

Tribal Solid Waste: Waste Characterizations

Earth Day Presentation
2017

Tribal Solid Waste Team

What Do We Do?

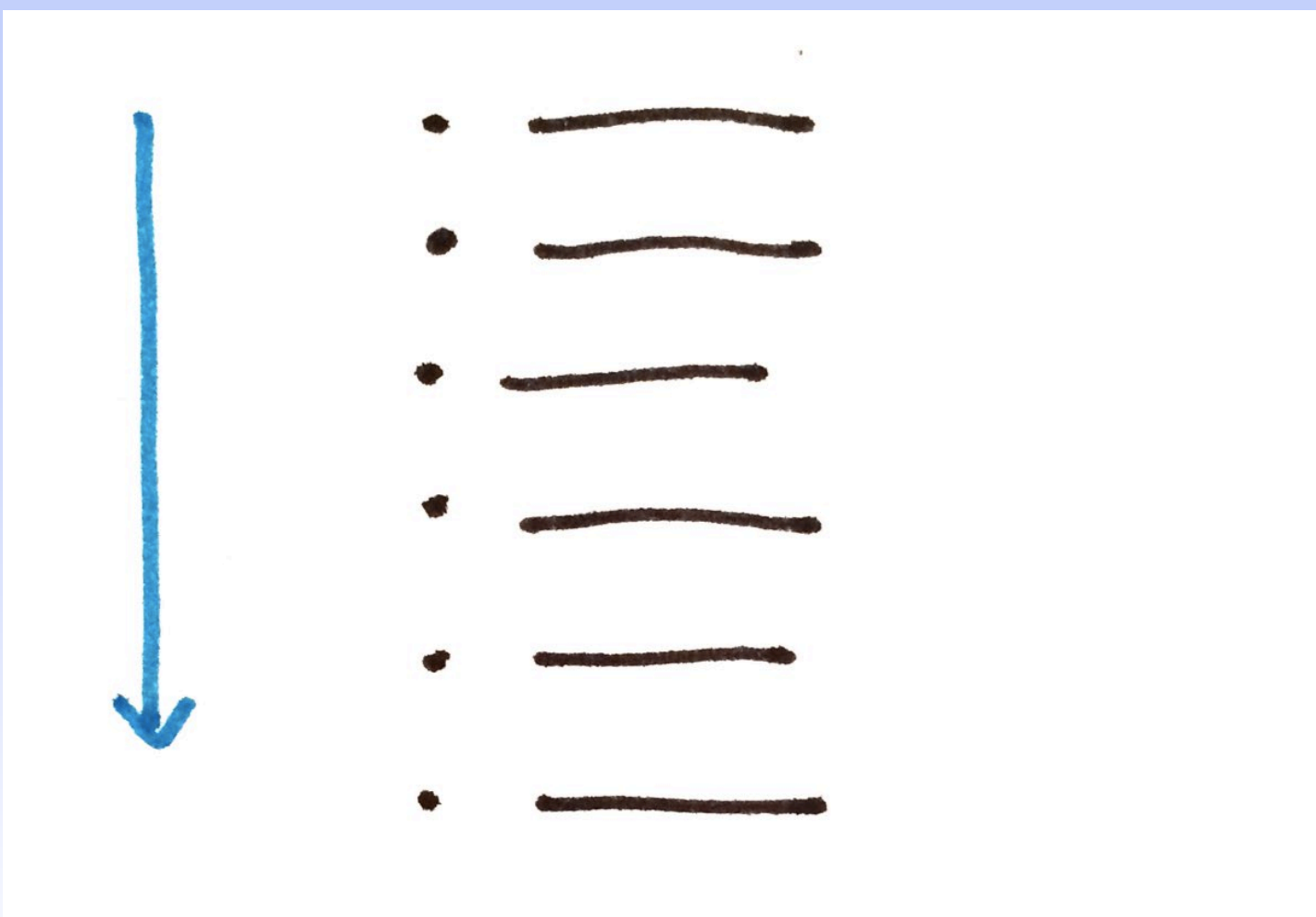


ISWMP



A complete IWMP includes descriptions of:

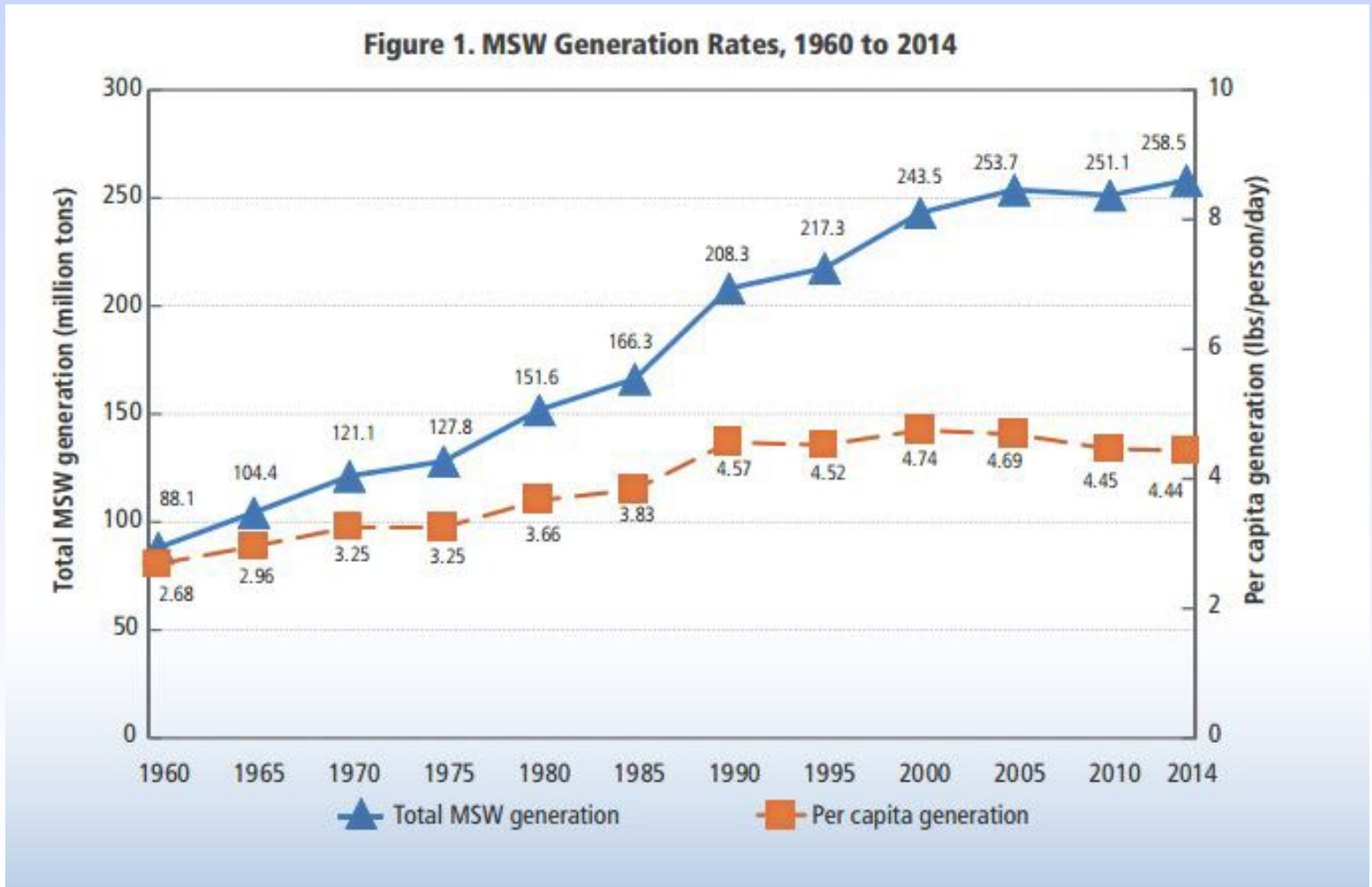
- Community service area
- Tribe's solid waste program structure and administration
- Tribe's current and proposed waste management practices
- Description of the funding, sustainability, and the long-term goals of the Tribe's solid waste program.
- Demonstration of approval of the plan by appropriate tribal council or governing body.



We think Solid Waste is important

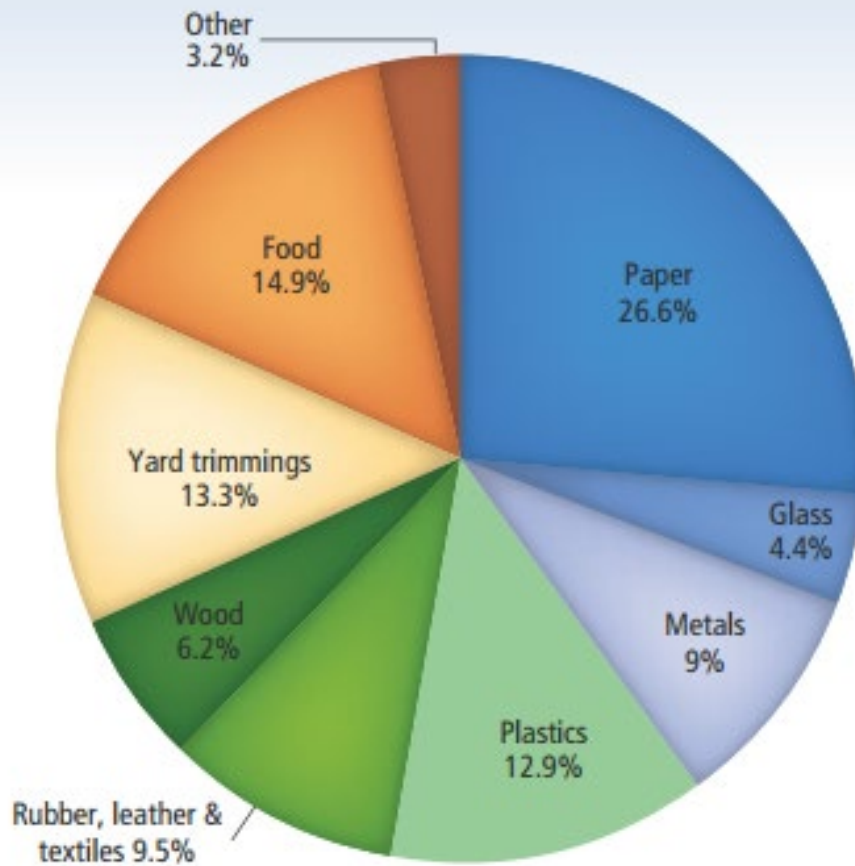
... but not everyone else does

Municipal Solid Waste (MSW) Generation Rates, 1960 to 2014



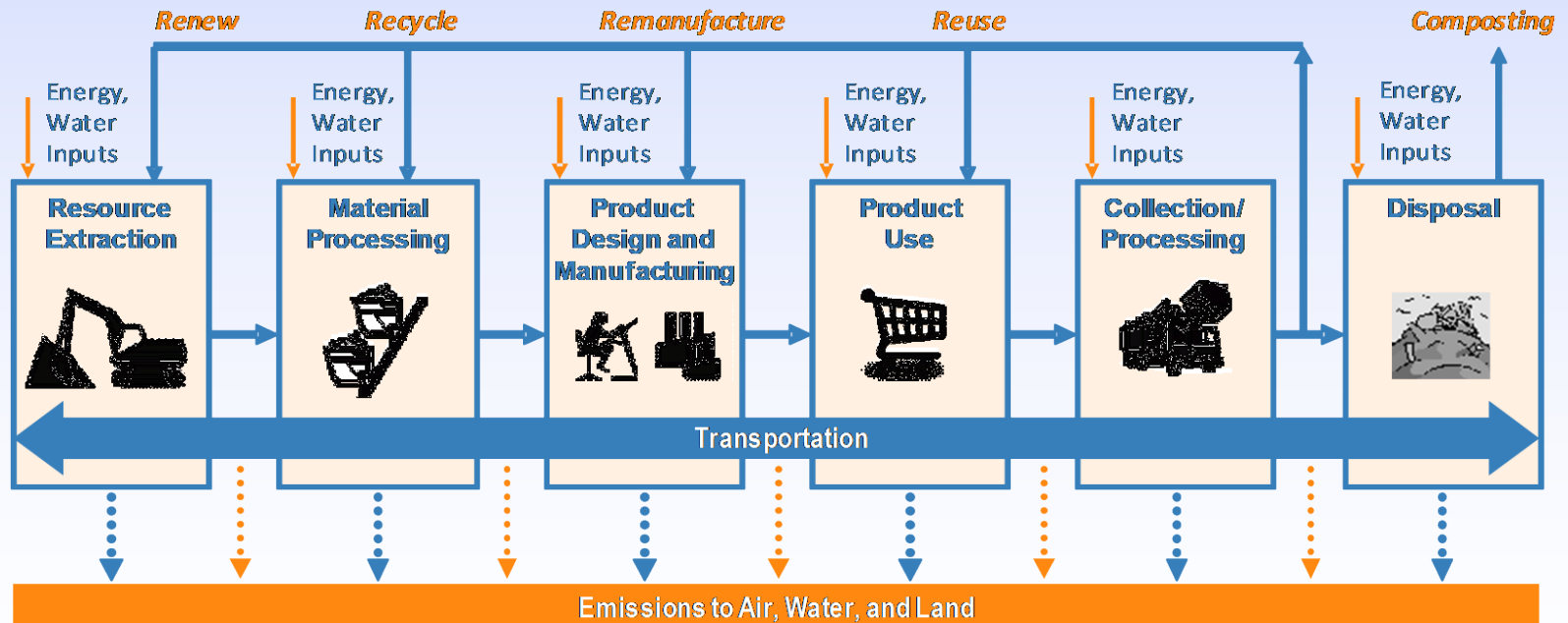
MSW Generation by Material (2014)

Figure 5. Total MSW Generation (by material), 2014
258 Million Tons

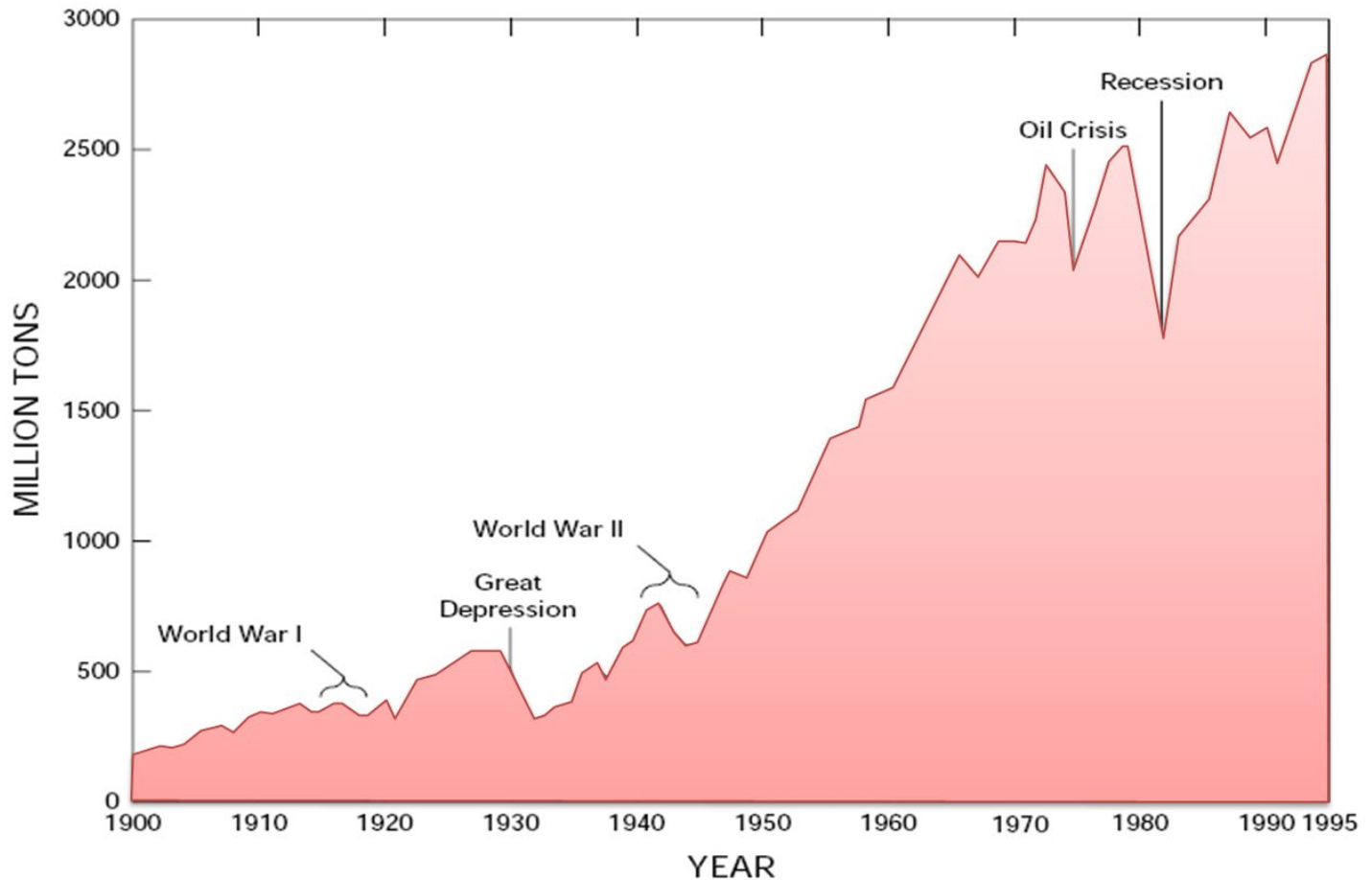


The Energy & Climate Connection to MSW

- Products that enter the waste stream have energy impacts and associated GHG emissions at each stage of their life cycle.



Materials Use



Use of materials in the United States, 1900-1995. Modified from Matos and Wagner, 1998, p. 110.

Opportunities Reduce Greenhouse Gas Emissions

THE IMPACT

RECYCLING HELPS TO CREATE CLEANER LAND, AIR, AND WATER, AND BETTER HEALTH.

IN 2012, **NATIONALLY,** WE RECYCLED

AND COMPOSTED

87 MILLION TONS OF MSW.

ANNUALLY, THIS ELIMINATED MORE THAN **168 MILLION METRIC TONS** OF CO₂ EQUIVALENT EMISSIONS REDUCED WHICH IS,

COMPARABLE TO REMOVING THE **ANNUAL EMISSIONS**

FROM OVER **33 MILLION** PASSENGER VEHICLES.

Environmental Benefits of Recycling



- Recycling an aluminum beverage can saves enough energy to run a laptop for more than 5 hours
- Recycling a gallon plastic milk jug saves enough energy to power a ceiling fan for 4 hours
- Recycling a week's worth of newspapers saves enough energy to power a light bulb (CFL 60 W equivalent) for 505 hours
- Recycling a dozen paperboard cereal boxes saves enough energy to operate a clothes washer for 4 hours

*For more fun recycling benefits, visit

<http://www3.epa.gov/epawaste/consERVE/tools/warm/index.html>

Messaging Techniques



1000 years ago, the mighty warrior Genghis Kahn neglected to recycle his plastic Coke bottle. Today it finally decomposed.



Vector-Borne Diseases



CA Residential Breakdown

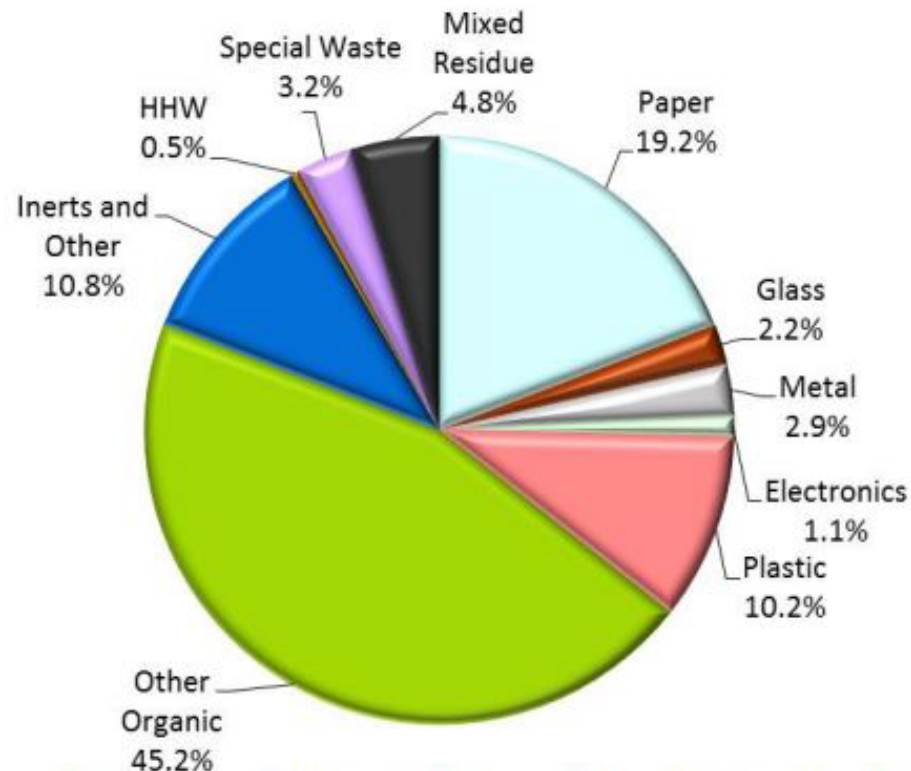
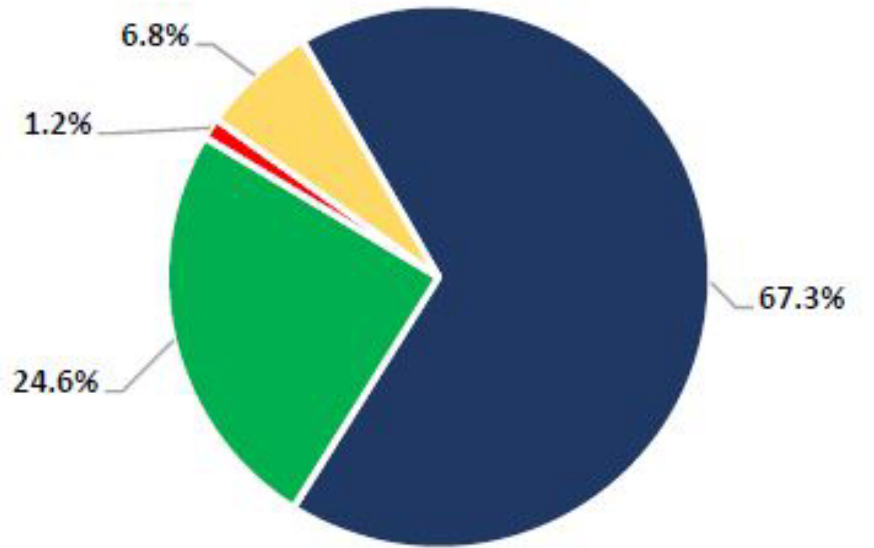


Figure 21. Overview of disposed waste from the residential sector. Chart showing the overall waste composition by material class for the residential sector. Amounts may not add up to 100 percent due to rounding. Data from CalRecycle 2014 waste characterization study.

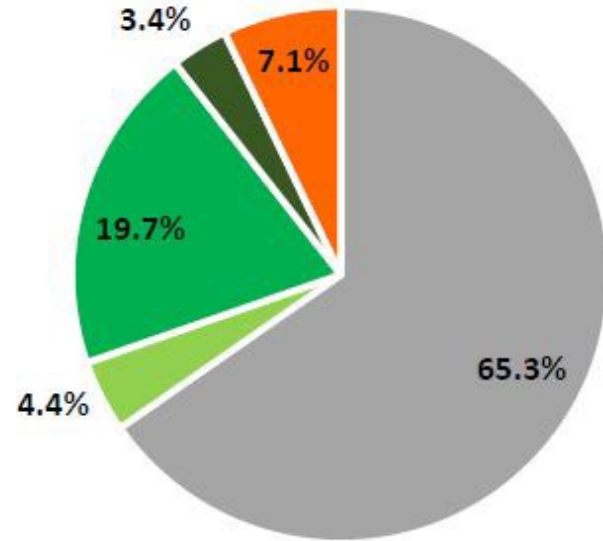
**Residential Waste Stream Summary
Percentage by Weight**



- Residual Trash
- Recyclables
- Organics/Compostables
- Special Wastes (Hazardous, Housewares (furniture/textiles), Electronic, Styrofoam)

Ak-Chin

**Residential Waste Stream Summary
Percentage by Weight**



- Residual Trash
- CRV Recyclables
- Other Recyclables
- Organics/Compostables
- Special Wastes (Hazardous, Electronic, Styrofoam)

Coyote Valley

Value of Waste Assessment



- Understand the types and quantities of materials and wastes that need to be managed, which is the foundation for an Integrated Waste Management Plan (IWMP)
- Identify opportunities to reduce disposal costs and increase recycling and composting
- Assess progress towards recycling and waste diversion goals
- Identify areas for improvement



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Value of Waste Assessment



- Helps Tribes understand what's in their waste stream
- How they can build a program around the materials
- Connect with haulers, MRFs, composting facilities or stand their own
- In order to have a viable ISWMP a Tribes must understand and manage their flow of materials



Consequences



Waste Sort



Will enable Tribes to:

- Quantitatively identify specific types of waste
- Target specific generation areas of the waste stream (e.g. casino, housing development, commercial facility)



Waste Sort



Strengths

- Quantitative data on total waste generated
- Identify specific waste components

Limitations

- Requires more time and effort
- May not be representative if only performed once
- Doesn't provide data on how or why wastes are generated



Waste Sort



Step 1: Develop Goals and Target Waste Stream

Step 2: Complete Pre-Assessment Questionnaire

Step 3: Plan Assessment Process

Step 4: Coordinate Logistics

Step 5: Conduct Waste Sort

Step 6: Collect and Review Data



Waste Sort: Preparations

Step 1: Develop Goals and Target Waste Stream



Conducting a Waste Assessment

Think about your community -
Where is waste being created?



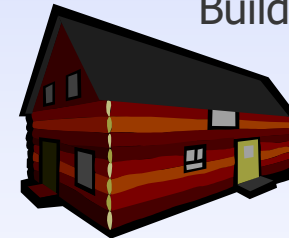
Residences
(include HUD housing
and multifamily units)



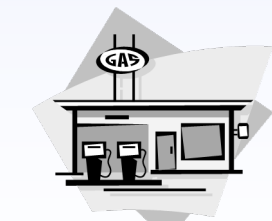
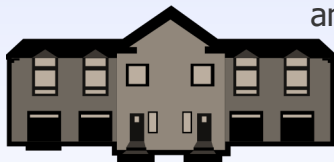
Maintenance



Tribal Administration
Buildings/Offices



Elder Care / Kid's Day
Care facilities



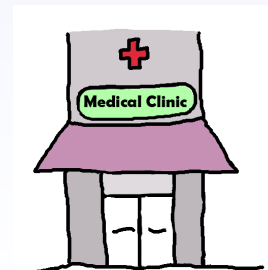
Gas Station/
Travel Center/
Smokeshop



Restaurant/
Coffee Shop



Casino



Health Clinic

Waste Sort: Preparations



Step 2: Complete Pre-Assessment Questionnaire

Establishes the baseline information

- Points of contact information
- Community demographics
- Collection containers
- Description of the waste stream
- Recycling and waste disposal costs
- Educational and promotional efforts

Waste Sort: Preparations



Step 3: Plan Assessment Process



Waste Sort: Preparations



Step 4: Coordinate Logistics



Waste Sort: Preparations

Step 4: Coordinate Logistics



Waste Sort



Step 5: Conduct Waste Sort



Waste Sort



Waste Sort



Waste Sort



Waste Sort



Waste Sort



Waste Sort



Waste Sort



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Sorting protocol

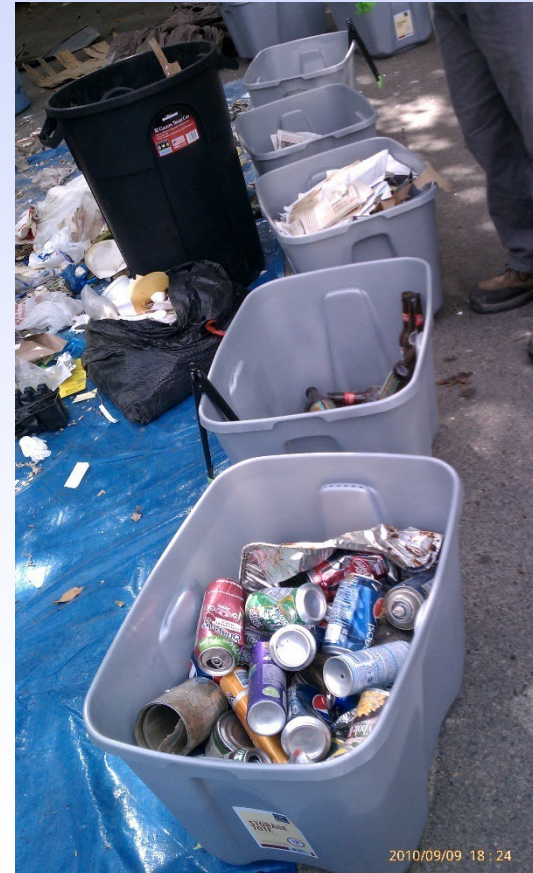


Collect Data



Waste Sort: Analysis

Step 6: Collect and Review Data



Waste Sort: Analysis

Step 6: Collect and Review Data

Analyze data collected

| Assessment Location & Date: Site 1 - 4/25/13 | | Weather: Clear | | |
|-------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------|-----------------------------------|-----------------|
| Materials | Materials & Container Weight Combined (lbs) | Tare = Empty Bin Weight (lbs) | Calculated Material Weight | Comments |
| GLASS | | | | |
| exclude: plate glass, mirrors, ceramics, dishes & glassware, Pyrex, etc. | | | | |
| GLASS BOTTLES & JARS | | | | |
| Tote #1 | 37lbs 11oz | 3lbs 13oz | 33lbs 14oz | |
| Tote #2 | 26lbs 15oz | 3lbs 13oz | 23lbs 2oz | |
| <i>Glass Subtotal</i> | 64lbs | 7lbs 10oz | 67lbs 7oz | |

Waste Assessment



- Having waste characterization data is a key component of an IWMP
- An IWMP is the blueprint of a comprehensive waste management program
- A successful IWMP can:
 - Effectively lower total operating costs
 - Increase efficiency
 - Reduce the use of open dumps
 - Improve protection of human health and the environment



Records Evaluation



Strengths

- Provides data on the weight or volume of waste/recyclables on a regular basis
- Tracks waste from the point of origin
- Identifies the most expensive or valuable components of an organization's waste
- Documents financial benefits of waste minimization/recycling
- Requires less time and effort than a waste sort

Limitations

- Might not provide quantitative data about specific waste components
- Might require substantial effort upfront to gather the records
- Does not provide data on how or why wastes are generated

Visual Assessment



Strengths

- Requires less time and effort than waste sorts
- Allows first-hand examination of facility operations
- Provides qualitative information about major waste components and waste-generating processes
- Reveals waste reduction opportunities

Limitations

- Relies on estimates of waste generation
- Needs to be repeated throughout the year to improve the reliability of the estimates
- Might not identify all wastes generated



Impacts & Trends



Impacts & Trends



Looking Forward



- Zero Waste
 - Incorporating ZW elements into ISWMPs (i.e. setting higher diversion rates, and addressing the products purchased on tribal lands)
- Community-Based Social Marketing Pilots
 - New marketing tool being piloted for Tribal communities in Arizona and California.



A photograph of a sunset or sunrise. The sky is filled with dark, textured clouds, with a bright yellow and orange glow from the sun breaking through near the horizon. In the foreground, the dark silhouette of a large building is visible against the bright light of the sun. The overall mood is serene and dramatic.

Thank you
Tribal Solid Waste Group
EPA R9