County of Maui Response**
6	Section 4.2.1.1 HI-5 Beverage Container Program	We note that most Certified Redemption Centers are privately owned and operated. The Department does directly contract for CRC services on Lanai. We also provide financial support for seven CRCs on Hawaii island through a contract with the County of Hawaii. We also note that all CRCs are required to accept aluminum, glass and plastic deposit containers (for which a deposit has been paid) for redemption.	Section 4.2.1.1 was updated to reflect the following: "Certified Redemption Centers (CRCs), typically privately-owned and -operated (the DOH contracts CRC services on Lāna'i), independently handle aluminum, glass, and plastic deposit containers for redemption and recycling statewide."
7	Section 4.2.1.2 E-Waste Collection Program	We suggest providing links to either the County of Maui's or Department of Health's (DOH's) E-Waste Recycling webpages (https://health.hawaii.gov/shwb/) for information on drop-off locations rather than the links to the legislation.	Section 4.2.1.3 was updated to include a link to the DOH and County e-waste websites.
8	Section 4.4.4 Continue to Conduct Waste Composition Studies	The Department has been awarded an EPA Solid Waste Infrastructure for Recycling Grant that will be used to conduct a statewide waste characterization study and report. The Central Maui Landfill, Hana Landfill, and Molokai-Naiwa Landfill are to be included in the study.	Comment noted. No change to Plan.
9	Section 4.4.5 Reinstate the Green Waste Compost Program	The Department strongly supports the development of the Organics Management Plan.	Comment noted. No change to Plan.
10	Section 5.3.2 Non-County Outreach and Promotions Programs	We suggest inserting weblinks for all the programs and organizations listed in this section.	Weblinks have been added.

State of Hawai'i Department of Health Response to Comments (Dated April 11, 2024)			
Comment Number	**Plan Section #/Title**	**Comment**	**County of Maui Response**
11	Section 5.6.1.1 Refresh Educational Materials and Seek to Harmonize Messaging	Preventing food waste bullet item: We note that while we don't currently have a program focused on food waste it will be covered as part of the "organics" discussion in our currently ongoing ISWM revision process.	Comment noted. No change to Plan.
12	Section 6.1.1 HHW Regulations	More information is available on the DOH's Hazardous Waste Section home page: https://health.hawaii.gov/shwb/hazwaste/	A weblink has been added.
13	Section 6.1.2 E-Waste Regulations	Act 151 (2022) made significant changes to HRS Ch. 339D, amongst which it eliminated "covered electronic device" and "covered television" definitions and created a new "Electronic Device" definition which encompasses the two now obsolete definitions.	Comment noted. Sections 3.1.1.1, 4.2.1.3, and 6.1.2 have been updated.
14	Section 6.2.1 HHW Collection Events	Are the State grants for HHW collections still active? We are not aware of an active grant program.	Comment noted. Language removed.
15	Section 7.3.2 Current Practice	The link to the junk vehicle information page should be updated.	Comment noted. Link and program information have been updated.
16	Section 7.13 Lead Acid Batteries	We strongly recommend that Li-ion batteries, photovoltaic solar panels and water heating solar panels also be addressed in the plan because of their increasing incidence in the waste stream and the extreme hazard that waste Li-ion batteries pose.	Comment noted. Materials referenced in this comment are addressed in Sections 6.4.2 and 6.5.

Response to Public Comments (Dated July 8, 2024)		
Comment Number	**Comment**	**County of Maui Response**
Resolution 24-118 Comments		
1	County Council urges the Solid Waste Advisory Committee to incorporate developing County food-waste composting facilities into the Integrated Solid Waste Management Plan.	Section 4.5 includes a recommendation (RBM2) to focus additional recycling and diversion efforts on organic waste (green and food waste). This recommendation was designated as a high priority. The ISWMP also includes *Section 4.2.4 – Bioconversion*, which discusses current food waste composting programs and facilities and evaluation opportunities for new technologies and methodologies.
2	County Council urges the Solid Waste Advisory Committee to advocate for State legislation to permit and facilitate development of County composting facilities.	