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PAY-AS-YOU-THROW / VARIABLE RATES / RECYCLE & SAVE FOR TRASH COLLECTION

REGION 9 GRANT REPORT EPA GRANT X100T11601 PAYT Webinars and Community Assistance VOLUME 2 of 2

Submitted to:
Timonie Hood, Region 9 EPA Grant Manager

Prepared by:
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www.paytnow.org

January 2015

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The information in this document has been funded in part by the United States Environmental Protection Agency under assistance agreement X1-00T11601 to Econservation Institute. It has not gone through the Agency's publications review or peer review process and, therefore, may not necessarily reflect the views of the Agency and no official endorsement should be inferred.

1. Volume 2 Overview

As described in Volume 1, the activities funded under this grant (2009-2014) were intended to work to facilitate growth of PAYT programs in EPA's Region 9 states; however, the project had considerable "spillover" to other states – and even countries – based on the attendance at project webinars, etc. Slides of the multiple webinars are provided in Section 1, including those with haulers and other guest speakers. A small sample of the peer match program (out of the 62 we received) is included as example of the type of response they received from Econservation Institute. These examples matched communities (as closely as possible) based on size, region, program types, to provide insight and ideas for establishing programs in their own community.

The extended period of the grant allowed us to work with communities through the multiple stages necessary to move PAYT along. For communities in Region 9 considering implementing PAYT, we provided detailed technical assistance, specifically to Chandler AZ, Sedona AZ, Kauai County HI, Maui County HI, Reno-Sparks NV, and Guam. Not all the communities were in the same state of preparedness to move forward with PAYT so our assistance was tailored to meet the diverse needs of these very individual communities. Section 2 contains the quite varied PAYT assistance we provided including presentations, surveys, rate calculations, implementation plans, and reports.

U.S. EPA Region 9 covers California, Arizona, Nevada, Hawaii, Pacific Islands and 148 Tribal Nations.

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Section 1

Webinars and Peer Match

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PAYT NOW!

Practical, pocket-book incentives for long-lasting recycling at the local level...



Workshop Given by
Econservation Institute
Superior CO

Lisa A. Skumatz, SERA
March 10, 2010

skumatz@econservationinstitute.org

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Sponsored by EPA Region 9 under grant



SPEAKERS / AGENDA – (Pacific Time)

- 11:00 – Introduction / Instructions
 - Juri Freeman, Econservation Institute
- 11:05 – PAYT Background, how it works
 - Lisa A. Skumatz, Ph.D., Econservation Institute;
skumatz@econservationinstitute.org; 866/758-6289
- 11:55 - Case Studies in PAYT
 - Juri Freeman, Econservation Institute;
info@econservationinstitute.org; 866/758-6289
- 12:00 – 12:50 – Panel on PAYT Implementation Strategies
 - Ordinance – Susie Gordon, Fort Collins, CO
 - Contracting – Douglas Short, Lafayette, CO
 - Municipal – Bruce Philbrick, Loveland, CO
 - Hauler Perspective – Gary Horton, Western Disposal, Boulder, CO
- 12:50 – 1:30 Open questions / discussion / panel



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ABOUT THE ECONSERVATION / REGION 9 PROGRAM

- Open webinars – open to ALL
 - Website assistance / materials
 - Peer match, “Ask the Experts”, other materials
- Hands-on help – Region 9
 - Targeted information, materials, peer match
 - Detailed assistance to design, develop, implement PAYT
- Watch www.paytnow.org for updates, new materials



3

MAKING COST-EFFECTIVE CHOICES

Workable solid waste management programs...

4

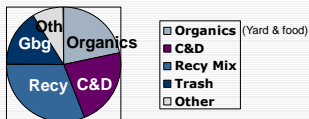
SOLID WASTE MANAGEMENT CHOICES

- Integrated programs - identifying low cost / high performing options
 - Mix of diversion strategies toward goals -- for cost, risk, diversification, leveraging
 - Priority materials?
 - Priority sectors?
 - Efficiencies?
 - The local situation...!
- Statistical analysis of strong-performing options
 - Hundreds of communities – beyond “case studies”

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WHAT MATERIALS? LARGEST WASTE STREAM COMPONENTS



- High volume targets (not brain surgery – common across all communities)
 - Recycling
 - Organics
 - C&D

Accuracy – different levels needed for planning vs. tracking..

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WHAT SECTORS? WHAT STRATEGIES?

- Usual evolution
 - Single family residential
 - Early win, homogeneous, authority, multiple materials
 - Commercial
 - Heterogeneous, tailoring, less authority, big “bang”
 - C&D
 - MF
 - Historically complicated
- Strategy types
 - Programs
 - Incentives
 - Mandates / requirements
 - Policies, legislation, other

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BASIC DIVERSION PROGRAM EVOLUTION

Strategies

FIRST: Drop-off recycling, Education

→ Drop-off yard waste, Curbside recycling, Compost training / education

→ → PAYT, Embedded recycling / no separate fee

→ → → Curbside yard waste option, Program efficiencies / enhancements

→ → → → Mandates, Incentives, Commercial strategies, Add food waste, C&D

→ → → → → Bottle bills, Special materials, Market development, Producer Resp+

- Generally low cost / low "authority" to higher
- Options for getting programs in place (municipalization, ordinance, contracts/districting, incentives) → discussed later

Sources: Skumatz (1996-2008)



8

KEY DIVERSION DRIVERS – LEADING STATES

- What led to diversion?
 - NOT natural flow, economics (unincluded impacts)
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- Consistent drivers / enablers → convenient programs
 - Legislation
 - Measurement
 - Funding
 - PAYT
 - Some included Subtitle D, "Ethic", Bottle Bill



Source: Skumatz Economic Research Associates study for CDPHE, "Roadmap for Colorado...", 2007



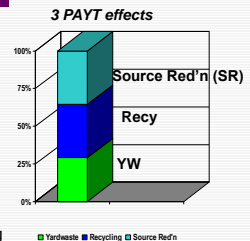
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PAY AS YOU THROW (PAYT)

10

PAYT - EFFECTIVE AND COST-EFFECTIVE

- **Effective:**
 - Demonstrated in 7100+ cities – Practical / flexible
 - **DOUBLES** recycling
 - Diverts **1/5-1/6** from landfill!
- **Biggest Impact:**
 - Statistical study shows it is the **BEST** of more than 2 dozen options for increasing diversion
- Strong job creation (13:1)



Source for graphs and figures: Skumatz Economic Research Associates, ©



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PAYT - EFFECTIVE AND COST-EFFECTIVE

□ Cost-effective:

- 1/3 of the effect costs ZERO (SR)
- PAYT needs NO SEPARATE FUNDING – paid by users (more equitably)
- No increase in costs for 2/3 communities (short / long run)
- Cheap for reduction of both GHG and Landfills

Source for graphs and figures: Skumatz Economic Research Associates ©

1

PAYT COST, ACCEPTANCE

- Cost & workload impacts – 2/3 no increase (source: State surveys)

- Preferred by households

Communities – after PAYT	89%-95%
PARADE™	2/3 in favor

- Strengths / weaknesses

Key Advantages	Disadvantages
Rewards all diversion activities No new trucks down street (&wear/tear) Behavior / reminder; choice Utility; equity Works in variety of systems, tailor NEEDS NO SEPARATE FUNDING!	Concerns about illegal dumping, equity (low income, large families), MF (see FAQs), change... More complex rate study, outreach Costs & savings - "Net" depends on local conditions

Source



PAYT – BACKGROUND AND HOW IT WORKS

3

PAYT– BASIC SYSTEM TYPES

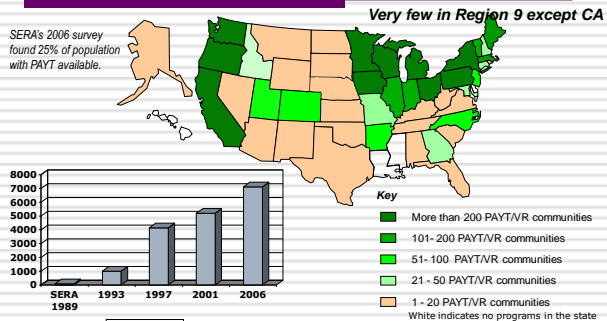
- Variable cans/subscription
- Bags
- Tags/stickers
- Hybrid
- Weight-based (GBTP – technology adopted by RecycleBank™)
- Drop-off variations

- Pros and cons –
 - Variations by region
 - Historical recycling “rebates”- less strong than PAYT / only recycling



PAY-AS-YOU-THROW (PAYT)/ VARIABLE RATES COMMUNITIES

SERA's 2006 survey found almost **7,100** PAYT/VR communities and only 3 states without programs



Superior, CO, 2006 Survey © SERA, all rights reserved, may be used with permission of author.

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PAYT WORKING ACROSS US IN ALL COMMUNITY SITUATIONS

- ☐ Large communities
- ☐ Small, rural communities
- ☐ Tourist / student / mountain
- ☐ Isolated / island / self-haul
- ☐ Multiple Coll'n actors
- ☐ Collection method
- ☐ Ethnic diversity
- ☐ Climate extremes
- ☐ Curbside and drop-off recycling
- ☐ In Colorado and all geographic regions of US – everywhere is "special"

Source: SERA surveys © all rights reserved

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INCENTIVE OPTIONS / COMPARISON

- ☐ Rebates, discounts, market returns
 - Long history / performance
 - Simple incentives – most discontinued
 - RecycleBank™ new version of incentive

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GETTING PAYT & DIVERSION PROGRAMS IN PLACE



State, County, Local Level...
Legislation, ordinance, contract, muni...

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THREE OPTIONS FOR GETTING PAYT & PROGRAMS IN PLACE

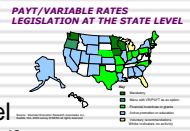
- ☐ Municipalization
 - Cities / towns
- ☐ Ordinance
 - Cities and counties
- ☐ Contracting / districting / franchising
 - Cities

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KEY ELEMENTS OF SUCCESSFUL PAYT PROGRAMS

- ☐ Level playing field
 - Haulers willing if...
- ☐ Recycling
 - Service definition, embedded fee, containerization
- ☐ Incentive:
 - Small container option (32 gallon)
 - Price incentive (80%)
 - Reporting & access for compliance
- ☐ Do-able at city, county, state level
 - Several states mandate, or mandate if...



Sample Ordinances & case studies on web site www.paytwest.org,
Paytnow.org, paytinfo.org map from © SERA all rights reserved

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GETTING PAYT IN PLACE: ORDINANCE VS. CONTRACT

Ordinance Pros	Contract Pros (similar for munic)
<ul style="list-style-type: none"> <input type="checkbox"/> Fewer Hauler ("Taking") & Citizen Complaints ("Choice") <input type="checkbox"/> Maintains competition <input type="checkbox"/> No need for "notice" <input type="checkbox"/> Quick <input type="checkbox"/> Can specify rate "structure" <input type="checkbox"/> Minimal City effort (RFP, etc.) <input type="checkbox"/> Retains "level playing field" for haulers – each implements the program and provides services knowing others will be operating under same rules. 	<ul style="list-style-type: none"> <input type="checkbox"/> Lower Cost / bills <input type="checkbox"/> Fewer trucks, "cleaner" set outs, reduced wear/tear on streets <input type="checkbox"/> One hauler to contact if problems arise. <input type="checkbox"/> City "control" including rates/setting; revenues <input type="checkbox"/> Can "designate" facility destinations for materials.

Sample language available for State legislation, contracts, ordinances, etc.
www.paytnow.org; paytwest.org; www.paytinfo.org

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PAYT CONCERNS: ILLEGAL DUMPING AND BEYOND



Photos: Skumatz, 11

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MAJOR CONCERNS ABOUT PAYT

- Illegal dumping
 - Minority of dumped waste; NEED Bulky item program
- Large families / poor families
 - Turn argument around. Unfair for small families, poor families to subsidize large disposers under current system – behavior affects bill now – control!
- Haulers
 - Business opportunity for haulers – recycling usually required
 - Revenues / rates / revenue stream issues – system choice options; subscription estimates critical; multiple revenue streams
 - Will do what customers want (if they pay for it)
 - Consider involving them in design
- MF, commercial
- Workload (WI/IA finds 2/3 have NO increase)
- Confusion, resistance to change – wait 6 months!
 - 89-95% prefer
 - Keep rates SIMPLE

Survey shows fears much greater than reality! – FAQs on website

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IMPLEMENTATION OPPORTUNITIES

- Contracts, franchises, rates or billing system being changed
- Landfill or disposal problems
- New or modified programs
- Existing system perceived as unfair
- Tight budgets, need to free up tax authority



PAYT may not be right for a community now, but almost ALWAYS worth investigating to see.

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PAYT CONCERNS / TIPS / SUMMARY

- Technical issues rarely the problem → performs
 - Pilot test / phase in
 - Strong diversion (all types), speedy, attitudes, retention, track record (7,100 towns), flexible / tailorable → local
- Public process, public education. Good customer education / understanding crucial
 - Education / why, how it works, how to make it work for me, packages for move-ins
- Politics, political will is the key stumbling block
 - Suggestions from communities; & champion
 - Negatives manageable if political will
 - Can't get there? Consider running for office!



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GHG, JOBS, NEXT STEPS

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PAYT AND EMISSIONS

- Recent work (SERA) comparing cost per MTCE from recycling / PAYT vs. energy efficiency programs
- Waste management programs cost-effective, with other policy advantages:
 - Jobs
 - Coverage, speed
 - Authority
 - Retention
 - No cost to city (users pay)
- Conclusion: Recycling / PAYT should be at the table for sustainability goals, stimulus funds

Can obtain report from skumatz@serainc.com



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TOP 5 STRATEGIES

Actions a community can task NOW!

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"TOP 5" - WHAT A COMMUNITY OR COUNTY CAN DO TO INCREASE DIVERSION... NOW!

- #5 Citizen sustainability committee
 - Activist/ involvement; access; options; grants
- #4 Measurement and goal-setting
 - Baseline/status quo/gaps, plan, goal, buy-in
- #3 Basic programs & ordinances
 - Ordinances for space for recycling; residential drop-offs, commercial programs (plans, lease, ABC, access) → opportunity
- #2 Education
 - Variety (incl. translating) → awareness
- #1 PAYT / Embedded recycling ordinance or contract → Number 1 thing you can do

handout available on web
SERA publication



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CASE STUDY - FLEXIBILITY IN PAYT

Juri Freeman
Skumatz Economic Research
Associates (SERA)

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PAYT FLEXIBILITY! – MIDDLETOWN, RI

- Adaptability of PAYT
- Located in south of RI, population ~17,000
- Town-wide contracting for waste hauling with national hauler



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MIDDLETOWN, RI – HOW IT WORKS

- Residents pay annual fee to cover some fixed costs
- Must buy pre-paid stickers to put on trash bags for collection (~\$2)
- Includes unlimited recycling
- Summertime yard program too

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MIDDLETOWN, RI – WHAT IS UNIQUE?

- Lots of bag/tag programs
- This allows automated collection through bag in a can program
- Enforcement
- Results
 - Participating households dispose of average of 1.5 bags/week
 - Prior to program they had 18% recycling rate – now at 42% - highest in state

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SUMMARY

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OVERALL SUMMARY

- Recycling / diversion
 - Evolution, priorities, tailoring to local issues
 - Outstanding & varied examples around the country – can do locally
- PAYT – Tested, Flexible, Effective, Minimal Cost, LOCAL
 - Impacts, implementation options
 - Uniquely effective, flexible,
 - Self-funding program with local implementation options
- Green impacts - Direct and indirect (jobs, ghg) impacts – solid waste management in the mix - stimulus

El

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DISCUSSION AND QUESTIONS?

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email: skumatz@serainc.com

Website – www.serainc.com
Also: www.paytwest.org, paytinfo.org; payt.org

To help on statistical studies, consider filling out survey on:
www.serainc.com (national survey)

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Workshop Given by
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Superior CO

Lisa A. Skumatz, SERA
July 15, 2010

skumatz@econservationinstitute.org

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- 11:05 – 11:55 PAYT Background, how it works
 - Lisa A. Skumatz, Ph.D., Econservation Institute:
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- 11:55- 12:05 Case Studies in PAYT
 - Juni Freeman, Econservation Institute;
 - info@econservationinstitute.org; 866/758-6289
- 12:05-12:15 Special Topic - Implementation Issues (Skumatz)
- 12:15-12:45 Case Study – Lafayette, CO & Contracting for PAYT
 - Douglas Short, Lafayette, CO
- 12:45-12:55 Special Topic – Rates and Uncertainty (Skumatz)
- 12:55- 1:10 Hauler Perspective
 - Bryce Isaacson, Western Disposal, Boulder, CO
- 1:10 – 1:30 Open questions / discussion



2

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NEXT SPEAKER



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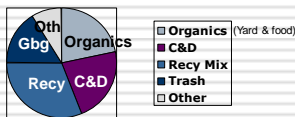
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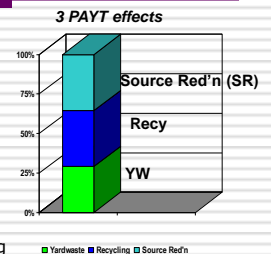


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PAY AS YOU THROW (PAYT)

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Source



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PAYT- BASIC SYSTEM TYPES

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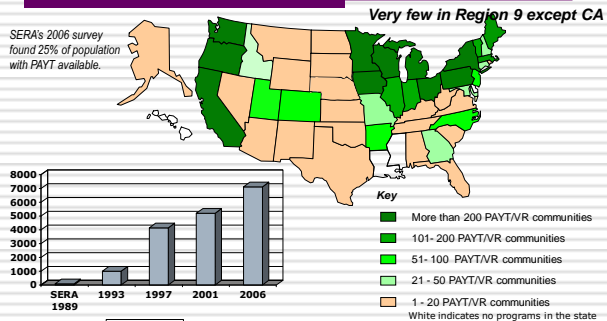
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Bag / Tag photos courtesy Resourceful Bag & Tag

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Superior, CO, 2006 Survey © SERA, all rights reserved, may be used with permission of author.

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Source: SERA surveys © all rights reserved

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INCENTIVE OPTIONS / COMPARISON

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THREE OPTIONS FOR GETTING PAYT & PROGRAMS IN PLACE

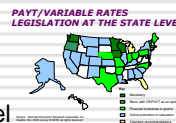
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Sample Ordinances & case studies on web site www.paytwest.org,
Paytnow.org, paytnfo.org map from © SERA all rights reserved



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PAYT CONCERNS: ILLEGAL DUMPING AND BEYOND



Photos: Skumatz, 1999



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MAJOR CONCERNS ABOUT PAYT

- Illegal dumping
 - Minority of dumped waste; NEED Bulky item program
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 - Business opportunity for haulers – recycling usually required
 - Revenues / rates / revenue stream issues – system choice options; subscription estimates critical; multiple revenue streams
 - Will do what customers want (if they pay for it)
 - Consider involving them in design
- MF, commercial
- Workload (WI/IA finds 2/3 have NO increase)
- Confusion, resistance to change – wait 6 months!
 - 89-95% prefer
 - Keep rates SIMPLE

Survey shows fears much greater than reality! – FAQs on website

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IMPLEMENTATION OPPORTUNITIES

- Contracts, franchises, rates or billing system being changed
- Landfill or disposal problems
- New or modified programs
- Existing system perceived as unfair
- Tight budgets, need to free up tax authority



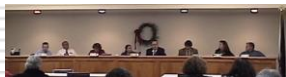
PAYT may not be right for a community now, but almost ALWAYS worth investigating to see.

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PAYT CONCERNS / TIPS / SUMMARY

- Technical issues rarely the problem → performs
 - Pilot test / phase in
 - Strong diversion (all types), speedy, attitudes, retention, track record (7,100 towns), flexible / tailorable → local
- Public process, public education. Good customer education / understanding crucial
 - Education / why, how it works, how to make it work for me, packages for move-ins
- Politics, political will is the key stumbling block
 - Suggestions from communities; & champion
 - Negatives manageable if political will
 - Can't get there? Consider running for office!



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GHG, JOBS, NEXT STEPS

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PAYT AND EMISSIONS

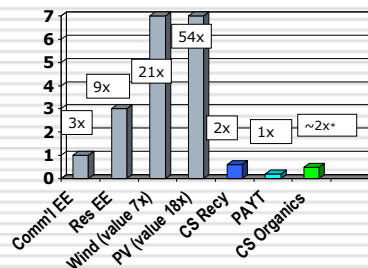
- Recent work (SERA) comparing cost per MTCE from recycling / PAYT vs. energy efficiency programs
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 - Jobs
 - Coverage, speed
 - Authority
 - Retention
 - No cost to city (users pay)
- Conclusion: Recycling / PAYT should be at the table for sustainability goals, stimulus funds

Can obtain report from skumatz@serainc.com



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RELATIVE COST PER MTCO₂e FOR SOLID WASTE, ENERGY PROGRAMS



Results show key MSW programs cheaper to reduce CO₂ than EE. PV, Wind high cost per MTCO₂e.

Source: Skumatz Economic Research Associates, Inc. (SERA) Superior, CO
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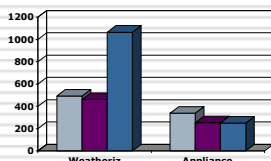
*Organics figures vary based on model



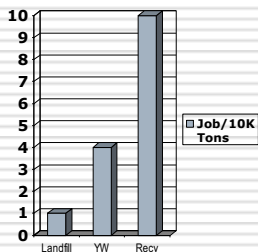
30

JOB MULTIPLIERS FOR ENERGY AND RECYCLING PROGRAMS

More local & national job impacts in weatherization & labor intensive; Appliance replacement programs more limited impact – local & US



ENERGY JOBS
(per \$1 million investment)



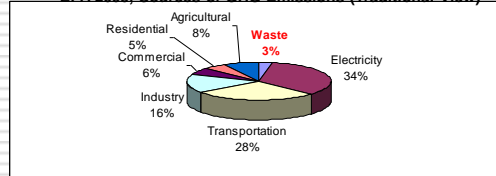
SOLID WASTE JOBS
(per 10,000 tons)

Source: Skumatz Economic Research Associates, Inc. (SERA) Superior, CO
All rights reserved. May be used with permission of author. Recycling jobs information from Platt, Institute for Local Self-Reliance

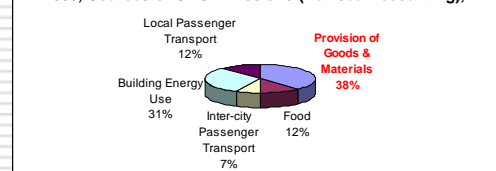


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EPA 2005, Sources of GHG Emissions (Traditional View)



EPA 2009, Sources of GHG Emissions (Revised Accounting), DRAFT



32

TOP 5 STRATEGIES

Actions a community can task NOW!

33

“TOP 5” - WHAT A COMMUNITY OR COUNTY CAN DO TO INCREASE DIVERSION... NOW!

- #5 Citizen sustainability committee
 - Activist/ involvement; access; options; grants
- #4 Measurement and goal-setting
 - Baseline/status quo/gaps, plan, goal, buy-in
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 - Ordinances for space for recycling; residential drop-offs, commercial programs (plans, lease, ABC, access) → opportunity
- #2 Education
 - Variety (incl. translating) → awareness
- #1 PAYT / Embedded recycling ordinance or contract → Number 1 thing you can do

handout available on web
SERA publication

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SUMMARY

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OVERALL SUMMARY

- Recycling / diversion
 - Evolution, priorities, tailoring to local issues
 - Outstanding & varied examples around the country – can do locally
- PAYT – Tested, Flexible, Effective, Minimal Cost, LOCAL
 - Impacts, implementation options
 - Uniquely effective, flexible,
 - Self-funding program with local implementation options
- Green impacts - Direct and indirect (jobs, ghg) impacts – solid waste management in the mix - stimulus

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DISCUSSION AND QUESTIONS?

Website – www.serainc.com

Also: www.paytwest.org, paytinfo.org; payt.org

To help on statistical studies, consider filling out survey on:
www.serainc.com (national survey)

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Juri Freeman
SERA and Econservation Institute
303/494-1178 (tollfree 866-758-6289)
freeman@econservationinstitute.org or
freeman@serainc.com



NEXT SPEAKER

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CASE STUDY – FLEXIBILITY IN PAYT

Juri Freeman

Skumatz Economic Research
Associates (SERA)

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PAYT FLEXIBILITY! – MIDDLETOWN, RI

- Adaptability of PAYT
- Located in sound of RI, population ~17,000
- Town-wide contracting for waste hauling with national hauler



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MIDDLETOWN, RI – HOW IT WORKS

- Residents pay annual fee to cover some fixed costs
- Must buy pre-paid stickers to put on trash bags for collection (~\$2)
- Includes unlimited recycling
- Summertime yard program too

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MIDDLETOWN, RI – WHAT IS UNIQUE?

- Lots of bag/tag programs
- This allows automated collection through bag in a can program
- Enforcement
- Results
 - Participating households dispose of average of 1.5 bags/week
 - Prior to program they had 18% recycling rate – now at 42% - highest in state

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Lisa A. Skumatz, Ph.D.
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skumatz@econservationinstitute.org or
skumatz@serainc.com

NEXT SPEAKER

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IMPLEMENTING PAYT

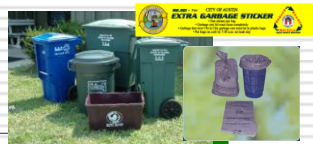
Implementation Decisions, Steps, & Timelines

44

IMPLEMENTATION DECISIONS

- ❑ Contract vs. RFP
- ❑ PAYT system type
 - Can, bag, tag, hybrid, etc.
 - Existing... future plan
 - Capabilities & resources (billing, containers)
- ❑ → Implementation steps

Ordinance Pros	Contract Pros (similar for munic)
<ul style="list-style-type: none"> ❑ Fewer Hauler ("Taking") & Citizen Complaints ("Choice") ❑ Maintains competition ❑ No need for "notice" ❑ Quick ❑ Can specify rate "structure" ❑ Minimal City effort (RFP, etc.) ❑ Retains "level playing field" for haulers – each implements the program and provides services knowing others will be operating under same rules. 	<ul style="list-style-type: none"> ❑ Lower Cost / bills ❑ Fewer trucks, "cleaner" set outs, reduced wear/tear on streets ❑ One hauler to contact if problems arise. ❑ City "control" including rates/setting revenues ❑ Can "designate" facility destinations for materials.



Bag / Tag photos courtesy Resourceful Bag & Tag

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Douglas Short
Public Works Director
City of Lafayette, CO
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douglass@cityoflafayette.com

NEXT SPEAKER

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City of Lafayette, CO – PAYT Experience

Separate Slides

Bryce Isaacson
Western Disposal, Boulder, CO
303/444-2037
bisaacson@westerndisposal.com

NEXT SPEAKER

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HAULER PERSPECTIVE ON PAYT

- Hauler impacts / considerations for ordinance vs. RFP / contract
 - Customer retention / level playing field
- PAYT – the Business case?
- Implementation issues / steps
 - Administrative, customer, containers
 - Uncertainties and revenues
- Advice / tips
- Questions?

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skumatz@serainc.com

NEXT SPEAKER

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PAYT NOW!

Practical, pocket-book incentives for long-lasting recycling at the local level...



Workshop Given by
Econservation Institute
Superior CO

Lisa A. Skumatz, SERA
December 9, 2010

skumatz@econservationinstitute.org

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Sponsored by EPA Region 9 under grant



SPEAKERS / AGENDA – (Mountain Time Zone)

- 12:00 – Introduction / Instructions
 - Juri Freeman, Econservation Institute
- 12:05 – 12:40 PAYT Background, how it works
 - Lisa A. Skumatz, Ph.D., Econservation Institute;
skumatz@econservationinstitute.org; 866/758-6289
- 12:40- 1:00 Hauler Perspective
 - Gary Horton, Western Disposal, Boulder, CO;
ghorton@westerndisposal.com 303/444-2037
- 1:00-1:20 Case Study – Town of Grand Lake, CO
 - Shane Hale, Town Manager, slmanager@townofgrandlake.com (970)627-3435
- 1:20- 1:30 Case Studies in PAYT
 - Juri Freeman, Econservation Institute; info@econservationinstitute.org; 866/758-6289
- 1:30-1:45 – Implementation and Rate Setting Topics (Skumatz)
- 1:45-2:00 - Open questions / discussion



2

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NEXT SPEAKER



3

ABOUT THE ECONSERVATION / REGION 9 PROGRAM

- Open webinars – open to ALL
 - Website assistance / materials www.paytnow.org
 - Peer match, “Ask the Experts”, other materials
- Hands-on help – Region 9
 - Targeted information, materials, peer match
 - Detailed assistance to design, develop, implement PAYT
- Watch www.paytnow.org for updates, new materials



4

PAY AS YOU THROW (PAYT)

Part of making Cost-Effective
Choices...

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PAYT - EFFECTIVE AND COST-EFFECTIVE

Effective:

- Demonstrated in 7100+ cities – Practical / flexible
- **DOUBLES** recycling – impacts on both curbside & drop-off recycling
- Diverts **1/5-1/6** from landfill

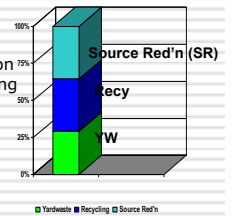
Biggest Impact:

- Statistical study shows it is the BEST of more than 2 dozen options for increasing diversion

One of top 3 drivers from leading US states

- Goals/measurement, funding, PAYT

3 PAYT effects



Source for graphs and figures: Skumatz Economic Research Associates, ©
Source for top 3 drivers, Skumatz & Freeman / SERA, "Colorado Roadmap Report, 2008."

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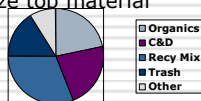
PAYT - EFFECTIVE AND COST-EFFECTIVE

Cost-effective:

- 1/3 of the effect costs ZERO (SR)
- PAYT needs NO SEPARATE FUNDING – paid by users (more equitably)
- No increase in costs for 2/3 communities (short / long run)
- Cheap for reduction of both GHG and Landfills

Inexpensive way to incentivize top material diversion

- Compositions similar...
- Low cost/ton computations



Source for graphs and figures: Skumatz Economic Research Associates ©

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PAYT COST, ACCEPTANCE

Cost & workload impacts – 2/3 no increase (source: State surveys)

Preferred by households

Communities – after PAYT	89%-95%
PARADE™	2/3 in favor

Strengths / weaknesses

Key Advantages	Disadvantages
Rewards all diversion activities No new trucks down street (&wear/tear) Behavior / reminder; choice Utility; equity Works in variety of systems, tailor NEEDS NO SEPARATE FUNDING!	Concerns about illegal dumping, equity (low income, large families), MF (see FAQs), change... More complex rate study, outreach Costs & savings - "Net" depends on local conditions

Source: Skumatz Economic Research Associates, ©



PAYT – BACKGROUND AND HOW IT WORKS

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PAYT- BASIC SYSTEM TYPES

- ☐ Variable cans/subscription
- ☐ Bags
- ☐ Tags/stickers
- ☐ Hybrid
- ☐ Weight-based
(GBTF – technology
adopted by RecycleBank™)
- ☐ Drop-off variations



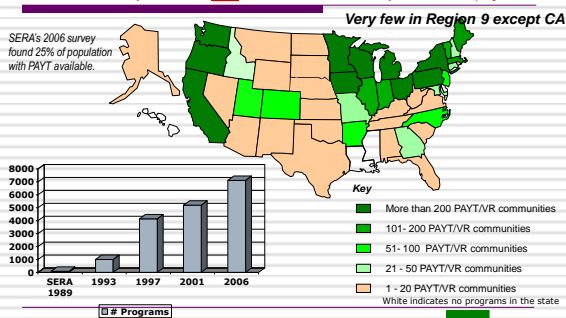
- ☐ Pros and cons –
 - Variations by region
 - Historical recycling "rebates"-
less strong than PAYT / only recycling



Bag / Tag photos courtesy
Resourceful Bag & Tag

PAY-AS-YOU-THROW (PAYT)/ VARIABLE RATES COMMUNITIES

SERA's 2006 survey found almost **7,100** PAYT/VR communities and only 3 states without programs



Superior, CO, 2006 survey © SERA, all rights reserved, may be used with permission of author

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PAYT WORKING ACROSS US IN ALL COMMUNITY SITUATIONS

In Region 9 and all geographic regions of US – everywhere is "special"

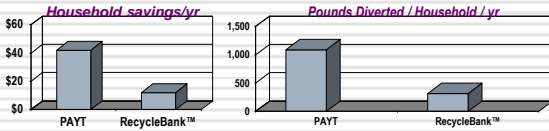
- ☐ Large communities
- ☐ Small, rural communities
- ☐ Tourist / student / mountain
- ☐ Isolated / island / self-haul
- ☐ Multiple Coll'n actors
- ☐ Collection method (manual, semi- and automated collection)
- ☐ Ethnic diversity
- ☐ Climate extremes
- ☐ Curbside and drop-off recycling
- ☐ ... and PAYT for commercial

Source: SERA surveys © all rights reserved

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INCENTIVE OPTIONS - PAYT VS. RECYCLING INCENTIVES



- Rebates, discounts, market returns
 - **Incentives for recycling ONLY – 1/3 of PAYT's impact**
 - Simple incentives – 20+ year history, most discontinued
 - RecycleBank™ new version of incentive:
 - Towns considering because: Hauler partnerships, "turnkey", jumpstart stalled recycling, no new billing (HOAs like it), strong marketing
 - Impacts – tons BEYOND single stream / containers; fees; rebates; cost per ton
 - Can have both PAYT and incentive; more expensive, but...

Source: SERA research; graphs from figures from EPA newsletter, 2009.

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GETTING PAYT & DIVERSION PROGRAMS IN PLACE

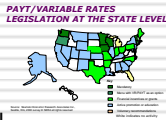


State, County, Local Level...
Legislation, ordinance, contract, muni...

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BMP FOR MOST SUCCESSFUL PAYT PROGRAM

- Level playing field
 - Haulers willing if...
- Recycling
 - Service definition, embedded fee, parallel containerization (large recyc carts)
- Incentive:
 - Small container option (32 gallon)
 - Price incentive (80%)
 - Reporting & access for compliance
- Do-able at city, county, state level
 - Several states mandate, or mandate if...



Sample Ordinances & case studies on web site www.paytwest.org,
Paytnow.org, paytnfo.org map from © SERA all rights reserved

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HOW TO GET PAYT IN PLACE

- Municipalization
- Ordinance
- Contracting / districting / franchising

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GETTING PAYT IN PLACE: ORDINANCE VS. CONTRACT

Ordinance Pros	Contract Pros (similar for munic)
<ul style="list-style-type: none"> <input type="checkbox"/> Fewer Hauler ("Taking") & Citizen Complaints ("Choice") <input type="checkbox"/> Maintains competition <input type="checkbox"/> No need for "notice" <input type="checkbox"/> Quick <input type="checkbox"/> Can specify rate "structure" <input type="checkbox"/> Minimal City effort (RFP, etc.) <input type="checkbox"/> Retains "level playing field" for haulers – each implements the program and provides services knowing others will be operating under same rules. 	<ul style="list-style-type: none"> <input type="checkbox"/> Lower Cost / bills <input type="checkbox"/> Fewer trucks, "cleaner" set outs, reduced wear/tear on streets <input type="checkbox"/> One hauler to contact if problems arise. <input type="checkbox"/> City "control" including rates/setting; revenues <input type="checkbox"/> More flexible / easier to enforce penalties than ordinance <input type="checkbox"/> Can "designate" facility destinations for materials <input type="checkbox"/> Potential revenue source <input type="checkbox"/> (Similar for franchise / district EXCEPT may not get lower bills if multiple awardees)

Sample language available for State legislation, contracts, ordinances, etc. at www.paytnow.org; paytwest.org; www.paytinfo.org

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PAYT CONCERNS: ILLEGAL DUMPING AND BEYOND



Photos: Skumatz, 1999

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MAJOR CONCERNS ABOUT PAYT

- ☐ Illegal dumping
 - Minority of dumped waste; NEED Bulky item program
- ☐ Large families / poor families
 - Turn argument around. Unfair for small families, poor families to subsidize large disposers under current system – behavior affects bill now – control!
- ☐ Haulers
 - Business opportunity for haulers – recycling usually required
 - Revenue risk a concern
 - Consider involving them in design
- ☐ MF, commercial
- ☐ Workload (State surveys find 2/3 have NO increase)
- ☐ Confusion, resistance to change – wait 6 months!
 - 89-95% prefer
 - Keep rates SIMPLE

Survey shows fears much greater than reality! – FAQs on website

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IMPLEMENTATION OPPORTUNITIES

- ☐ Contracts, franchises, rates or billing system being changed
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GHG & JOBS FROM PAYT

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PAYT AND EMISSIONS

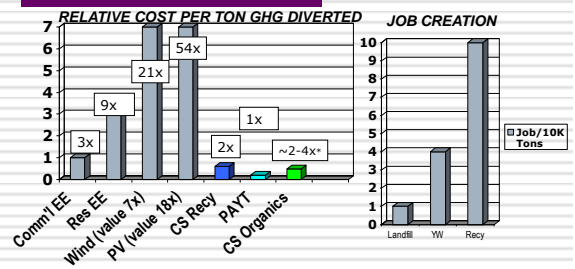
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RELATIVE COST PER MTCE AND JOB CREATION IMPACTS



Results show key MSW programs cheaper to reduce CO2 than EE. PV, Wind high cost per MTCE.

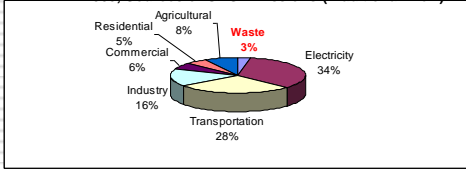
Source: Skumatz Economic Research Associates, Inc. SERA, Superior, CO
All rights reserved. Draft. Used with permission of author.
Source for Job Creation - Institute for Local Self-Reliance website

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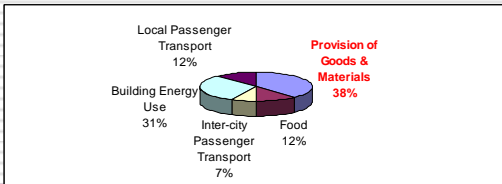
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handout available on web
SERA publication

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SUMMARY

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OVERALL SUMMARY

- Cost-effective Diversion
 - PAYT a key strategy – can do locally
- PAYT – Tested, Flexible, Effective, Minimal Cost, LOCAL
 - Impacts, implementation options
 - Uniquely effective, flexible,
 - Self-funding program with local implementation options
- Green impacts - Direct and indirect (jobs, ghg) impacts – PAYT more effective / cost-effective

29

DISCUSSION AND QUESTIONS?

Lisa A. Skumatz, Ph.D.
 Website – www.econservationinstitute.com
www.serainc.com

Also: www.paytnow.org; paytwest.org; paytinfo.org; payt.org

To help on statistical studies, consider filling out survey on:
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 "national survey"

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HAULER PERSPECTIVE ON PAYT

Gary Horton

President
 Western Disposal, Boulder, CO
 303/444-2037
ghorton@westerndisposal.com



NEXT SPEAKER

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HAULER PERSPECTIVE ON PAYT

- Hauler impacts / considerations for ordinance vs. RFP / contract
 - Customer retention / level playing field
- PAYT – the Business case?
- Implementation issues / steps
 - Administrative, customer, containers
 - Uncertainties and revenues
- Advice / tips
- Questions?

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TOWN OF GRAND LAKE, CO – PAYT EXPERIENCE

Shane Hale

Town Manager
Grand Lake, CO 80447
glmanager@townofgrandlake.com
(970)627-3435

NEXT SPEAKER

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TOWN OF GRAND LAKE, COLORADO

Separate Slides

34

CASE STUDIES – FLEXIBILITY IN PAYT

Juri Freeman

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freeman@econservationinstitute.org or
freeman@serainc.com



NEXT SPEAKER

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CASE STUDY: FORT COLLINS – “ORDINANCE”



- Trash Collection in Fort Collins
 - Privatized (i.e., “open subscription”); 3 companies
- Ordinance 1992; set PAYT and RATIO (not rates); curbside recycling embedded; auditing capabilities
- Haulers must also:
 - provide yearly education & information to customers
 - submit annual Recycling Plan that lists all their rate schedules
 - report volumes for trash and for recycling to City bi-annually
 - maintain records of service to verify PAYT is being implemented
 - be prepared to make records available to City auditors
 - violations = fines plus risk of losing license
- 85-95% participation, 27% diversion
- Note – sustainability goals - recycling / PAYT / solid waste strategies responsible for largest share of 5 year progress

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PAYT FLEXIBILITY! – MIDDLETOWN, RI

- Adaptability of PAYT
- Located in south of RI, population ~17,000
- Town-wide contracting for waste hauling with national hauler



El

37

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IMPLEMENTATION & RATES

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skumatz@serainc.com

NEXT SPEAKER

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IMPLEMENTATION AND RATE-SETTING FOR PAYT

*Implementation Decisions, Steps, &
Timelines*
Rate Design and Analysis

41

IMPLEMENTATION DECISIONS

- Service delivery
 - Muni, contract (bid or RFP), franchise, district, ordinance
- PAYT system type
 - Can, bag, tag, hybrid, etc.
 - Existing... future plan
 - Capabilities & resources (billing, containers)
- → Affect Implementation steps

Ordinance Pros	Contract Pros (similar for munic)
<ul style="list-style-type: none"> □ Fewer Hauler ("Taking") & Citizen Complaints ("Choice") □ Maintains competition □ No need for "notice" □ Quick □ Can specify rate "structure" □ Minimal City effort (RFP, etc.) □ Retains "level playing field" for haulers -- each implements the program and provides services knowing others will be operating under same rules. 	<ul style="list-style-type: none"> □ Lower Cost / bills □ Fewer trucks, "cleaner" set outs, reduced wear/tear on streets □ One hauler to contact if problems arise. □ City "control" including rate-setting, revenues □ Can "designate" facility destinations for materials.



Bag / Tag photos courtesy Resourceful Bag & Tag

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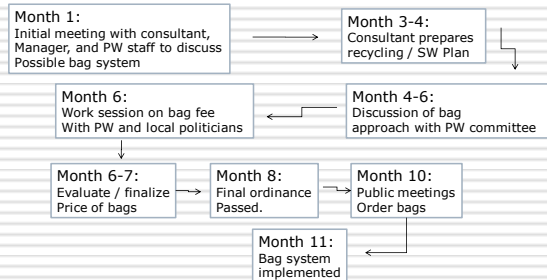
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IMPLEMENTATION EXAMPLES

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IMPLEMENTATION SCHEDULE – BAG EXAMPLE



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IMPLEMENTATION SCHEDULE – COMPREHENSIVE CHANGE FROM CAN PROGRAM (EXAMPLE, p. 1 of 2)

1-2 Years before:

- Begin informing political leaders & community groups about potential change
- Make "threshold" decisions: system type, enforcement strategies, billing details
- Assess / plan accompanying recycling options
- Bring in accountants, etc. to study feasibility
- Develop comprehensive workplan (collection & customer service, new staff, data, PR)
- Bring on key staff needed to design & implement (rates, pr, contracts, customer service)
- Propose necessary ordinance changes
- Possible pilot programs / evaluate / be willing to make changes

3-6 months before:

- Phase in customer service staff hires; longer-term more responsible staff first; then temp
- PR efforts in full swing
- Billing system tested & working
- Bag/tag distribution in place
- Cans ordered, distribution plan

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IMPLEMENTATION SCHEDULE – COMPREHENSIVE CHANGE FROM CAN PROGRAM (EXAMPLE, p. 2 of 2)

3 months before – 6 months after:

- Excitement – work with contractor on:
 - Collect trash first / resolve disagreements later
 - Take care of customers or complaints will spill into political arena
 - Expect large overtime, temporary, & intermittent employee costs
 - Phase down customer service

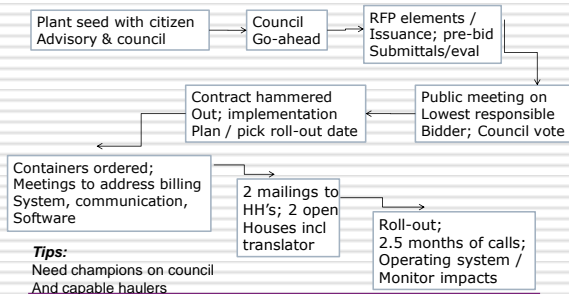
6 months after:

- Reviews through customer surveys, internal analysis, CS workload assessment
- Temp staff / overtime likely discontinued / start to return to normal levels
- Program maintains – evaluation against goals / expected \$ and tons

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IMPLEMENTATION STEPS – RFP TO PAYT EXAMPLE



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IMPLEMENTATION ISSUES– CONTRACTED HAULER PERSPECTIVE (EXAMPLE)

- List of addresses; Examine HH types;
- Billing system changes;
- ID who responsible for customer
- Records, billing, calls & disputes
- Identify interface route; bad debt?
- Who buys / delivers carts;
- How many customer choices?
- Study set outs / Rate setting

Notify residents (news, Mail, door hangers, phone)

Order carts, receive, stage For delivery; deliver proper Sizes; exchanges; maintain Damaged carts; inventory

Tips:

- Order carts 3-4 months ahead
- (up to 1000 can be ordered more quickly)
- Print materials lead time 3 months or less
- Minimize special treatment

Monitoring, reporting, recording Tonnages / volumes, weights, set-outs

**MORE DETAILED EXAMPLES (WITH RECOMMENDATIONS)
IN UPCOMING PAPER – WATCH WEBSITE**

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RATESETTING - DESIGNING TO ENHANCE IMPACTS, TRADEOFFS

- System type differences – Cans vs. other (research)
 - Rate incentives / relative impacts
- Program fees – embedded vs. separate
 - Recycling vs. yard waste
- Size of differential / incentive
 - 80% recomb. from SERA research)
- Education effects
- Rates vs. Bills
 - Highlight behavioral potential

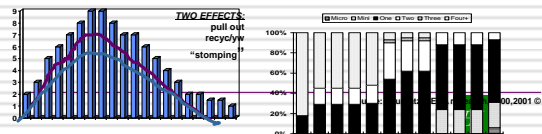
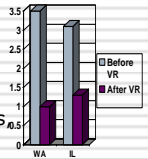


Source: Skumatz, SERA research©

El

RATE SETTING & DESIGN

- Number of “revenue items” is key
 - Prediction challenges, data
- Revenue risk
 - System type
 - Customer charge, per capita charges
 - Set Outs are KEY
 - 3 x30g historically – often down to 1 or 1.5 x 30 gal.



EXAMPLES OF RATE CALCULATIONS

SUBSCRIPTIONS & RATES: BAG SET OUT RISKS, IMPLICATIONS

illustrates Rate (& shortfall) implications of variations in set out distributions

Assume cost if \$5/wk on average...	Computed rates	Shortfall if 1 bag /wk	Computed rates	Shortfall if 1 bag/wk
1 bag / week	\$5.00	\$0.00	\$3.00	\$0.00
1.5 bags/wk	\$3.33	\$1.67	\$2.00	\$1.00
2 bags/wk	\$2.50	\$2.50	\$1.50	\$1.50
Base fee	\$0.00		\$2.00	

Mis-estimating the number of bags people will buy can lead to \$ shortfall.

→ try set out surveys, consumer surveys, phase in / pilot, PAYT publications...

Simplification for this illustration: Assumes no change in cost from reduced landfill tons from fewer bags. “Can” systems can embed incentives but bag is a bag...

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SUBSCRIPTIONS → SUBSCRIBED CAN RATES

Illustrates Rate (& shortfall) implications of variations in set out distributions

Can Size	SET OUT OPTION 1	SET OUT OPTION 2	SET OUT OPTION 3
Mini	\$7.98 0%	\$0.00 0%	\$0.00 0%
1	\$11.90 30%	\$13.89 45%	\$18.52 70%
2	\$23.81 30%	\$27.78 30%	\$37.04 25%
3	\$35.71 40%	\$41.67 25%	\$55.56 5%
Avg Cans/HH	2.10	1.80	1.35
Gals/HH	67.2	57.6	43.2
Avg \$ / HH	\$25.00	\$25.00	\$25.00

(100% differential between rates)

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SUBSCRIPTION RATES → CAN RATES (WITH BASE FEE)

Illustrates Rate (& shortfall) implications of variations in set out distributions

Set base / program fee level/HH=>	\$10.00	\$10.00	\$10.00
Bill per avg HH=>	\$25.00 100%	\$25.00 100%	\$25.00 100%
Mini	\$14.79 0%	\$10.00 0%	\$10.00 0%
1	\$17.14 30%	\$18.33 45%	\$21.11 70%
2	\$24.29 30%	\$26.67 30%	\$32.22 25%
3	\$31.43 40%	\$35.00 25%	\$43.33 5%
Avg Cans/HH	2.10	1.80	1.35
Gals/HH	67.2	57.6	43.2

Impacts: More revenue certainty. Less than 100% differential between rate levels in TOTAL; 42%-52% for these examples; less for higher cans; small users pay more

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PUBLIC PROCESS

- Public process
- Outreach
 - Rural: Civic organizations, radio stations / talk shows, newspapers, face-to-face
 - Urban / suburban: articles, stuffers, brochures, etc.
- Education key...



(Source: Skumatz & Green, SERA Education report for IA DNR)

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SUMMARY

- PAYT effective, cost-effective, flexible, demonstrated
- Negatives manageable with political will
- Quickest, least expensive, most effective approach to achieve diversion, equity, and environmental goals
- Range of examples provided in this webinar show simple to sophisticated systems, and demonstrate creative solutions at the local level...
- Resources available to all (paytnow.org) and EXTRA resources for Region 9 communities
 - Go to website or call 303/494-1178

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DISCUSSION AND QUESTIONS?

Lisa A. Skumatz, Ph.D.
Website – www.econservationinstitute.com
www.serainc.com

WATCH WEBSITE FOR TOOLS / INFORMATION:
www.paytnow.org; paytwest.org; paytinfo.org; payt.org

To help on statistical studies, consider filling out survey on:
www.serainc.com or www.garbageandrecyclingsurveys.com
“national survey”

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QUESTIONS / ASSISTANCE:

Lisa A. Skumatz, Ph.D. & Juri Freeman

Econservation Institute

762 Eldorado Drive, Superior, CO 80027

Phone: 303/494-1178

email: skumatz@econservationinstitute.org

skumatz@serainc.com

Project website – www.paytnow.org

PAY AS YOU THROW ON THE GO:

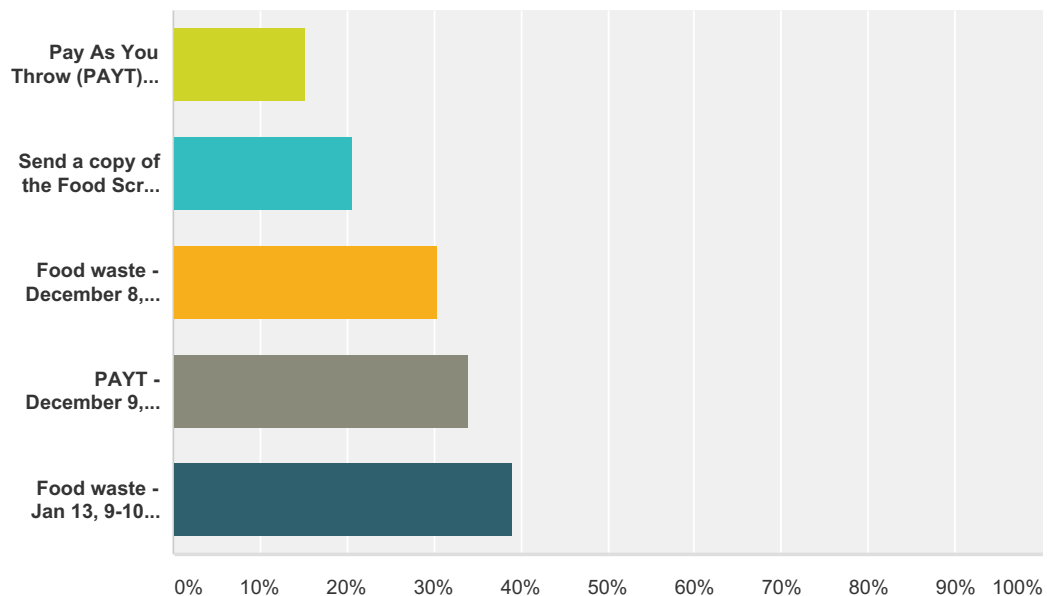
Q1 Contact Information

Answered: 1,617 Skipped: 7

Answer Choices	Responses	
Name	99.94%	1,616
Affiliation	95.55%	1,545
Email	99.75%	1,613
Address	94.87%	1,534
City	72.85%	1,178
State	95.55%	1,545
Zipcode	74.46%	1,204
Phone Number	93.75%	1,516

Q2 For which item(s) are you signing up?

Answered: 903 Skipped: 721

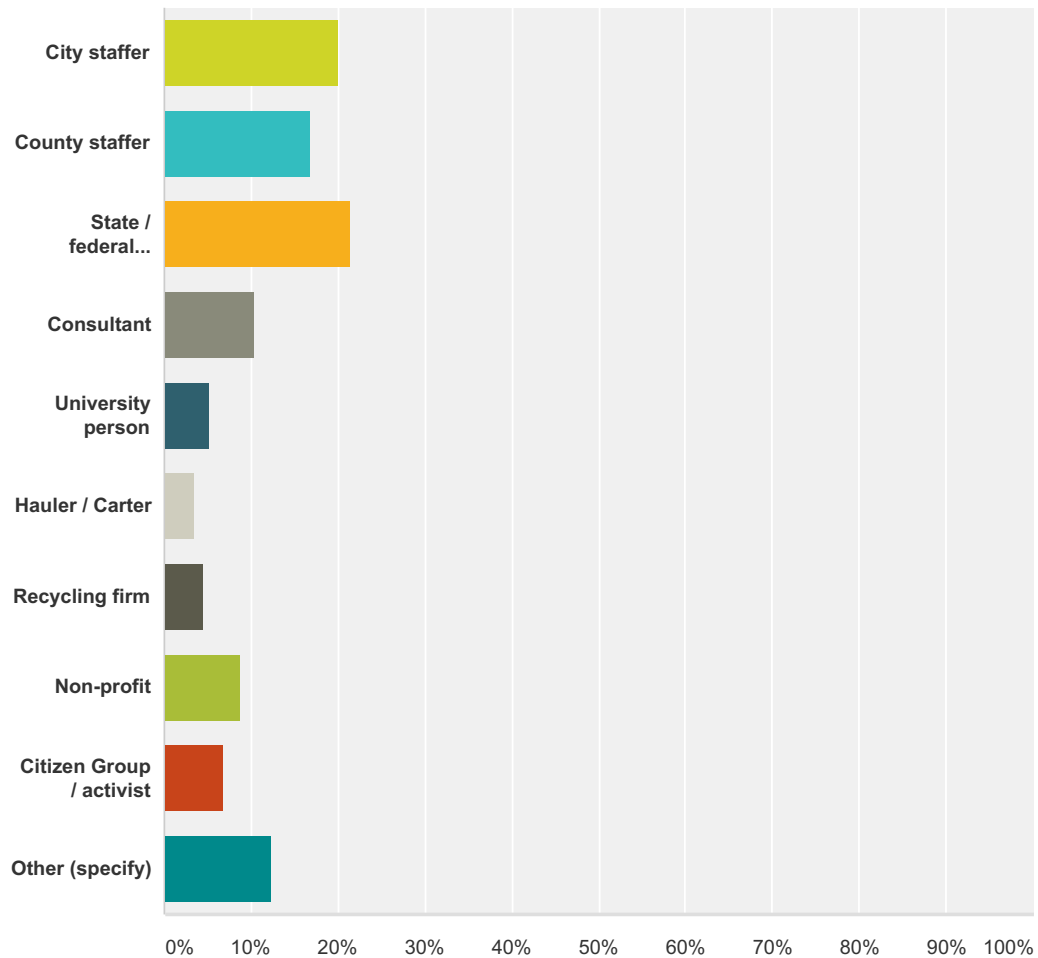


Answer Choices	Responses	
Pay As You Throw (PAYT) April 7, 11-1pm Mountain Time	15.28%	138
Send a copy of the Food Scraps Report	20.60%	186
Food waste - December 8, 9-10:30 Pacific time-CLOSED	30.45%	275
PAYT - December 9, 11-1 Pacific time-CLOSED	34.11%	308
Food waste - Jan 13, 9-10:45 CLOSED	38.98%	352

Total Respondents: 903

Q3 Are you a...

Answered: 1,198 Skipped: 426

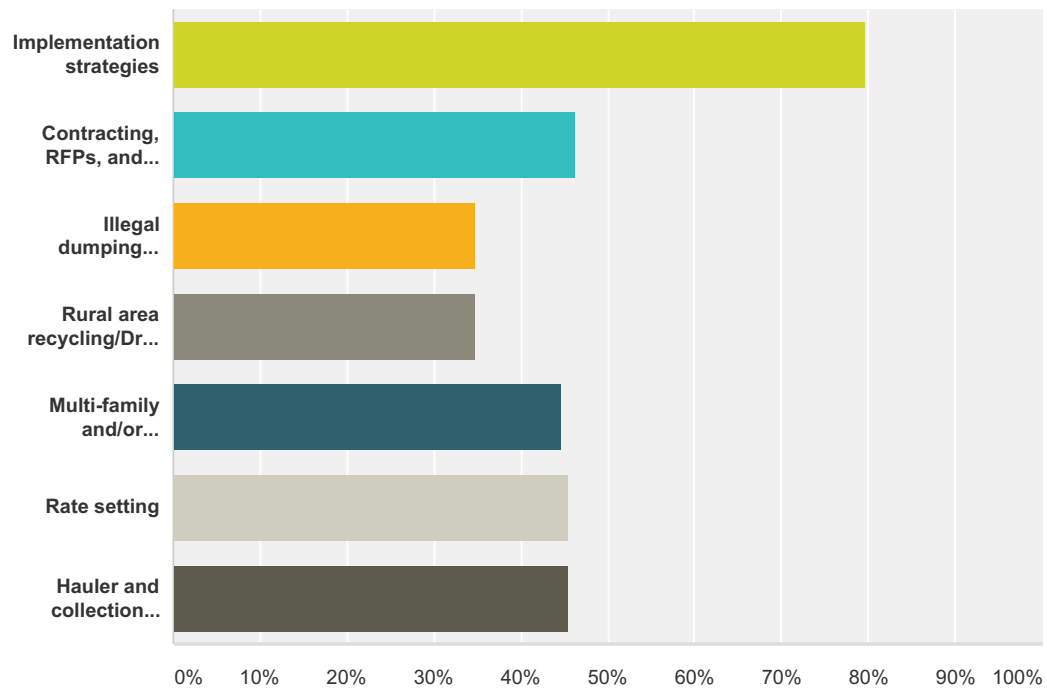


Answer Choices	Responses	
City staffer	19.95%	239
County staffer	16.86%	202
State / federal government	21.45%	257
Consultant	10.43%	125
University person	5.18%	62
Hauler / Carter	3.59%	43
Recycling firm	4.67%	56
Non-profit	8.68%	104
Citizen Group / activist	6.93%	83

Other (specify)	12.35%	148
Total Respondents: 1,198		

Q4 IF YOU are signing up for PAYT...Beyond "the basics", which of the following specialty PAYT topics most interests you?

Answered: 831 Skipped: 793



Answer Choices	Responses
Implementation strategies	79.78% 663
Contracting, RFPs, and ordinances	46.45% 386
Illegal dumping concerns	34.90% 290
Rural area recycling/Drop-off only programs	34.78% 289
Multi-family and/or commercial issues	44.65% 371
Rate setting	45.61% 379
Hauler and collection options	45.61% 379
Total Respondents: 831	

Q5 IF YOU are signing up for PAYT, what stage of PAYT are you in? (i.e.- just thinking about it, or, in the process of implementing)

Answered: 756 Skipped: 868

Q6 IF you are signing up for the FOOD SCRAPS report, are you considering a program? What stage are you in?

Answered: 648 Skipped: 976

Q7 If you know of other communities with PAYT, could you please list some of them (especially newer ones)? We're trying to complete the latest inventory of PAYT communities. Thanks!!

Answered: 38 Skipped: 1,586

Q8 In addition to webinars and a website (www.paytnow.org), this project offers free help to communities trying to work on PAYT. If you think you might need some FREE assistance, let us know below. What kind of help?

Answered: 35 Skipped: 1,589

Peer Match Program

The following are examples of Peer Match contacts and the potential matches for the community. As of this report, Econservation has had 62 requests for Peer Matches; over 50 of them have been completed beginning March 2008. The most recent request was July, 2014.

States with 1 Request	States with 2 Requests	States with 3 Requests	States with 4 Requests	States with 5 Requests	States with 7 Requests (none w/ 6)	Other
CA, HI, IL, KY, MA, ME, MN, ND, NM, NV, NY, RI	GA, IN, WY	AZ, MD, NJ,	CT, FL, OH, VA	OK	CO	Canada

Econservation Institute



Econservation Institute
 Boulder Office: 762 Eldorado Drive, Superior Colorado
 Voice: (303)494-1178 Fax: (303)494-1177
 email: info@econservationinstitute.org
 website: www.econservationinstitute.org

DATE: 1/11/10

TO: Denise Ice, Duncan, AZ

FROM: Lisa Skumatz, David Juri Freeman, Econservation Institute

SUBJECT: Pay-as-you-throw Peer Match

Based on the information you provided Econservation Institute, the following potential peer match cities were uncovered:

City	Contact	Location	Population	Collection	PAYT
City of Brodhead, WI	Richard Vogel publicworks@ckhweb.com	Rural	3,100	Contracted hauler for garbage and recycling collection	Started in 2002, use bags with a fixed fee
Oak Bluffs, MA	(508)693-2187	Rural, isolated	3,700 full time	Drop-off only for recycling	Use a sticker program for PAYT
Rawlins, WY	Don Cuin swdiv@rawlins-wyoming.com	Rural		Multiple haulers trash, drop-off only recycling	Started PAYT in 1980, use variable cans and bags

Please let us know if you have any questions.



Econservation Institute
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 website: www.econservationinstitute.org

DATE: 1/11/10

TO: Tina Llewellyn, Frostburg, MD

FROM: Lisa Skumatz, David Juri Freeman, Econservation Institute

SUBJECT: Pay-as-you-throw Peer Match

Based on the information you provided Econservation Institute, the following potential peer math cities were uncovered:

City	Contact	Location	Population	Collection	PAYT	Diversion
Norman, OK	Steve Womack steve.womack@normanok.gov	Urban, college	105K	Contracted	Variable size carts, now they have c/s recycling but used to be drop-off only	43% diversion
Loveland, CO	Bruce Philbrick philbb@ci.loveland.co.us	Rural, Urban	62K	Municipal collection	Started early 90's use variable cans and bag/tags	Diversion around 50% (including yw collection)
Oak Bluffs, MA	(508)693-2187	Rural, isolated	3,700 full time	Drop-off only for recycling	Use a sticker program for PAYT	

Please let us know if you have any questions.

Lisa Skumatz
 Econservation Institute
 303-494-1178



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 email: info@econservationinstitute.org
 website: www.econservationinstitute.org

DATE: 1/11/10

TO: Michael Dworsky, Hilo, HI

FROM: Lisa Skumatz, David Juri Freeman, Econservation Institute

SUBJECT: Pay-as-you-throw Peer Match

Based on the information you provided Econservation Institute, the following potential peer math cities were uncovered:

City	Contact	Location	Population	Collection	PAYT
Oak Bluffs, MA	(508)693-2187	Rural, isolated	3,700 full time	Drop-off only for recycling	Use a sticker program for PAYT
Topsham, ME	Ed Caron ecaron@topshammaine.com	Rural, suburban	~10K	Small local haulers for trash, drop-off only for recycling	Use PAYT at the transfer station, bag/tag/sticker
Sanbornton, NH	Mary O'Neil	Rural	2,600	Drop-off only for trash and recycling	Started PAYT in 1995, use bags with a fixed fee

Please let us know if you have any questions.

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Section 2

Webinars and Peer Match

The information in this document has been funded in part by the United States Environmental Protection Agency under assistance agreement X1-00T11601 to Econservation Institute. It has not gone through the Agency's publications review or peer review process and, therefore, may not necessarily reflect the views of the Agency and no official endorsement should be inferred.

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ECONSERVATION INSTITUTE / CHANDLER AZ GRANT PROJECT

Pay-As-You-Throw (PAYT) Options and Impacts



Econservation Institute
Superior CO

Lisa A. Skumatz, Juli Freeman
August, 2011

skumatz@econservationinstitute.org

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1

AGENDA

Item	Who	Time
Introduction- Background	All	10
PAYT Basics	Skumatz	15
Draft Implementation Plan	Freeman	10
Discussion	All	10
Interim Survey Results	Freeman	10
Rate Study	Skumatz	15
Discussion	All	15
Next Steps	All	5
	Total	90



2

ABOUT THE EPA GRANT

- EPA Region 9 Solid Waste Management Assistance Grant Solicitation #EPA-R9-WST7-09-002, Econservation Institute (EI) is funded to provide no cost consulting to communities
- Detailed assistance to design, develop, implement PAYT
- 3 city/county partners in Region 9 (includes Chandler, AZ)



3

TIMELINE (ORIGINAL)

Activity	April	May	June	July	August	September	City role in activity
Data request							Done
Existing data analysis							Done
Set-out Survey							Done
On-Line Survey							Almost done
Draft implementation plan							Done
Refined implementation plan							Done
Phone meetings							Yes, Every Other Week
Rate study							Discussion with EI
Billing analysis							Interviews with Skumatz
On-site Meeting							To be discussed
Final Implementation plan							To be discussed
Further steps to be determined during implementation planning							



ABOUT THE ECONSERVATION INSTITUTE

- Non-profit dedicated to sharing information on diversion, recycling, and sustainability
- Based outside of Boulder, Colorado
- Founded by Lisa Skumatz, Ph.D
- Small staff of economists, analysts, and researchers

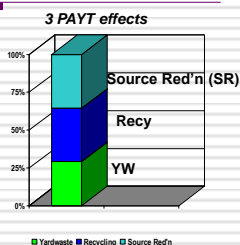


PAY AS YOU THROW (PAYT)

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PAYT - EFFECTIVE AND COST-EFFECTIVE

- **Effective:**
 - Demonstrated in 7100+ cities – Practical / flexible
 - **DOUBLES** recycling
 - Diverts **1/5-1/6** from landfill!
- **Biggest Impact:**
 - Statistical study shows it is the **BEST** of more than 2 dozen options for increasing diversion
- **Strong job creation**



Source for graphs and figures: Skumatz Economic Research Associates, ©



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PAYT - EFFECTIVE AND COST-EFFECTIVE

- **Cost-effective:**
 - 1/3 of the effect costs **ZERO** (SR)
 - PAYT needs **NO SEPARATE FUNDING** – paid by users (more equitably)
 - No increase in costs for 2/3 communities (short / long run)
 - Cheap for reduction of both GHG and Landfills

Source for graphs and figures: Skumatz Economic Research Associates ©



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PAYT COST, ACCEPTANCE

- Cost & workload impacts – 2/3 no increase (source: State surveys)
- Preferred by households



Communities – after PAYT	89%-95%
PARADE™	2/3 in favor



- Strengths / weaknesses

Key Advantages	Disadvantages
Rewards all diversion activities No new trucks down street (&wear/tear) Behavior / reminder; choice Utility; equity Works in variety of systems, tailor NEEDS NO SEPARATE FUNDING!	Concerns about illegal dumping, equity (low income, large families), MF (see FAQs), change... More complex rate study, outreach Costs & savings - "Net" depends on local conditions

Source

PAYT – BACKGROUND AND HOW IT WORKS

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PAYT- BASIC SYSTEM TYPES

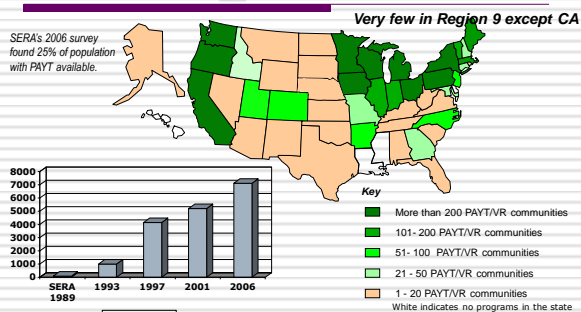
- **Variable cans/subscription**
- Bags
- Tags/stickers
- Hybrid
- Weight-based (GBTP – technology adopted by RecycleBank™)
- Drop-off variations
- Pros and cons –
 - Variations by region
 - Historical recycling "rebates" – less strong than PAYT / only recycling



Bag / Tag photos courtesy Resourceful Bag & Tag

PAY-AS-YOU-THROW (PAYT)/ VARIABLE RATES COMMUNITIES

SERA's 2006 survey found almost **7,100** PAYT/VR communities and only 3 states without programs



Superior, CO. 2006 Survey © SERA; all rights reserved, may be used with permission of author

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PAYT WORKING ACROSS US IN ALL COMMUNITY SITUATIONS

- ☐ Large communities
- ☐ Small, rural communities
- ☐ Tourist / student / mountain
- ☐ Isolated / island / self-haul
- ☐ Multiple Coll'n actors
- ☐ Collection method
- ☐ Ethnic diversity
- ☐ Climate extremes
- ☐ Curbside and drop-off recycling

Source: SERA surveys © all rights reserved

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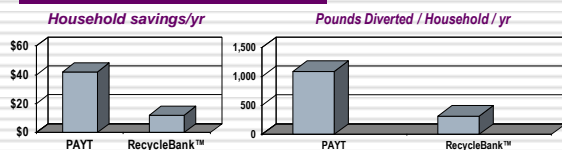
INCENTIVE OPTIONS / COMPARISON

- ☐ Rebates, discounts, market returns
 - Long history / performance
 - Simple incentives
 - ☐ 20+ years of examples, most discontinued
 - RecycleBank™ new version of incentive:
 - Towns consider because:
 - ☐ Hauler partnerships
 - ☐ Low hassle – "turnkey"
 - ☐ Jumpstart recycling
 - ☐ No new billing needed (attractive to HOAs, etc.)
 - ☐ Jazzy, traction, new, strong marketing

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IMPACTS COMPARISON – PAYT VS. RECYCLING INCENTIVES



Preliminary Review of communities with RecycleBank™

- ☐ Impacts separate from SS and containers
- ☐ Tonnage impacts
- ☐ RecycleBank™ fees
- ☐ Coupon redemption
- ☐ Cost per ton recycled

Source: SERA research; graphs from figures from EPA newsletter

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GETTING PAYT & DIVERSION PROGRAMS IN PLACE



State, County, Local Level...

Legislation, ordinance, contract, muni...

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THREE OPTIONS FOR GETTING PAYT & PROGRAMS IN PLACE

- ☐ Municipalization
 - Cities / towns
- ☐ Ordinance
 - Cities and counties
- ☐ Contracting / districting / franchising
 - Cities

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PAYT CONCERNS: ILLEGAL DUMPING AND BEYOND



Photos: Skumatz, 18

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MAJOR CONCERNS ABOUT PAYT

- ☐ Illegal dumping
 - Minority of dumped waste; NEED Bulky Item program
- ☐ Large families / poor families
 - Turn argument around. Unfair for small families, poor families to subsidize large disposers under current system – behavior affects bill now – control!
- ☐ Haulers
 - Business opportunity for haulers – recycling usually required
 - Revenue risk a concern
 - Consider involving them in design
- ☐ MF, commercial
- ☐ Workload (WI/IA finds 2/3 have NO increase)
- ☐ Confusion, resistance to change – wait 6 months!
 - 89-95% prefer
 - Keep rates SIMPLE

Survey shows fears much greater than reality! – FAQs on website

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IMPLEMENTATION OPPORTUNITIES

- ☐ Contracts, franchises, rates or billing system being changed
- ☐ Landfill or disposal problems
- ☐ New or modified programs
- ☐ Existing system perceived as unfair
- ☐ Tight budgets, need to free up tax authority



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PAYT CONCERNS / TIPS / SUMMARY

- Technical issues rarely the problem → performs
 - Pilot test / phase in
 - Strong diversion (all types), speedy, attitudes, retention, track record (7,100 towns), flexible / tailorable → local
- Public process, public education. Good customer education / understanding crucial
 - Education / why, how it works, how to make it work for me, packages for move-ins



- Politics, political will is the key stumbling block
 - Suggestions from communities; & champion
 - Negatives manageable if political will

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DRAFT IMPLEMENTATION PLAN

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CURRENT SITUATION

- Trash is collected weekly in 95-gallon carts for most
- A 68-gallon (2,464 carts in use) or 48-gallon (only 9 carts in use) cart is available upon request
- There is also alley collection in 300 gallon containers for a portion of the community (9,005 hhs, or 13% of total).

% Customers	Can Size
83.2%	95 - gallon
3.8%	68 - gallon
0.01%	48 - gallon
13.0%	Alley service

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CURRENT SITUATION

- Monthly charges are \$15.07/month
- Solid Waste rates remained constant from 1993 to 2005. There was a substantial increase in 2005 and the City is currently looking at a 3% rate increase
- Diversion: Approximately 17% at the curb and 2% at the drop-offs

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CURRENT SITUATION

The existing system has several elements that make it readily compatible with PAYT...

Advantages

- No changes needed to recycling system
- No changes needed in hauler arrangements/trash collection
- City pays for trash disposal and is paid for recycling
- City is considering a rate change
- Contracted hauler (WM) runs more PAYT programs than any other hauler in the US
- City bills monthly, recycling fees embedded

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CURRENT SITUATION

There are also several elements that must be considered when designing the program...

Considerations

- Alley collection
- Free drop-offs
- Free bulky item (every 6 weeks)
- Cart changes
- Political/public acceptance (all cities)
- Illegal dumping (all cities)
- Hauler incentive limited



PAYT SYSTEM DESIGN (CARTS)

- Collection will continue to be automated.
- HHS provided with various cart sizes (45-gallon, 65-gallon, 95-gallon, or multiple carts)
- Options for 32-gallon (carts, bag in can, insert, decals)
- City must finance the new carts and provide them to the residents (options include leasing, advance billing, borrowing, others to be discussed) (container fund?)
- Collection of MSW and recycling will be weekly to meet County requirements
- No changes to waste hauling contract- nothing in the current contract appears to preclude the implementation of PAYT rates/carts
- Minimal changes for hauler (except potentially in the 300 gallon alley service routes)

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PAYT SYSTEM DESIGN (CARTS)



Appx. Dimensions
45"H x 28.5"W x 33"D



Appx. Dimensions
40.5"H x 26.5"W x 28"D



Appx. Dimensions:
39"H x 20"W x 23"D

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PAYT SYSTEM DESIGN

Recycling:

- The current recycling system stays as is (96-gallon carts, collected weekly and embedded in the trash rates)

Facilities:

- No change in solid waste or recycling processing facilities

Changes to 300 gallon alley collection:

- Adjust prices so it is more significantly more expensive than cart based service and more equitable

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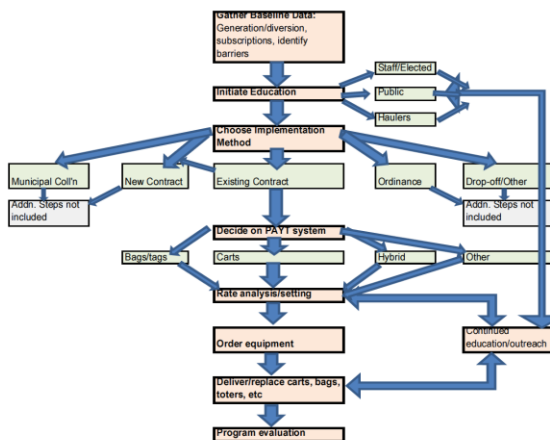
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PAYT SYSTEM DESIGN (OTHER)

- Continue to investigate green waste collection options.
- Bulky collection program changed to one free per year, fee/on-call based for all other collections
- Drop-off trash at RSWCC- suggest punch cards/coupons for one or two "free" drop-offs of MSW per rate payer per year, additional visits require a gate fee. Recycling drop-off continues to be "free"

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PAYT SYSTEM DESIGN

- Consider branding it as something other than PAYT

■ Chandler Trash \$aver Program?

Remainder of presentation:

- Survey
- Rates, potential impacts
- Next steps



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DISCUSSION AND QUESTIONS SO FAR...?

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SURVEY RESULTS



City of Chandler Trash and Recycling Survey 2011

•Went 'live' Saturday August 6th

•Up to 1,633 responses as of August 25th 2011
(97% completion rate)

5. Recycling Services

6. About how often do you set out your recycling (blue) container(s) at the curb?

- ☐ Every week
- ☐ Every other week
- ☐ Once a month
- ☐ Every other month
- ☒ Rarely
- ☐ Never

If you answered rarely or never, could you please tell us why?

7. On average, how full is your recycling (blue) container(s)?

Percent Full (on average)

Container One
Container Two (if you have more than one container)

34

SURVEY TOPICS

- ❑ **Trash Service and Behavior:** Trash generation and set-out, Drop-off and bulky, collections, Alley service
- ❑ **Recycling Service and Behavior:** Curbside participation, Amount recycled/diverted, Materials recycled
- ❑ **Yard/Green Waste:** Material types and amounts generated, Current disposal/composting habits
- ❑ **Satisfaction, Barriers:** Current program satisfaction (curbside trash and recycling, drop-off, bulky, etc.), Challenges, barriers to more recycling
- ❑ **Program preference**
- ❑ **Brief demographic information**
- ❑ **Open ended questions/other**

35

BRIEF RESULTS (alley)

- ❑ At a \$10-\$15 price differential 75% of residents reported that they would be "very likely" or would "definitely" be willing to switch to curbside collection.
- ❑ 16% report they would not be willing to switch.



36

BRIEF RESULTS (alley)

- "I prefer alley collection, but don't see that I have a choice. I would have to take whatever the city decides"
- "It doesn't matter to me which way I walk to put the trash out. If it saves me money, it's a good idea. Besides, the alleys no longer serve a useful purpose and are an eyesore."
- "The big alley container is the best."
- "I love my alley service.. please don't take it away"
- "We would actually like the curbside trash collection much better than the alley."

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37

BRIEF RESULTS (PAYT)

Vast majority report Trash is 75% or less full...

7. On average, how full is your garbage (black) container(s)?

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Percent Full (on average)

	Barely any trash (0-10%)	About a quarter full (25%)	Around half full (50%)	About three-quarters full (75%)	Pretty much all the way full (100%)	Overflowing (More than 100%)	Response Count
Container One	4.3% (68)	12.7% (203)	23.3% (371)	30.2% (481)	26.6% (423)	3.0% (47)	1,593

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BRIEF RESULTS (PAYT)

PAGE: PROGRAMS CONTINUED

21. How important are the following items to you? (where 1 is unimportant and 5 is very important)

[Create Chart](#)

[Download](#)

	1-unimportant	2	3	4	5-very important	Response Count
Ability to control my trash costs/rates	2.0% (32)	1.7% (26)	11.8% (184)	20.8% (325)	63.8% (998)	1,565

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BRIEF RESULTS (PAYT)

22. If the city were to offer a variable rate program for trash where households are charged for how much trash they throw away (similar to your other utilities like water or electricity) would you support or oppose this type of program? Under this type of program each household only pays for what they throw away, the less you dispose, the less you pay, the more you dispose, the more you pay. All households are also provided with unlimited recycling as a way to control their trash disposal costs.

[Create Chart](#)

[Download](#)

- 2/3 Support or neutral
- Around 27% do not support
- The rest are not sure
- Nearly 700 comments!
- Several main categories

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40

NEED MORE INFO..

- "Need info first to compare what I spend today with what the new system would cost."
- "I would want to know the rates and how it would effect me before supporting it. I was think I would benefit since I throw very little away."
- "I would need more information on this to list pros and cons"
- "Will need more details on the proposed rate structure."
- "So if I understand this right I pay less for trash cost cause I'm recycling more? Sounds like a good idea especially with everything going up in cost. How would this be done? How would you know how much I have? Would we get new trash cans? "
- "Would the cost be dictated by bin size or do you have the ability to estimate household contribution."

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41

NEED MORE INFO..

- "Provided there is an easy enough method to exercise full recycling options that are curbside pickup, and on average, enough could be recycled to keep most peoples rates the same, or even lower them, then I would not oppose it."
- "I'm curious as to how the amount of trash will be determined. "
- "Obviously, my level of support will be determined by the cost of the variable rate program as it applies to my monthly bill! "

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CONCERNED ABOUT DUMPING..

- "People can abuse the program and throw trash in other people's containers. It would not be fair."
- "It would be unfair to put a price per bag or by weight. Now you'd have some Dumping elsewhere or even leaving it in their yards to save money. This could attract insects, animals and cause an unsafe environment."
- "I think the city would have a lot of trash around because people would not want to pay! "

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43

HOUSEHOLD SIZES..

- "Families are penalized under this system" (Anti)
- "A larger household would have more trash and should not be punished for that" (Anti)
- "The disadvantage I see to this is that it would put the burden of higher fees to larger families who can least afford it. Having flat rates seems to be a good community approach." (Anti)
- "I chose somewhat support because I see neighbors using two trash cans full and in my house hold we only fill it up half way on an average week. It is worth a try." (Pro)
- "There are only two people living at home so we do not have much garbage." (Pro)
- "Why should I have to pay for other people's wasteful ways." (Pro)

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44

LOVE IT...

- "I think this is a great idea."
- "Love this idea!"
- "It is about time we claim we are a city mature enough to drive these type of programs. I fully support this."
- "Very refreshing idea you pay for what you use"
- "I would highly support this idea. We don't generate much trash we recycle more the we throw out."
- "Just like I don't want to pay for the water my neighbor uses, I don't want to pay for the extra trash they have just because they don't want to recycle. I think if people pay for what they throw away, people will think twice about whether to throw something away or recycle it."

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45

HATE IT..



- "I would oppose. My neighbors never clean up their yard and a lot of the debris comes to my house. I would hate to be charged more just because I end up cleaning not only my yard, but the stuff that comes from their yard as well."
- "I am somewhat opposed because there may be times, like after a move or big party, where I am generating more trash and don't want to be charged extra because of it. I am okay with the current system."
- "What a dumb idea!"
- "Let me make this abundantly clear: This is a wretched, terrible, awful, horrible idea that should not even have been considered, much less put in this survey. Do not consider this ever again. Fire the folks who thought this up. Do not implement this."

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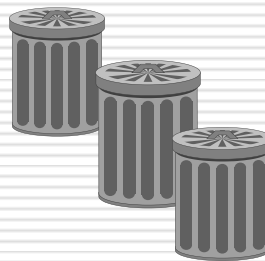
A FEW OTHER RESULTS

- **Set-out Recycling at curb:** 2/3 weekly, ¼ EOW
- **Visit drop-off facility** (Queen Creek): 43% never visit, 37% d/off bulky, 23% D/off MSW
- **Curbside bulky:** 53% have used it, of those... 2/3 1x year or less, 25% 2x year
- **Satisfaction high!**- +90% are *extremely* or *very satisfied* with trash service, recycling service
- **Food and yard waste** are the main materials remaining in the trash

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RATES / RATE-SETTING



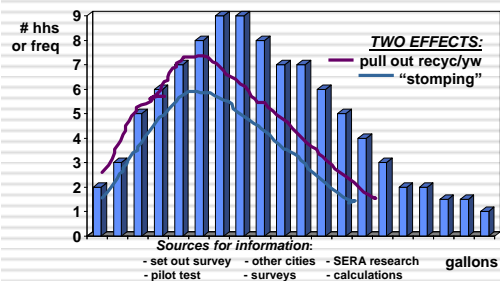
RATE SETTING

- Number of "revenue items" is the key
 - Prediction challenges, data
- Revenue risk
 - Customer charge, per capita charges, plan for fewer set outs



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ESTIMATING REVENUE UNITS

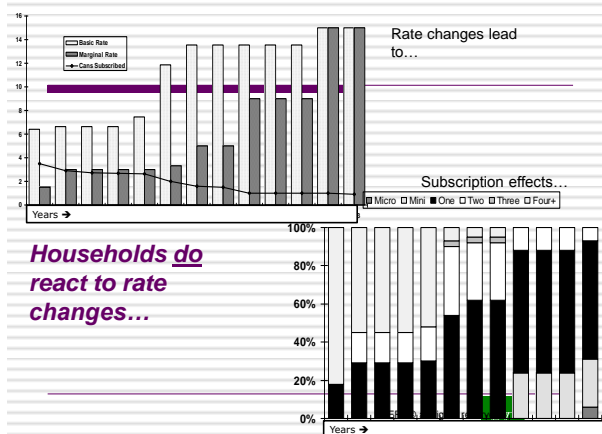


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RATE INCENTIVES / REVENUE RISK

- Aggressiveness of incentive (20% vs. > doubling)
 - relation to cost of service ("COS") VS. thresholds
 - Revenue risk (incentives to reduce, set outs, deviations from COS)
- Research results
 - "goal" range...



SUBSCRIPTIONS AND RATES: IMPACTS FROM SET OUTS

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SUBSCRIPTIONS → CAN RATES

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SUBSCRIPTION RATES → CAN RATES (WITH BASE FEE)

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55

RATES / ACCEPTABILITY

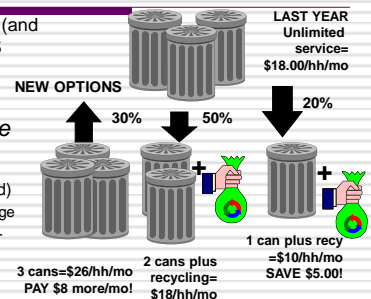
- Highlight winners (and losers) -- % and \$

- Rates vs. BILLS

For example:

**70% pay same
or less!**

(vs. \$/can increased)
(but note here, average
bill increased \$0.80 --
outcome depends on
structure, changes)



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QUESTIONS / DISCUSSION



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NEXT STEPS

- ☐ Write-up on-line survey
- ☐ Finalize rate estimates
- ☐ Additional webinar?
- ☐ On-site meeting (Sept.? Oct?)
- ☐ Others?

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VARIABLE RATES FOR TRASH COLLECTION IN CHANDLER, AZ

- REPORT -

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SECTION 1: EXECUTIVE SUMMARY

1.1: Introduction

Under the EPA Region 9 Solid Waste Management Assistance Grant Solicitation #EPA-R9-WST7-09-002, *Econservation Institute (EI)*¹ was funded to provide no cost consulting to communities in EPA Region 9. The consulting assistance was designed to encourage communities to adopt variable rate pricing or Pay-As-You-Throw (PAYT) for solid waste. Under the awarded grant only a few communities were selected for in-depth PAYT consultation and Chandler, AZ was one of the communities.

Why Consider Pay-as-you-throw?

Pay-as-you-throw (PAYT; also called variable rates, volume-based rates, and other names) provides a different way to bill for garbage service. Instead of paying a fixed bill for unlimited collection, these systems require households to pay for services based on how much trash they set out for collection – the less set out, the lower the bill, the more set-out, the higher the bill. Individual household rates are based on the size of trash can subscribed to². Paying by volume (like you pay for electricity, water, groceries, etc.) provides households with an incentive to recycle more and reduce disposal and creates a more equitable way for households to pay for trash services. Under PAYT each household is only responsible for paying for what they dispose of, low generators, good recyclers, small households, and others no longer need to help cover the costs of disposal for households that throw away large amounts of trash on a regular basis

It is critical for communities to have realistic expectations about what will happen if they implement PAYT. PAYT is a commonly adopted program and is in place in over 7,100 communities in the United States³. Data from more than 1,000 communities around the country was used to identify the impacts of PAYT above and beyond any other recycling or yard waste program differences, demographics, and other factors. The research showed the following impacts on residential solid waste:⁴



Disposal decreases by 16%-17%

¹ Econservation Institute is a 501c3 non-profit based in Superior Colorado dedicated to sharing information and real world data on sustainable issues including recycling. EI has a small staff of economists, analysts, and researchers dedicated to its mission.

² Other PAYT program charge based on the number of bags set out, require generators to put pre-paid tags on trash for collection, use a hybrid system, or some other option.

³ Skumatz, Freeman. PAYT in the United States. 2006 Update and Analysis. US EPA.

⁴ Skumatz, Lisa A., Ph.D., "Beyond case studies: Quantitative effects of recycling and variable rates programs", *Resource Recycling* 9/1996; and Skumatz, Lisa A., Ph.D., "Achieving 50% diversion: Program elements, analysis, and policy implications", *Resource Recycling*, 8/2000.

Increases in recycling of 5-6 percentage points or 5-6% of residential waste generation (usually about a 50% increase in current recycling)⁵

Increases in yard waste diversion of about 4-5 percentage points

Source reduction of about 6% of generation⁶

Years of research indicates that adding a PAYT program is the single most effective change a community can make to increase recycling. According to published research, PAYT increases recycling more than adding a new material, changing collection frequency, or many other potential program design or collection changes.

1.2: Variable Rate System Design

The basics of the new variable rate system for the City of Chandler are displayed in figure 1.1.

Figure 1.1. PAYT System Design

PAYT Rate Incentives Details	Description
What	Rates for smaller trash service are lower, and are subsidized by larger service levels in order to provide significant-enough differentials to act as an incentive to reduce trash. Each household signs up for a set level of trash collection and receives a 45, 64, or 96 gallon cart. All trash must fit in the cart, recycling service is unchanged and collection is unlimited. A small service level (45 gals ⁷) must be provided, and fees for more trash service cost more.
Why	Modify rates so residents pay different rates for different amounts of trash service, providing a recycling and source reduction incentive.
Who	SF, duplexes, triplexes (covered residences)
Facilities issues	None. Trash and recycling both go to same location as current system. Free RSWCC gate rates and bulky collections should be examined.
Equipment	Different-sized (or multiple) containers are needed; cans can be leased or customers can be asked to provide / purchase cans.
Staff Effort / Admin	Billing is modified to provide repetitive billing for different can levels (if cans). Current line itemed billing system has the potential to work well with a PAYT program.
Cost	Financing for containers cost approximately \$1/hh/mo; minimal cost billing adjustment; rerouting / training. – minimal cost if the city chooses to lease or finance (costs balanced by savings at landfill), all costs covered by rates. Rates programming required to replace current values. Overall costs to city are minimal and are far outweighed by potential landfill disposal savings and increased recycling revenue. Costs per household will decrease for the majority of Chandler residents. (see rates discussion)

⁵ Analyzing Iowa communities, Frable, 1994, found an increase of 30% to 100% with an average of 50% increase in recycling tonnages.

⁶ Skumatz, Lisa A., Ph.D., (2000) "Measuring Source Reduction: PAYT / Variable Rates as an Example", Skumatz Economic Research Associates Technical Report, prepared for multiple clients, included on USEPA website; and Skumatz, Lisa A., Ph.D., "Source Reduction can be Measured", *Resource Recycling*, 8/2000.

⁷ Although it appears as if there is nothing in the Chandler Waste Hauling contract that would prohibit PAYT, the contract does specify cart sizes as 45, 65, 95 gallons while a 32-gallon minimum size is preferred, 45 gallons will work.

1.3: Estimated Impacts of PAYT on Existing Rates and Tons

The City of Chandler Solid Waste rates remained constant from 1993 to 2005. There was a substantial increase in 2005 and the City is currently looking at a 3% rate increase. Assuming the new revenue requirement per household is \$15.55 / household / month⁸ the per household rates under a variable rate system were developed. The subscription outcomes are a critical determinant in the rate computations and to help predict the subscription levels City of Chandler staff conducted a set-out survey and a web survey. Figure 1.1 displays the suggested rates for various subscription levels based on the data collected and EI experience working with scores of other communities on variable rate design. The rates are designed to meet the City's revenue requirements and to provide a large enough economic incentive to encourage additional recycling for households. Note that under all scenarios the majority of households in the city would actually see savings on their monthly bills. Additional scenarios, including a fixed fee option, are included in the report.

Figure 1.2: Computed Rate Scenarios and Savings (compared to current rates)

Subscription Assumption ==>	A: 12% Red'n & stuffing (Revenue \$15.55)	B: 15% Red'n & Stuffing (Revenue \$15.55)	C1: 30% red'n (YW & stuffing) (Revenue \$15.55)	C2: 30% red'n (YW & stuffing) & \$21.55
48gal	\$11.21	\$9.54	\$10.47	\$14.52
64gal	\$13.80	\$13.88	\$15.23	\$21.11
96gal	\$18.97	\$22.55	\$24.76	\$34.31
2x96 gal	\$37.94	\$45.10	\$49.52	\$68.62
3x96 gal	\$56.91	\$67.65	\$74.28	\$102.93
300gal (total rate)	\$51.96	\$77.86	\$85.46	\$118.43
Avg 30-g Can Equivalents →	2.34	2.32	2.06	2.06
Savings compared to current rates →	61% save \$1.27-3.86/mo	62% save \$1.19-5.53/mo	66% save \$4.60/mo	66% save \$0.55/mo

The variable rates program will impact the amount of MSW going (source reduction, increased recycling, some at-home composting) to the landfill and recyclables (increased recycling) going the MRF. Based on the City of Chandler's existing waste disposal and recycling contracts this may result in significant cost saving to the city. Figure 1.3 displays the potential impacts of the PAYT program.

Figure 1.3: Estimated Budget Impacts

	Impact on tons	Impacts on Revenue / Expenses
Decrease in MSW to Landfill	6,600 - 8,400	Savings of \$231K - \$294K
Increase in Recycling to MRF	3,300 - 4,300	Revenues of \$91K - \$118
<i>Total</i>	<i>9,900 - 12,700</i>	<i>\$322K - \$413K</i>

⁸ The rates figure is computed to incorporate the 3% increase suggested as needed by the City, plus a small amount designed to help purchase more small containers for use by households. We provide a table in the report that lists the options that could have been used. If a different dollar amount better represents the average cost of service, then the new rates can be readily computed (e.g. a 5% increase would lead to an average per household of \$15.85).

1.4: Public Acceptance

The technical aspects of variable rates or PAYT are rarely the barrier to implementation. Although studies have shown that after implementation the vast majority of residents support PAYT¹, perceived concerns about rate changes, changes to existing trash systems, illegal dumping (see appendix 2), and other barriers can make ‘selling’ the program to the public challenging.

In order to gather information on the potential public support or opposition to PAYT Econservation Institute conducted a statistically valid web survey of Chandler residents. The full results of the survey are displayed in the report (along with the extensive public comments in the appendix). A few highlights are shown below:

Controlling the costs of trash is important to residents: The majority of residents (85%) report that the ability to control their trash rates is important or somewhat important to them. Variable rates provide residents with greater control over their trash rates.

Residents are currently oversubscribing to trash service: Over 70% of respondents reported that on average their trash containers are three-quarters full or less. Two-fifths reported that their trash carts are less than half-full on average. These residents could potentially reduce their trash cart service size.

The majority of residents support a change to variable rates for trash collection: The majority of residents (52%) reported that they *strongly* or *somewhat* support adopting variable rates for trash collection. Slightly over one-fifth (23%) reported that they are *not sure* whether they would support it or are *neutral* about the program. Only 28% reported that they *somewhat* or *strongly oppose* variable rates. Upon review of the open-ended comments the major categories of concern were:

- Need more information in general
- Concerned about how it would impact their rates
- Concerned about illegal dumping
- Household sizes
- Government overextending itself

Marketing the Program

As one last note, to maximize the effectiveness of the program, we believe a renaming of the program may be useful. The term “Pay as you throw / PAYT” may not resonate well with residents or decision-makers. A locally tailored name that avoids the word “pay” may lead to a more successful implementation (we are using “Recycle & Save” in some locations) – and tailoring it further to provide a Chandler flavor may enhance the program’s success.



SECTION 2: BASIC IMPLEMENTATION PLAN

Background Information and Current Situation

Based on interviews and a review of existing data, the following background information will be useful in PAYT planning:

Population: 242,522

HHS: 92,559

Serviced HHS: City provides Solid Waste services to 69,257 HH as of March 2011)

Tons Residential MSW: 71,394 curbside, 14,232 self-haul drop-off (Recycling Solid Waste Collection Center – RSWCC – (FY 09-10)

Tons Residential Recycling: 20,663 (1,864 at RSWCC center (may include some commercial), 18,000 curbside, 799 drop-offs and OCC at curb)

Total Tons Generated: 106,290

Residential diversion rate: 19%¹⁰

The figure below displays the calculated per capita and per household trash generation, disposal, and recycling amounts:

Figure 2.1: Per Capita and Per Household Data

	Person/Day	HH/Week	Percent
Total generation	3.0	58.9	100%
Trash disposal	2.4	47.4	81%
Recycling	0.6	11.4	19%

This is consistent with national residential trash generation estimates¹¹. The diversion rate is below the national average of 34%.

Trash Collection:

The city contracts with a single hauler (Waste Management) to provide services for all *covered residences* (includes duplexes and triplexes)

Trash is collected weekly in 95-gallon carts for most

A 68-gallon (2,464 carts in use) or 48-gallon (only 9 carts in use) cart is available upon request

There is also alley collection in 300 gallon containers for a portion of the community (9,005 hhs, or 13% of total). This is a potential issue to examine.

Recycling:

Approximately 17% at the curb and 2% at the drop-offs

Recycling is embedded in the trash rates for all households

Single stream in 96 gallon carts collected weekly

Materials include OCC, ONP, glass, aluminum/steel, paper, and #1-#6 plastics

Although there are not strong numbers on participation, some anecdotal reports show that around 25% - 40% of households set-out recycling carts every-other-week or less with maybe around 10% not participating at all.

¹⁰ Diversion rate= Tons diverted/ Total tons generated. This is different than the reported diversion rate of 24.7% due to changes in the denominator.

¹¹ US EPA Municipal Solid Waste in the United States: 2009 Facts and Figures reports that the average residential per capita generation is in the range of 2.4 to 2.8 lbs per person per day.

Other Services:

Bulky item collection is offered for *no additional cost* every 6 weeks

Additional bulky collection can be paid for \$30/collection

For an additional cost, residents may request more than one refuse container. There is no cost for additional recycle containers.

The Recycling and Solid Waste Collection Center is open to all residents where they can drop trash, bulky, recycling at *no cost*

Fees:

Covered residences are charged on their utility (water) bill as a separate line item

Bills are sent monthly

Monthly charges are \$15.07/month

Solid Waste rates remained constant from 1993 to 2005. There was a substantial increase in 2005 and the City is currently looking at a 3% rate increase in July 2011.

Landfill disposal costs to the city are around \$28/ton

The least the City can get paid for recycling is \$25.50/ton according to the recycling contract

Contracts:

There is a contract with WM for hauling and transfer that goes until 2020 with one 10 year extension possible. Upon first review it appears as if there are no major barriers to PAYT in the existing contract.

The city owns the carts and is responsible for the carts under the WM contract

There is a contract with United Fibers for processing recyclables

Education:

The City receives \$2.35 per ton paid quarterly from United Fibers for education, although it is not stipulated in the contract that this money is strictly for education

PAYT System Design

A description of what the future pay-as-you-throw systems might look like in Chandler is included below:

Containerization:

Collection will continue to be automated. Households will be given the option of various sized carts (45-gallon, 65-gallon, 95-gallon, or multiple carts)

City must finance the new carts and provide them to the residents (options include leasing, advance billing, borrowing, others to be discussed)

Collection of MSW and recycling will be weekly to meet County / State requirements

No changes to waste hauling contract- nothing in the current contract appears to preclude the implementation of PAYT rates/carts

Minimal changes for hauler (except potentially in the 300 gallon alley service routes)



Rates and Billing:

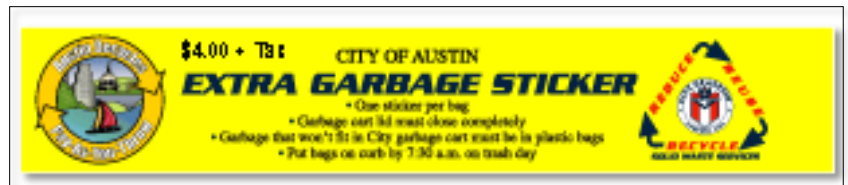
Continue billing through the City utility bills on a monthly basis with a line item for trash service. Under PAYT there will be a recurring bill with the rate depending on subscription level (no bad debt!)

Rates recommended include an 80% rate differential (see rate design section).

EI suggests only doing one rate change, if the City changes rates as planned, it should include PAYT rates, or wait to change rates until the city is ready to implement PAYT.

Residents are allowed one 'free' cart size change per year. Additional 'up-sizing' (going from a 45 to a 64 gallon cart) can be done for a fee, 'downsizing' is free.

In order to meet high-disposal periods (parties, holidays, guests visiting) the City should continue its on-call extra trash service collections for an added fee. This will allow residents to sign-up for a lower level of trash service and just pay a few extra dollars for extra collection when it is needed. The city may also want to consider a tag program (where residents buy pre-paid tags to place on extra trash that doesn't fit in the can) or other options (perhaps allowing two discounted extra collections per year or other options to meet the needs of the public).



Recycling:

The current recycling system stays as is (96-gallon carts, collected weekly and embedded in the trash rates)

Facilities:

No change in solid waste or recycling processing facilities

Changes to 300 gallon alley collection:

Continue to offer service

Adjust prices so it is more significantly more expensive than cart based service

Other programs:

Continue to investigate green waste collection options. If green waste at the curb becomes an option in the future, consider alternating weeks of recycling and yard waste collection (a green waste option is included in the rates study)

Bulky collection program changed to one (or two) free per year, fee/on-call based for all other collections

Drop-off trash at RSWCC- suggest punch cards/coupons for one (or two) "free" drop-offs of MSW per rate payer per year, additional visits require a gate fee. Recycling drop-off continues to be "free"

Marketing the Program:

As one last note, to maximize the effectiveness of the program, we believe a renaming of the program may be useful. The term "Pay as you throw / PAYT" may not resonate well with residents or decision-makers. A locally tailored name that avoids the word "pay" may lead to a more successful implementation (we are using "Recycle & Save" in some locations) – and tailoring it further to provide a Chandler flavor may enhance the program's success.

Basic PAYT Implementation Flow Chart

Figure 2 displays a simplified PAYT implementation flow chart. For Chandler, only options related to an existing solid waste contract are displayed.

Figure 2.2: PAYT Implementation Flow Chart

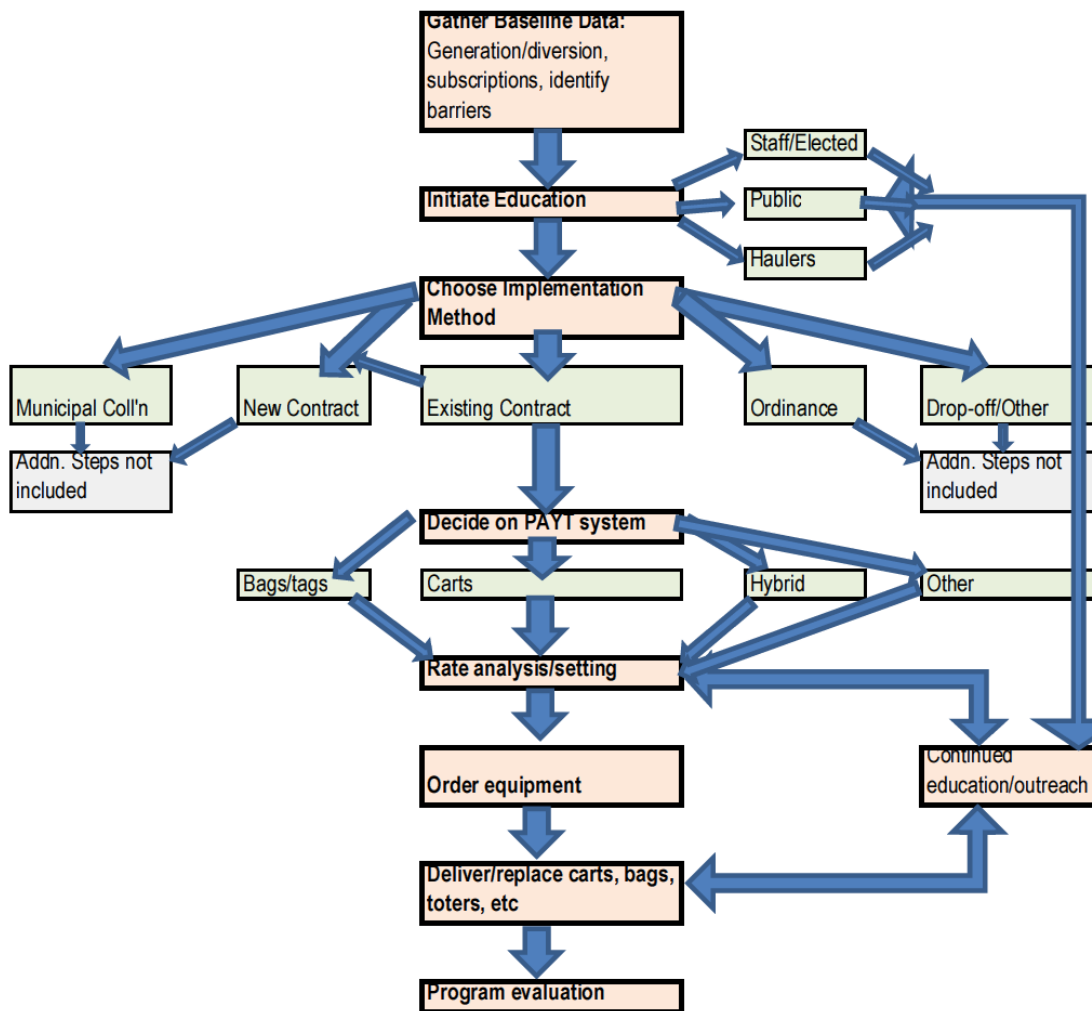


Figure 2.3: PAYT Implementation Steps

PAYT Rate Incentives Details	Description
What	Rates for smaller trash service are lower, and are subsidized by larger service levels in order to provide significant-enough differentials to act as an incentive to reduce trash. Each household signs up for a set level of trash collection and receive a 45, 64, or 96 gallon cart. All trash must fit in the cart, recycling service is unchanged and collection is unlimited. A small service level (45 gals ¹²) must be provided, and fees for more trash service cost more.
Why	Modify rates so residents pay different rates for different amounts of trash service, providing a recycling and source reduction incentive.
Who	SF, duplexes, triplexes (covered residences)
Facilities issues	None. Trash and recycling both go to same location as current system. Free RSWCC gate rates and bulky collections should be examined.
Equipment	Different-sized (or multiple) containers are needed; cans can be leased or customers can be asked to provide cans.
Staff Effort / Admin	Billing is modified to provide repetitive billing for different can levels (if cans). Current line itemed billing system has the potential to work well with a PAYT program.
Cost	Financing for containers cost approximately \$1/hh/mo; minimal cost billing adjustment; rerouting / training. – minimal cost if the city chooses to lease or finance (costs balanced by savings at landfill), all costs covered by rates. Rates programming required to replace current values. Overall costs to city are minimal and are far outweighed by potential landfill disposal savings and increased recycling revenue. Costs per household will decrease for the majority of Chandler residents. (see rates discussion)
How Paid?	All costs recovered through residential trash bills. There is a large incentive for the community to recycle more. PAYT will significantly decrease the amount of trash to the LF, resulting in cost savings for Chandler.
Potential Impacts	Perhaps 40-50% more recycling than current curbside program and a 5-6 percentage point decrease in trash sent to the LF. The landfill savings and recycling revenues (based on current contracts) may be in the range of \$322K to \$413K total impact per year for the City.
Implementation Steps – 1-3 months	<ul style="list-style-type: none"> Find champion on City council for PAYT. Public survey or hold public hearing for education, support, opposition, barriers, WTP, others Conduct set out survey to assess likely subscriptions for rate setting / costs Begin rate analysis and containerization estimations Begin addressing specific barriers to Chandler (See “issues” below) Discussions with contracted hauler
Implementation Steps- <i>Political</i>	<ul style="list-style-type: none"> Work with elected officials/city staff to gather buy-in Public outreach/education
Implementation Steps – 3-6 months (if Ok'd by city council, citizens)	<ul style="list-style-type: none"> Complete rate study/cart estimations Review routing; train staff Review current billing system

¹² Although it appears as if there is nothing in the Chandler Waste Hauling contract that would prohibit PAYT, the contract does specify cart sizes as 45, 65, 95 gallons while a 32-gallon minimum size is preferred, 45 gallons will work.

	<ul style="list-style-type: none"> · Continue education on program / container selection by residents · Order containers
Implementation Steps – 6-9 months	<ul style="list-style-type: none"> · Container delivery · Change rates / bills · Continued Education · Begin PAYT program · Monitor / refine / track

SECTION 3: RATE AND IMPACTS

When PAYT rates are developed, the rates are based on number and size of cans, and no longer on household fees, scaled to cover CPI- or other increases. Thus, computations of “set out” distributions are an important part of rate-setting. This chapter addresses three key issues:

- Changes in customer behaviors and the impacts on “set outs”¹³ – which now represent “revenue units” to the city;
- Rate computations resulting from those assumptions of set outs; and
- Estimated tonnage impacts from the changes in customer behavior.

Current Set Outs:

Figure 3.1 has three columns.

The first column presents current set outs (percent of households on each container size).

The second column presents can sizes households say they would be likely to subscribe to under a PAYT program and curbside recycling

The third column shows the amount of volume in the cans households actually use, based on the set out survey (can weighing).

We used these data, combined with information from other communities with early and mature PAYT programs, to develop some scenarios surrounding what could happen to subscriptions. Note that the average current weekly gallons of service provided to households are 102 gallons.

We show current subscriptions in the first column. The last column shows that if they had the option for 32, 48, 64, and 96 gallon cans, and they stuffed their waste but did no additional diversion (recycling, etc.), they would be using less than 2/3 that amount (about 71 gallons).¹⁴ In the survey, households were asked what they believe they could adjust their subscriptions to, with PAYT *and* recycling / diversion. Those results show a projected total subscription volume of 76 gallons (middle column).

Figure 3.1: Current Subscriptions and Usage

	Current gal of svc	Estimated from Web survey	Current disposal Plus "Stuffing"
32 gal	0.0%	14.6%	14.6%
48 gal	0.7%	20.1%	36.8%
64 gal	3.9%	25.9%	4.2%
96 gal	81.5%	25.5%	38.7%
300 gal	13.9%	13.9%	5.7%
Total	100.0%	100.0%	100.0%
Gallons, no 300 ¹⁵	94.1	63.6	64.8
Gallons w/300	101.9	76.2	70.7

¹³ Chandler City staff conducted a set-out survey to determine the current set-out in the city. The results of the survey are covered in more detail in Section 5.

¹⁴ Note, however, that the PAYT plan does not expect to allow 32 gallons as a service option, so the total gallons that customers will be subscribed to will increase, as all those 32 gallon-enabled customers will be assigned to the 48 gallon containers. The 32 gallon option is included in the table to allow readers to see how many households could potentially use this service.

¹⁵ If we exclude the 300-gallon customers and compute the gallons used by the “average” 45/64/96” gallon customer...

Our analysis of the customers using 300 gallons shows that with stuffing and NO additional recycling, 41% of the current customers would still need more than a 96-gallon container (but it could be 2x96s). A total of about 4% could reduce to 48-gallon containers, 11% could move to 64 gallon containers, and 44% could easily subscribe to 96 gallon cans.

3.1: Projected Set-Out Scenarios

In each of the three projected set out scenarios, we assumed there are two main actions that occurred:
Households removed recyclables and conducted some other diversion (source reduction, perhaps back-yard composting, etc.) to divert materials from the garbage, and
Residents stomped on their trash to fit more in a can.

The three subscription scenarios were computed to represent the following¹⁶.

Scenario A is based on a projection of a reduction of 12% of the trash in the container, with half going to recycling, and half to source reduction.

Scenario B reflects a 15% reduction, which is recommended as a slightly more revenue-conservative assumption about container subscription shifts than the 12% reduction.

Scenario C is very aggressive, and assumes residents would achieve 30% diversion. This would likely take the incorporation of a yard waste program.

The two tables below present the results showing the actual needs of customers (with the possibility of a 32 gallon service), and the service levels that could be achieved with a minimum of a 48 gallon container. The average gallons of trash service represented by these subscription levels are also provided at the bottom of each table.

**Figure 3.2: Modeled Subscription Scenarios
(including and excluding customers on 32 gallons of service)**

	A:12% divers. & "Stuffing"	B:15% divers. & "Stuffing"	C:30% divers. (YW)&"Stuff"
32 gal	17.5%	18.4%	26.3%
48 gal	38.7%	39.0%	39.9%
64 gal	4.9%	4.9%	4.9%
96 gal	35.3%	34.1%	27.4%
300 gal	3.6%	3.6%	1.5%
Total	100.0%	100.0%	100.0%
Gallons, no 300	62.3	61.5	56.6
Gallons w/300	66.6	65.9	59.3

IF no 32 gallon	A:12% divers. & "Stuffing"	B:15% divers. & "Stuffing"	C:30% divers. (YW)&"Stuff"
48 gal	56.2%	57.4%	66.3%
64 gal	4.9%	4.9%	4.9%
96 gal	35.3%	34.1%	27.4%

¹⁶ Impact estimates are based on previously conducted statistical studies on the impacts of PAYT by the authors. Additional information on the impacts of PAYT can be found in [ADD REFERENCE](#)

300 gal	3.6%	3.6%	1.5%
Total	100%	100%	100%
Gallons, w/300	69.4	68.8	63.5

Depending on the scenario we believe will occur, we see a range from 56-70 gallons per week per household as an average trash subscription. Given a minimum size of 48 gallons, we make the following notations about the 3 subscription scenarios:

A is a likely outcome from the 12% additional diversion we expect from the program.

B is a slightly more aggressive assumption about diversion, and conservative financial assumption.

This is modeled to “hedge” the rates computations, and provide a little less revenue risk.

C is a likely outcome if households divert a great deal more (30%) from the PAYT program. We expect that this amount could only occur with a significant uptick in organics diversion. Given that few communities see significant backyard composting, this will have to include either an aggressive drop-off program, or more likely, addition of a curbside organics program (with fees embedded in the trash rate / no separate fee for at least a base service of organics service). For this reason, we present the rates computations for subscription scenario C with two options – just the same revenue requirements as before (\$15.55), and one option that includes a likely \$6 fee for the addition of a curbside yard waste program.

3.2: Rate Computations

Setting rates to incentivize customer behaviors while covering costs and maintaining revenues is a one of the most important aspects of a PAYT program. The rates charged to customers must, among others items, cover the costs to get to the door (the highest cost for the City), the incremental cost of additional trash (a much lower cost to the hauler), and the embedded cost of the recycling program.

Under PAYT the challenge is to set the base fee and the incremental cost of additional trash to balance two objectives. While incremental amounts of trash do not cost the City significantly more to collect, the new rates must be designed as an economic signal to the rate payer.¹⁷ The base rate will vary depending on the City’s particular costs, but an incremental price increase for additional units of trash of 80% is recommended. This value – 80% -- is based on statistical studies¹⁸ that balance two objectives: **1)** providing a strong recycling incentive, and this value was found to provide almost the same recycling incentive to households as rates that double for double the service; and **2)** backing off from very aggressive rates to recognize the fact that the largest cost in providing trash or recycling service is getting the truck to the door – arguing for flatter rates. This differential tries to provide incentives, but also help decrease the risk of not covering fixed costs of the operations.

Revenue Requirements:

Each of the scenarios A, B, and C-1 is designed to raise exactly the same amount of revenue from the average household - **\$15.55 / household / month**. This figure is computed to incorporate the 3% increase suggested as needed by the City, plus a small amount designed to help purchase more small containers for use by households. We provide a table below that lists the options that could have been used. If a different dollar amount better represents the average cost of service, then the new rates can be readily computed (e.g. a 5% increase would lead to an average per household of \$15.85). Scenario C-2 uses the \$21.55 dollar figure,

¹⁷ Or else no behavior change is motivated and the system might as well have flat rates – no impact is achieved.

¹⁸ See Skumatz, Lisa A., “PAYT Frequently Asked Questions” on www.paytinfo.org or numerous articles in *Resource Recycling*. These analyses were based on data from hundreds of PAYT communities across the US.

which takes it one step further, adding an estimated \$6 for a yard waste program. In the upper right of the table, we show the total annual revenues raised from each “average rate” option.

Figure 3.3: Residential Solid Waste Revenue Requirement Options for Chandler

Comput. of Rev Reqmt Options			30%	\$6.00		SELECTED REV REQ=>		\$15.55	\$21.55
	Thous	Per HH/Mo	Add Can Re	Add YW	Can+YW		Total Rev (thou	\$1,080.73	\$1,497.73
Current	\$1,047.4	\$15.07	\$15.10	\$21.07	\$21.10				
Add 3%	\$1,078.8	\$15.52	\$15.55	\$21.52	\$21.55				
Add 5% (proposed)	\$1,099.7	\$15.82	\$15.85	\$21.82	\$21.85				
Proposed WITH fee	\$1,099.7	\$15.82	\$15.85	\$21.82	\$21.85				
Full Rev Req	\$1,127.3	\$16.22	\$16.25	\$22.22	\$22.25				

The rate computation table presents results for the three subscription scenarios – A (12% reduction), B (15% reduction), and C (30% reduction) – and the two revenue requirement options (\$15.55 for all three, and a \$21.55 option for subscription C).

The different columns within each scenario represent different possible outcomes for how much service the City households need. Rate distributions are displayed based on subscription levels.

The subscription outcomes discussed earlier are a critical determinant in the rate computations, as a review of Figure 3.4 shows. Where Chandler households land in their subscription need (and what the new rates will be) will depend on decisions related to the pricing and renewed interest in the recycling option.

Note that the last several rows in Figures 3.4 and 3.5 display the percent of households that would save money compared to current rates, and the dollar amount they would save (the range). These savings would be available because of shifts in their behavior from reductions in over subscription of trash and increase in recycling and source reduction. In some cases, a substantial number of households may save money. However, in the most aggressive option (where we assume most customers shift to 48 gallons), we see only minimal savings. This is because the costs of service must be recovered substantially from that lowest service level, because the vast majority of customers are on that service level. There are too few customers on high service levels to help contribute toward reduced fees for those on low service.

We highlight in purple our recommended rates – Subscription scenario B, with fully embedded costs (no “base fee”). This provides meaningful differentials between rate levels (which provides an incentive), and uses subscription levels that are relatively conservative.¹⁹ However, whichever rates are computed for Chandler, we tend to recommend that the rates should be rounded (up) to the nearest 5 cents, 10 cents or 25 cents.

Finally, there are two rate **structure** scenarios presented below.

Scenario 1 below: This scenario presents the rates described above – 80% extra for double the service (64 gallons are 80% more than 32 gallons), and that rate differential (in dollar terms) represents the difference for each additional 32 gallons to include the service levels available in Chandler, including 48, 96, etc..

¹⁹ It is possible the City might want to refine the subscription assumptions to increase those on 64 gallon containers. However, we are finding that, especially when households switch from 96 gallon service, that they stay on 96 gallons, or switch to the smallest level. The middle subscriptions are not always adopted as readily. Increasing the share of 64-gallon subscribers, and reducing the 96-gallon subscribers is also a way to hedge revenue risk as well.

Scenario 2 below: This other structure option embeds a \$5.67²⁰ fee in the property tax (or a “generator” or “environmental” fee), which assures that base amount is paid by each property holder. This represents a share of the cost of “getting the truck to the door”. Then, the additional cost for providing service is distributed as multiples of the service level. In this case, *beyond the \$10 base fee*, twice the service is charged at twice the increment. This increment then repeats for each additional service level. The figures in the table represent the total cost for each service level, including the generator fee.

Figure 3.4: Computed Rate Scenarios and Savings (compared to current rates)

RATE DESIGN 1 - 80% Extra for Double the Service -

Subscription Assumption ==>	A: 12% Red'n & stuffing (Revenue \$15.55)	B: 15% Red'n & Stuffing (Revenue \$15.55)	C1: 30% red'n (YW & stuffing) (Revenue \$15.55)	C2: 30% red'n (YW & stuffing) & \$21.55
48gal	\$11.21	\$9.54	\$10.47	\$14.52
64gal	\$13.80	\$13.88	\$15.23	\$21.11
96gal	\$18.97	\$22.55	\$24.76	\$34.31
2x96 gal	\$37.94	\$45.10	\$49.52	\$68.62
3x96 gal	\$56.91	\$67.65	\$74.28	\$102.93
300gal (total rate)	\$51.96	\$77.86	\$85.46	\$118.43
Avg 30-g Can Equivalents →	2.34	2.32	2.06	2.06
Savings compared to current rates →	61% save \$1.27-3.86/mo	62% save \$1.19-5.53/mo	66% save \$4.60/mo	66% save \$0.55/mo

Figure 3.5: Computed Rate Scenarios and Savings with Fixed Customer Fee Option

RATE DESIGN 2: FIXED FEE OF \$5.67 (included) PLUS “CAN IS A CAN” STRUCTURE FOR DOUBLE THE SERVICE

Subscription Assumption ==>	A: 12% Red'n & stuffing (Revenue \$15.55)	B: 15% Red'n & Stuffing (Revenue \$15.55)	C1: 30% red'n (YW & stuffing) (Revenue \$15.55)	C2: 30% red'n (YW & stuffing) & Revenue \$21.55
48 gal	\$12.01	\$12.06	\$12.88	\$17.26
64gal	\$14.12	\$14.18	\$15.28	\$21.12
96gal	\$18.34	\$18.44	\$20.09	\$28.85
2x96 gal	\$31.01	\$31.21	\$34.51	\$52.03
3x96 gal	\$43.68	\$43.98	\$48.93	\$75.21
300 gal (Total rate)	\$45.28	\$45.58	\$50.74	\$78.11
Avg 30-g Can Equivalents →	2.34	2.32	2.06	2.06
Savings compared to current rates →	61% save \$0.95-3.06	62% save -\$0.89-3.01/mo	66% save \$2.19/mo	None save compared to current rates

²⁰ This covers the collection fee of \$5.76. We explored increasing this fee to \$10 to cover more costs, and decrease revenue risk, but we rejected the option because the resulting rates only showed differentials in the range of of \$1-\$3 for increments in can sizes. This will not provide sufficient incentive for behavior change, and is, in a sense, too close to “flat fees” to be worth the investment in PAYT administrative and system changes.

Revenue Risk.

It is very difficult to forecast the percent of households that will move to new subscription levels under PAYT rate incentives. There is always risk – and that risk has revenue implications. With progressive rates (higher for higher service levels), there are negative revenue implications if fewer people end up on 96 gallons of service than were expected, because their increased revenues help cover some of the costs for the low can subscribers.

The pink row in the two rate tables shows the “number of 32-gallon can equivalents” subscribed by the households under the subscription scenarios. The following table is a simplified look at the revenue risk associated if, instead of 2.3 or 2.06 cans subscribed (which equals about 74 or 64 gallons, respectively) some other level is subscribed to.²¹ The table assumes there are 69,500 households.

An example result (to explain how to use the table) is that, under Rate Scenario B, we assumed customers would select an average of 2.32 cans of service (again, 32-gallon equivalents). If people really select subscriptions that result in 2.8 cans (89.6 gallons), then the City will *OVER* recover revenues by about \$2.7 million (or 21%). If, instead, under Scenario C1, households select subscriptions averaging only 1.7 cans (more households subscribed to 45-gallon service than predicted and thus less revenue), the City will *UNDER* recover revenues of about \$2.24 million.

Figure 3.6: Estimated Revenue Risk from Possible Discrepancies between Rate-Assumed Subscriptions vs. Actual Customer Choices

REVENUE RISK ESTIMATES FROM ERRORS IN SUBSCRIPTION ASSUMPTIONS

		Scenario A: 13% diversion, Revenue expected \$13.0 million		Scenario B: 15% diversion, revenue expected \$13.0 million		Scenario C1: 30% diversion; Revenue expected, \$13.0 million		Scenario C2: 30% diversion, Revenue expected \$18.0 million.	
If average cans ACTUALLY selected, equals →		Annual \$ at risk (thous)	% at risk	Annual \$ at risk (thous)	% at risk	Annual \$ at risk (thous)	% at risk	Annual \$ at risk (thous)	% at risk
Then annual dollars At risk, city-wide, Are shown	1.5	-\$4,650.84	-36%	-\$4,587.11	-35%	-\$3,503.42	-27%	-\$4,855.22	-27%
	1.6	-\$4,096.32	-32%	-\$4,028.34	-31%	-\$2,872.40	-22%	-\$3,980.72	-22%
	1.7	-\$3,541.79	-27%	-\$3,469.56	-27%	-\$2,241.38	-17%	-\$3,106.23	-17%
	1.8	-\$2,987.27	-23%	-\$2,910.79	-22%	-\$1,610.36	-12%	-\$2,231.73	-12%
	1.9	-\$2,432.75	-19%	-\$2,352.02	-18%	-\$979.35	-8%	-\$1,357.23	-8%
	2.0	-\$1,878.22	-14%	-\$1,793.25	-14%	-\$348.33	-3%	-\$482.73	-3%
	2.1	-\$1,323.70	-10%	-\$1,234.47	-10%	\$282.69	2%	\$391.77	2%
	2.2	-\$769.17	-6%	-\$675.70	-5%	\$913.71	7%	\$1,266.27	7%
	2.3	-\$214.65	-2%	-\$116.93	-1%	\$1,544.73	12%	\$2,140.77	12%
	2.4	\$339.87	3%	\$441.85	3%	\$2,175.75	17%	\$3,015.26	17%
	2.5	\$894.40	7%	\$1,000.62	8%	\$2,806.77	22%	\$3,889.76	22%
	2.6	\$1,448.92	11%	\$1,559.39	12%	\$3,437.78	27%	\$4,764.26	27%
Breakeven / assumed Levels are highlighted (These are the From rate Computations)	2.7	\$2,003.45	15%	\$2,118.16	16%	\$4,068.80	31%	\$5,638.76	31%
	2.8	\$2,557.97	20%	\$2,676.94	21%	\$4,699.82	36%	\$6,513.26	36%
	2.9	\$3,112.49	24%	\$3,235.71	25%	\$5,330.84	41%	\$7,387.76	41%
	3.0	\$3,667.02	28%	\$3,794.48	29%	\$5,961.86	46%	\$8,262.25	46%

Note that the table truncates at 1.5 can equivalents, because the City is not offering cans smaller than 48 gallons. The table shows there are revenue implications from mis-estimations of set out. However, if Scenario

²¹ remember, these are 32-gallon equivalents, not 48 gallon units for this purpose

C1 rates are selected, there may be a reasonable chance that revenues will be over-collected – at least if a convenient yard waste program is not offered.

3.3: Impacts of PAYT on Chandler Trash Tonnage

In 2010 Chandler collected and disposed of approximately 71,400 tons of residential MSW. There were about 18,000 tons of recyclables collected in the curbside recycling program, and another 800 tons in cardboard and other materials collected at the curb. The drop-off program received around 1,900 tons. There is no yard waste program in place or planned in the near term.

We have conducted numerous studies of the tonnage impacts of PAYT on residential tonnage. The most comprehensive work²² compared PAYT communities over time, and compared PAYT vs. non-PAYT communities statistically. The results indicated there are three impacts from PAYT:

- Increased recycling (removing about 6% of tonnage from the residential MSW stream);
- Increased composting (removing another 6% of tonnage from the residential MSW stream; most of the effect goes to curbside programs);
- Increased source reduction (removing about 6% from the residential MSW stream through donations to charity, buying less packaging, etc.).

If we assume the usual “12%” is removed (increased recycling and increased source reduction, assumes no yard waste impact because there is no collection or drop-off program), we would see a removal of about **8,600** tons from the residential MSW stream, and about one half that amount (**4,300**) as an increase in materials to the MRF.

We examined the City of Chandler’s current recycling, and find a residential curbside recycling rate of 20%, with about 2/3 of the households recycling weekly. This is a relatively high recycling-only (no yard waste) rate compared to other communities with similar programs. This may argue that the average 6% recycling bump might be too aggressive for Chandler. However, if the 2/3 of the households not currently recycling regularly (that is 22%) is induced to recycle at the average level though the program (20%)²³, we see a transfer of trash in the amount of about **3,300** tons to the recycling stream. To be conservative, we might assume a similar ratio for the source reduction impact.²⁴

The range represented by the two computation methods shows impact from the PAYT program of:

- Reduction in residential MSW tonnage of **6,600-8,400** tons per year.
- Increase in recycling to the MRF of **3,300-4,300** tons per year.

Based on the City of Chandler’s existing waste disposal and recycling contracts this may result in significant cost saving to the city. Figure 3.6 displays the potential impacts of the PAYT program.

Figure 3.6: Estimated Budget Impacts

	Impact on tons	Impacts on Revenue / Expenses
Decrease in MSW to Landfill	6,600 - 8,400	Savings of \$231K - \$294K
Increase in Recycling to MRF	3,300 - 4,300	Revenues of \$91K - \$118K
Total (savings and revenue)	9,900 - 12,700	\$322K - \$413K

²² Skumatz, Lisa A., “Source Reduction can be measured”, multiclient study including EPA, 2001, Skumatz Economic Research Associates, Inc., www.serainc.com; and others; also published in *Resource Recycling* 2001.

²³ or if we wanted to be less conservative, we could include a bump equal to the recycling level for each of those 2/3 that are recycling, which would compute to almost 30%.

²⁴ A this point, we did not estimate the impacts from the highest, most aggressive scenario that likely needs Yard Waste programs, because those are not being planned at this time. Note, however that the estimates can be easily computed by Chandler using the 30% figures provided.

SECTION 4: SURVEY RESULTS

In order to achieve a better understanding of the current trash and recycling behaviors and to gain insight regarding the opinions, barriers, and Chandler resident's support / opposition to variable rates EI worked with the City to conduct a residential web survey. Postcards were mailed to 69,281 households in City directing them to the on-line survey. A total of 1,687 surveys were started and 97% (1,638) of the surveys were fully completed. The number of survey responses collected enables the responses to be reported with a confidence interval of 95% +/- 2.4%. The results of the survey follow.

4.1: Summary

Trash and Recycling Service

Residents are very satisfied with current trash and recycling services: Over 90% of all respondents reported that they are *very* or *extremely satisfied* with the current trash and recycling collection services provided by the city.

Residents are highly supportive of recycling: When asked to report how important various services were, the *ability to recycle at the curb* ranked the highest (1.8 weighted score on a scale of - 2(unimportant) to 2(important)) followed by the *ability to recycle and divert many materials* (1.7 weighted score). The lowest ranking items were *alley collection of 300-gallon containers* (-.8) followed by the *recycling / solid waste facility at Queen Creek Rd.* (.8).

Alley Collection

At the right price differential the majority of alley collection households would be willing to go to curbside collection: Combined, three-quarters of the households with alley collection reported that they would *definitely* (59%) or *probably* (16%) switch to curbside service if the price differential between alley and curbside was \$10 to \$15 dollars. However, no matter what the price differential is there is still a small portion of residents (15% of those with the service) that are strongly attached to their alley collection that reported they would not be willing to switch.

Organics Service

Residents are interested in curbside organics service: Responses to the open-ended questions (although not quantitatively measured) indicate that many households would be willing to consider or might actively support a curbside organics program.

Targeting organics in the future can potentially greatly increase diversion: When asked to report what materials still remain in the trash after all the recycling activities they do, the top two materials were *yard waste* (46.5%) followed by *food waste* (38.8%).

Education and Outreach

Future outreach should target three main topics: Based on the survey results the three main topics future outreach should address (unless of course, variable rates are adopted) are *mulch-mowing* (less than 10% reported that they mulch mow), *what materials can be recycled* in the current system, and *what happens to recyclables* once they are collected.

Drop-Offs and Bulky Item Collection

Both the free drop-off and curbside bulky collection are popular services and should be continued: More than 50% of respondents reported that they have visited the drop-off recycling facility (57.2%) and / or used the bulky item collection (53%).

Switching to two free drop-offs or collections per year would accommodate the majority of residents with no changes to their current behaviors: Of the people who visit the drop-off 81% reported they visit it a *few times per year* or less and for those using the curbside bulky collection 87.5% report they use it *two times a year* or less. Thus providing two free bulky collections per year and two free drop-off visits per year would meet the vast majority of residents needs without impacting how they currently pay for services. The City may also wish to consider only one free drop-off / collection per year if revenue is a concern.

Variable Rates for Trash Collection

Controlling the costs of trash is important to residents: The majority of residents (84.7%) report that the ability to control their trash rates is important or somewhat important to them. Variable rates provide residents with greater control over their trash rates.

Recycling participation has room for improvement: While two-thirds of respondents report that they are setting out their recycling weekly, the remaining 33% of residents report that they are only setting out recycling every-other-week or less frequently.

Residents are oversubscribing to trash service: Over 70% of respondents (72.4%) reported that on average their trash containers are three-quarters full or less. Two-fifths reported that their trash carts are less than half-full on average. These residents could potentially reduce their trash cart service size. However, when asked if they wanted a smaller cart, only 15.2% reported they would switch without a price incentive.

The majority of residents support a change to variable rates for trash collection: The majority of residents (52.3%) reported that they *strongly* or *somewhat* support adopting variable rates for trash collection. Slightly over one-fifth (22.5%) reported that they are *not sure* whether they would support it or are *neutral* about the program. Only 28% reported that they *somewhat* or *strongly oppose* variable rates. Upon review of the open-ended comments, EI saw that a portion of those that reported they do not support PAYT do so because they are unsure how the program would work and are hesitant to support a program they do not know much about. The major categories of comments were:

- Need more information: These are people who question what the rates would be, how trash would be charged, who would enforce the program, and what the program would look like in general.
- Concerned about illegal dumping: Similar to many other communities that have adopted PAYT, residents in Chandler are concerned about the impacts it would have on illegal dumping and other people putting trash in their carts.
- Household sizes: Some respondents were enthusiastic about the idea that small households / generators could potentially lower their bills and viewed the program as more equitable while others commented that a variable rate program would be unfair to large families / generators.



- **Support:** Many of the comments were very supportive of the program for a wide variety of reasons from economic and equity to environmental or green reasons. Still others commented that they liked the program but did not say why.
- **Oppose:** Much of the opposition was for the reasons already listed (concerns over large families, illegal dumping, impacts on rates). Other reasons included too much government oversight, general opposition to change, and concerns that it would increase government spending during a tight budgetary period. Others were opposed to the program for no stated reason.

4.2: Results

1. What is your zip code? (N=1,583)

Zip Code	Percent Response
85224	18.7%
85225	22.1%
85226	19.3%
85248	6.4%
85249	18.3%
85286	15.2%

2. What type of container(s) do you put your trash in when setting it out for collection?

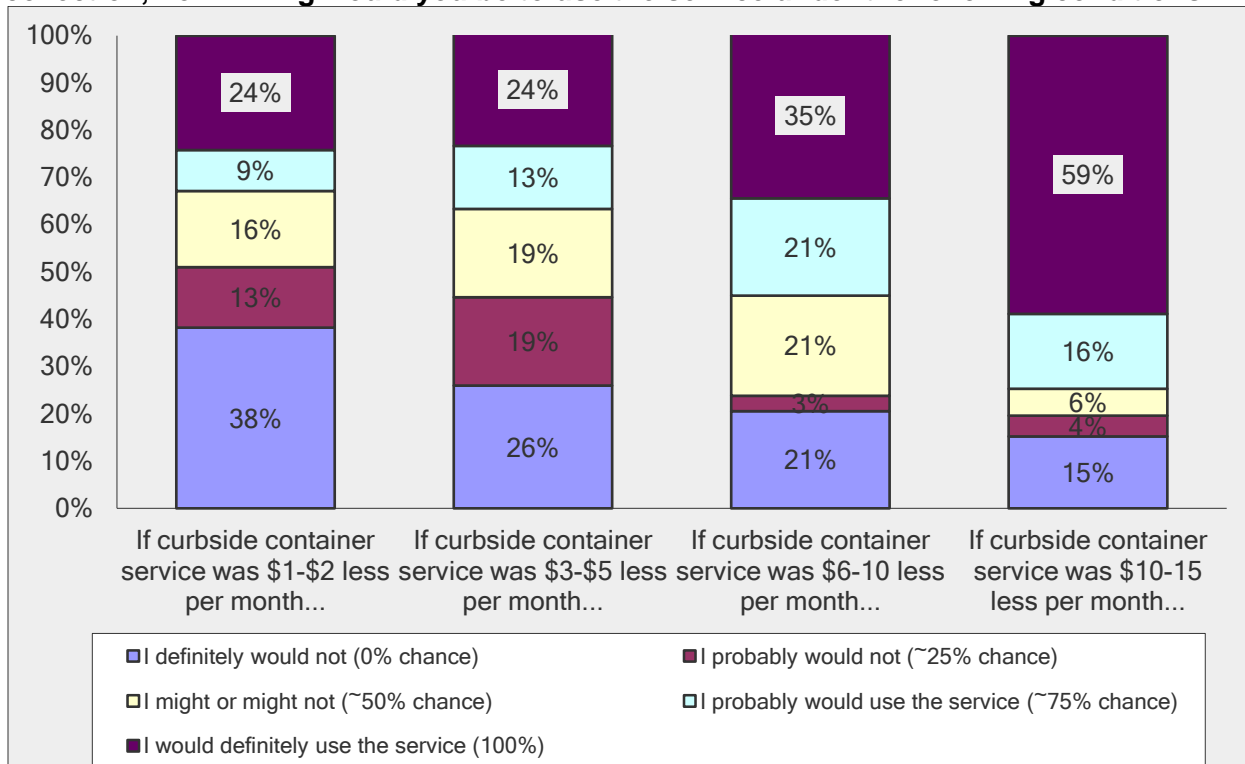
Answer Options	Response Percent	Response Count
A 64 or 96-gallon wheeled container at the curb	89.8%	1496
A 300-gallon container in the alley	10.2%	170
Other (please specify)		87
<i>answered question</i>		1666

The following two questions are for 300-gallon Alley Service households only:

3. In an average week, how much trash does your household set out in the alley container? (In terms of kitchen sized trash bags)

Answer Options	Response Percent	Response Count
1 to 2 kitchen sized trash bags	37.7%	63
3-4 kitchen sized trash bags	39.5%	66
5-7 kitchen sized trash bags	18.0%	30
8-11 kitchen sized trash bags	4.8%	8
12-14 kitchen sized trash bags	0.0%	0
14-20 kitchen sized trash bags	0.0%	0
More than 20 kitchen sized trash bags	0.0%	0
<i>answered question</i>		167

4. If the City offered you curbside collection in containers for a cheaper monthly rate than alley collection, how willing would you be to use the service under the following conditions?



The following question is for Curbside Service households only:

5. On average, how full is your garbage (black) container(s)?

Percent Full (on average)							
Answer Options	Barely any trash (0-10%)	About a quarter full (25%)	Around half full (50%)	About three-quarters full (75%)	Pretty much all the way full (100%)	Overflowing (More than 100%)	Response Count
Container One	4.2%	13.2%	24.4%	30.6%	24.6%	3.0%	1489
Container Two (If you have more than one cart)	18.5%	20.0%	21.5%	18.5%	20.0%	1.5%	65

The remainder of the responses applies to all households:

6. About how often do you set out your recycling (blue) container(s) at the curb?

Answer Options	Response Percent	Response Count
Every week	66.0%	1093
Every other week	25.6%	424

Once a month	7.2%	119
Every other month	0.5%	8
Rarely	0.4%	6
Never	0.3%	5
If you answered rarely or never, could you please tell us why?		9
answered question		1655

7. On average, how full is your recycling (blue) container(s)?

Answer Options	Barely any recycling (0-10%)	Around a quarter full (25%)	Around half full (50%)	Around three-quarters full (75%)	Pretty much all the way full (100%)	Overflowing (More than 100%)	Response Count
Container One	0.6%	3.5%	19.7%	37.3%	35.2%	3.7%	1658
Container Two (If you have more than one container)	37.0%	14.8%	22.2%	14.8%	11.1%	0.0%	27

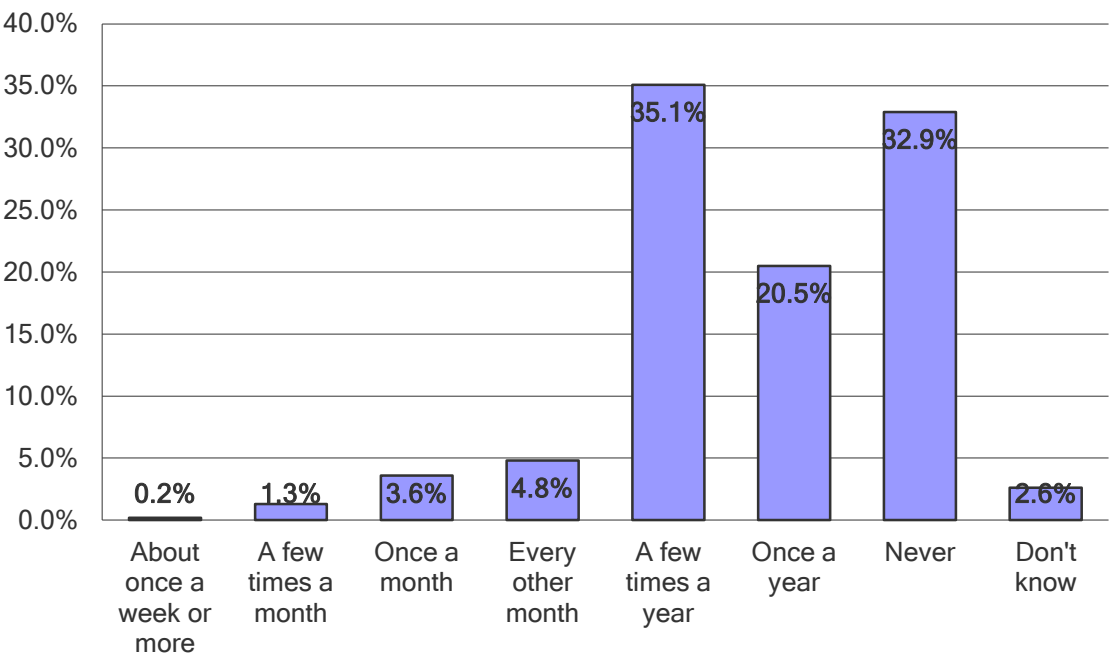
8. Do you bring trash or other items to the city drop-off facility (The Recycling-Solid Waste Collection Center on Queen Creek Rd)? (Please select all that apply)

Answer Options	Response Percent	Response Count
I have never visited the facility	42.8%	702
Yes, we bring trash to the facility	22.5%	369
Yes, we bring recycling to the facility	12.9%	212
Yes, we bring bulky items	37.3%	612
Yes, we bring other materials to the facility (electronics, paint, oil)	32.8%	538
If yes, why do you choose to use the facility?		420
answered question		1642

9. If you use the Recycling-Solid Waste Collection Center on Queen Creek Rd., about how often do you bring material to the drop-off?

Answer Options	Response Percent	Response Count
About once a week or more	0.2%	3
A few times a month	1.3%	18
Once a month	3.6%	50
Every other month	4.8%	67
A few times a year	35.1%	488
Once a year	20.5%	285
Never	32.9%	457
Don't know	2.6%	36
answered question		1389

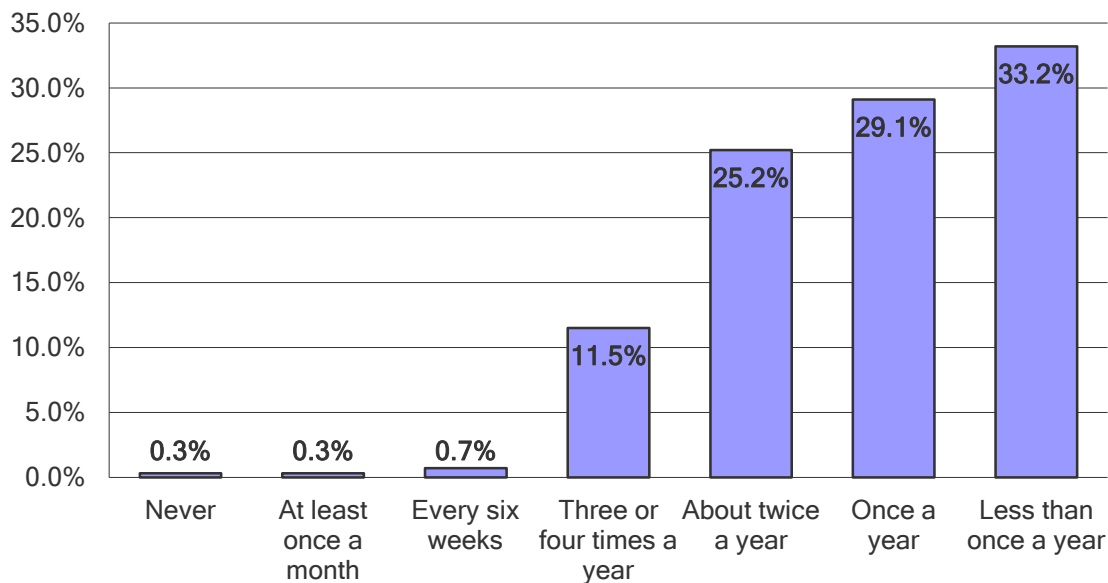
10. If you use the Recycling-Solid Waste Collection Center on Queen Creek Rd., about how often do you bring material to the drop-off?



11. Have you ever used the curbside bulky item collection service offered in the City?

Answer Options	Response Percent	Response Count
No, I have never heard of this service	14.1%	232
I know about it but I have never used it	33.1%	546
Yes	53.0%	875
<i>answered question</i>		1651

12. How often do you use the bulky item service? (N=877)



12. When you have grass clippings, leaves, garden or tree trimmings what do you do with the waste materials? (N=1,651)

Answer Options	Grass / garden clippings	Leaves	Limbs / tree trimmings	
Put in garbage can	52.1%	56.1%	49.5%	
Leave on grass	9.7%	2.6%	0.2%	
Bring to drop-off center	4.5%	4.8%	20.2%	
Landscaper removes	18.4%	19.8%	22.8%	
Compost in back yard	8.6%	9.0%	2.3%	
No materials to speak of	6.6%	7.8%	5.0%	

13. Does your household do any home composting?

Answer Options	Response Percent	Response Count
Yes, we compost our organic waste	9.8%	154
Yes, but not very much	7.7%	121
No, we do not have a compost bin	82.6%	1292
Other (please specify)		58
answered question		1564

14. How satisfied are you with the following services?

Answer Options	Extremely satisfied	Very satisfied	Somewhat satisfied	Somewhat dissatisfied	Very dissatisfied	Extremely dissatisfied	Don't know	Response Count
Trash Service	55.5%	38.1%	5.2%	0.7%	0.3%	0.1%	0.2%	1644
Recycling Service at the curb	56.4%	36.8%	4.4%	0.8%	0.3%	0.2%	1.3%	1637
Recycling-Solid Waste Collection Center on Queen Creek Rd (drop-off)	32.7%	21.9%	3.5%	0.4%	0.3%	0.3%	41.1%	1604

Scheduled Curbside Bulk Collection	34.7%	20.8%	6.3%	1.2%	0.4%	0.4%	36.5%	1604
Recycling outreach/education	25.2%	27.7%	14.3%	1.9%	0.5%	0.2%	30.3%	1601
Household Hazardous Waste drop-off	21.7%	16.7%	7.1%	1.9%	0.8%	0.6%	51.4%	1599
<i>answered question</i>								1646

15. Which of the following materials still take up lots of space in your garbage after any diversion activities that you do?

Answer Options	Response Percent	Response Count
Diapers	8.3%	124
Pet waste/kitty litter	18.3%	273
Clothing/fabric	1.9%	28
Pizza boxes	24.2%	361
Food waste	38.8%	577
Plastic containers	15.9%	237
Other plastic packaging	26.7%	397
Paint cans	3.9%	58
Cereal box type packaging	11.8%	175
Cardboard (waxed, like frozen food)	16.0%	238
Plastic bags	20.1%	299
Take out/to-go food containers	26.7%	398
Paper	11.4%	170
Cans/containers (aluminum, soda)	8.3%	124
Glass	5.4%	81
Wood waste	6.4%	95
Yard waste	46.5%	692
Cardboard (corrugated)	17.3%	258
Which one takes up the MOST space?		737
<i>answered question</i>		1489

16. If the City were to offer new sizes for trash service, what size trash can do you predict would meet your household needs on an average week?

Answer Options	Response Percent	Response Count
No change (Current size is perfect)	73.3%	1183
We could use a smaller container/cart (We do not often fill up the current container)	15.2%	245
We could use a larger container (We generate more trash per week than can fit in one of the current container)	12.9%	208
Other (please specify)		110
<i>answered question</i>		1615

17. When compared to other Chandler residents, I usually recycle...

Answer Options	Response Percent	Response Count
Much more than the average resident	30.8%	503
A little bit more	32.0%	522
About the same	32.3%	526
A little less	4.0%	65
Much less	0.8%	13
I do not recycle	0.1%	2
<i>answered question</i>		1631

**18. What do you believe, if anything, makes it hard for you or your household to recycle in Chandler?
(Please select all that apply)**

Answer Options	Response Percent	Response Count
Nothing, it is easy to recycle	83.4%	1269
Nothing, I do not want to recycle	0.3%	4
No room to store materials for recycling	5.0%	76
It is too messy	2.0%	31
I am not sure the materials are really 'recycled'	8.0%	121
I am not sure what I can recycle	10.2%	155
I often forget to recycle	3.6%	54
Our family does not generate any recyclables	0.1%	2
It is a waste of time to recycle	0.3%	4
Recycling does not make sense in our community	0.1%	1
Other (please specify)		167
<i>answered question</i>		1521

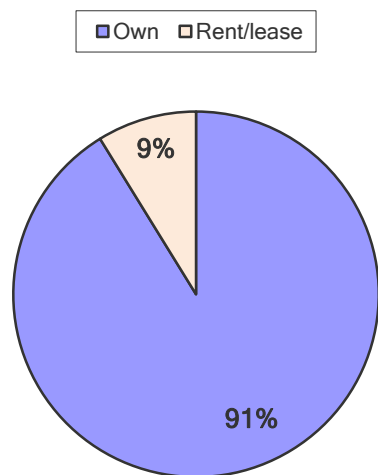
**19. How important are the following items to you? (Where -2 is unimportant and 2 is very important)
(weighted responses shown) (N=1,635)**

Answer Options	Weighted Average
High quality of service in trash collection	1.6
Ability to recycle at the curb	1.8
Ability to recycle and divert many materials	1.7
Bulky item collection	1.1
The Recycling - Solid Waste facility (Queen Creek Rd.)	0.8
Alley collection in 300-gallon containers (for some households)	-0.8
Ability to control my trash costs/rates	1.4

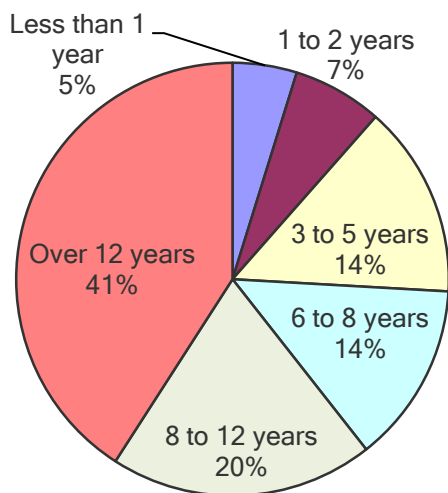
20. If the city were to offer a variable rate program for trash where households are charged for how much trash they throw away (similar to your other utilities like water or electricity) would you support or oppose this type of program? Under this type of program each household only pays for what they throw away, the less you dispose, the less you pay, the more you dispose, the more you pay. All households are also provided with unlimited recycling as a way to control their trash disposal costs.

Answer Options	Response Percent	Response Count
Strongly support	26.6%	433
Somewhat support	25.7%	419
Neutral	14.5%	236
Somewhat oppose	10.3%	168
Strongly oppose	17.7%	289
Not sure	6.9%	112
Comments?		637
<i>answered question</i>		1630

21. Do you or members of your house own or do you rent?



22. How long have you lived in Chandler?



23. How old is the head of household? (N-1,625)

Answer Options	Response Percent	Response Count
Under 25	0.3%	5
25 to 34	13.3%	216
35 to 44	23.8%	387
45 to 54	27.4%	445
55 to 59	12.7%	206
60 to 64	9.4%	152
65 years or older	13.0%	211
Don't know	0.2%	3

4.3: Open Ended Responses

The open ended responses to all of the questions covered above as well as to the following three questions can be seen in the appendix of this report. The responses are unedited.

1. **Are there any changes you would like to see Chandler make to their trash and recycling services?** (903 responses)
2. **Are there any aspects of Chandler's trash and recycling program you would like to see left unchanged or any other comments you may have?** (796 responses)
3. **Are there any other comments you would like to make regarding trash and/or recycling services in Chandler, AZ?** (524 responses)

SECTION 5: SET-OUT SURVEY RESULTS

In early summer 2011 City of Chandler staff conducted a set-out survey to provide data for Econservation Institute. The main focus of the data collection was to inform the rate study in Section 4 of this report. The following additional results were drawn from the set-out data.

Curbside Trash Results

Of the 236 households with curbside collection surveyed, 78.4% set out trash for collection. The average weight for all households (including those not setting out trash) was 55.3 lbs/week. The average weight for only the households setting out trash was 70.6 pounds and the maximum weight recorded was 244.5 pounds. Based on US Census data for average household size this equates to an average MSW generation of approximately 3.6 lbs per person per day.

The trash carts were, on average, 69% full. As the distribution displayed in figure 5.1 shows, while 40% residents are filling their trash carts full, the majority of households are oversubscribed to trash service and could potentially use smaller carts. Figure 5.2 displays the results of the trash set-out survey.

Figure 5.1: Distribution of Cart Percent Full

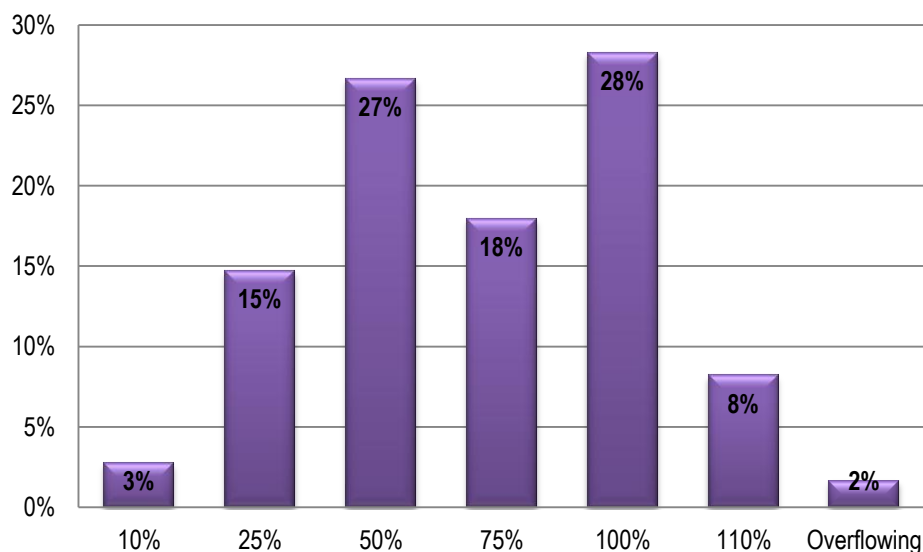


Figure 5.2: Results of Trash Set-Out Survey

Category	Result
HHs Surveyed	236
% Setting out trash	78.4%
Average weight (for those setting out trash)	70.6 lbs
Average % full	69.6%

Recycling Results

Of the 340 households surveyed for recycling only 52.5% set recycling at the curb for collection. Some of the households surveyed may have been out of town the week surveyed, some homes could have been vacant, and other may only set out recycling every-other-week or less frequently. The data collected does indicate that less than 100% of households are setting out recycling on a weekly basis, it does not allow EI to report an

accurate participation rate. Based on the trash set-out data, the recycling data indicates that perhaps only 66% of households are setting recycling at the curb on a weekly basis²⁵.

On average, the recycling carts were 72% full for those participating in the program. Overall, the average weekly weight of recyclables per household (included those not setting out recycling at all) was found to be 13.8 pounds per household. If only the households setting recycling at the curb are considered the average weight was 26.5 pounds per household. Using US census data on household size this works out to an average of .9 to 1 pound of material recycled per person per day. Combining this with the trash set-out data, the average total generation per person per day was found to be 4.5 to 4.6 lbs/person/day. The estimated curbside diversion rate based on the set-out data is 20%, very close to diversion rate of 19% based on reported tonnage data. The results of the recycling set-out are shown in figure 5.3.

Figure 5.3: Results of Recycling Set-Out Survey

Category	Result
HHs Surveyed	340
% Setting out trash	55.2%
Estimated weekly participation	66%
Average weight (for all households)	13.8 lbs
Average weight (for only those setting out recycling)	26.5 lbs
Average % full (for only those setting out recycling)	72%
Estimated curbside diversion rate	20%

300-Gallon Alley Collection Set-Out

Although the average number of pounds per household of trash set out by alley collection households is lower than that of the curbside collection households, their recycling participation and estimated diversion rate is significantly lower. The average pounds of trash set out per alley collection household was observed to be 31.3. The percentage of households observed to be recycling was only 30.8% compared to around 66% in curbside collection routes. The average weight of recycling per households was only 4.9 pounds per week (including those not setting out any recycling), about 9 pounds less than curbside households. The estimated diversion rate is 10%, half of the 20% average for curbside households. The results of the alley collection survey are shown in figure 5.4.



Figure 5.4: Results of 300-Gallon Alley Set-Out Survey

Category	Result
HHs Surveyed	26
Average weight trash	31.3 lbs
Average weight recycling	4.9 lbs
Recycling participation	31%
Estimated curbside diversion rate	10%

²⁵ This agrees with the web-survey self reported data in which two-thirds of respondents reported they set-out recycling at the curb every week.

Appendix 1: Arizona Cities with Variable Rates for Trash Collection

Although there are over 7,100 communities with PAYT in the US, there are very few strong PAYT examples in the state of Arizona. EI identified a handful of communities in the state that use variable rates to charge for trash collection, unfortunately the rate setting in the communities needs to be refined in order to provide meaningful economic incentives to rate payers. The largest price differential was only 15%, and the smallest was 6.6%. These price differentials do not send a strong price signal to generators. A few examples are included below:

City of Clarkdale, Yavapai County, AZ

Population: 3,836

HHs Participating: 1,308

Tons MSW: n/a

Tons Recycling at the Curb: 228/y

Drop-off recycling: One that city owns and operates, others avail in county

Trash Collection:

The city contracts with Patriot Disposal for all single family residences

Trash is collected weekly offering 64g and 96g carts

Service is optional, can choose to self-haul

Commercial and multifamily contract through private haulers

Recycling:

Recycling is embedded in the trash rates for all households collected by Patriot

It is single stream in 96 gallon carts collected weekly.

Materials include OCC, ONP, glass, aluminum/steel, paper, and #1-#7 plastics

Other Services:

Bulky item collection is not offered

For an additional refuse container available

There is no cost for additional recycle containers.

Weekly curbside brush pickup

Fees:

Covered residences are charged on their utility (water) bill as a separate line item

Bills are sent monthly

64g/ \$16.25, 96g/\$18.75, add'l container for \$11.50/m

Brush pick up free to those with monthly service, otherwise \$10 charge

The city owns the carts, no fee

City of Mesa, Maricopa County, AZ

Population: 439,041

HHs Participating: 117,203

Tons MSW: 110,990 curbside (FY 09-10)

Tons Recycling at the Curb: 33,474

Tons Composted: 17,990

Drop-off recycling: Two drop off centers that the city owns and operates

Trash Collection:

The city provides services for all single and multifamily (includes condos and multiplexes)
Trash is collected weekly offering 60g and 90g carts and is mandatory service
City in open competition with haulers for commercial

Recycling:

Recycling is embedded in the trash rates for all households
It is single stream in 96 gallon carts collected weekly.
Materials include OCC, ONP, glass, aluminum/steel, paper, and #1-#6 plastics

Other Services:

Bulky item collection is offered for \$19.99 per load by schedule only
For an additional \$11.02/m, residents may request more than one refuse container. There is no cost for additional recycle containers.
Green Waste barrel for yard waste only (no food scraps)

Fees:

Covered residences are charged on their utility (water) bill as a separate line item
Bills are sent monthly
60g/ \$20.83, 90g/\$23.83m
The city owns the carts, no fee
Optional Green (Yard) Waste service, \$5.51/m

City of Tucson, Pima County, AZ

Population: 520,116

HHs Participating: 140,000

Tons MSW: n/a

Tons Recycling at the Curb: n/a

Drop-off recycling: Thirteen drop off centers that the city owns and operates

Trash Collection:

The city provides services for all single and multifamily (includes condos and multiplexes) and commercial
Trash is collected weekly offering 40g, 65g, and 96g carts
Variable rate service began July 2010

Recycling:

Recycling is embedded in the trash rates for all households, but not mandatory
It is single stream in 96 gallon carts collected weekly
Materials include OCC, ONP, glass, aluminum/steel, paper, and #1-#6 plastics

Other Services:

Bulky item collection is offered free twice per year or can schedule for fee
HHZ waste drop off sites
There is no cost for additional recycle containers
No yard waste or organics programs

Fees:

Covered residences are charged on their utility (water) bill as a separate line item
Bills are sent monthly

40g/ \$15, 65g/\$16, 96g/\$16.75
The city owns the carts, no fee

Appendix 2: PAYT and Illegal Dumping

Invariably, one of the first questions municipalities ask about pay-as-you-throw is its impact on the incidence of increased illegal dumping. Overall, PAYT does *not* lead to increased illegal dumping. A series of surveys and interviews with hundreds of communities conducted over the past two decades by Econservation staff have shown that the vast majority of communities that adopt PAYT do not report increased incidences of illegal dumping. Communities report that illegal dumping is a “perceived” barrier and not an actual barrier. Although many communities report that they thought illegal dumping would increase with PAYT only a small portion actually do see increases. Virtually all of the communities that report an increase of illegal dumping after implementing PAYT also report that illegal dumping returns to pre-PAYT levels within one to three months. The bottom line is that if your community had illegal dumping before implementing PAYT, PAYT will not solve the issue, on the other side, if your community does not have issues with illegal dumping adopting a PAYT program will not cause illegal dumping to start. Illegal dumping happens with or without the presence of a PAYT program.

SERA 2010 National Community Survey

Communities with PAYT programs in place were asked to rank illegal dumping before and after implementing PAYT on an A to F scale (where an A means that there is no incidence of illegal dumping and F means it is a huge problem). After implementation, none of the communities with PAYT reported that illegal dumping was a *huge problem* and those that reported is was a D decreased from 21% to 14% after implementing PAYT.

Results of 2010 Community Survey

Ranking	Before PAYT	After PAYT
A- No problem at all	0%	0%
B- Very slight issue	21%	43%
C- Medium problem	7%	7%
D- Large issue	21%	14%
F- Huge Problem	7%	0%
Don't know / wasn't there	43%	28%

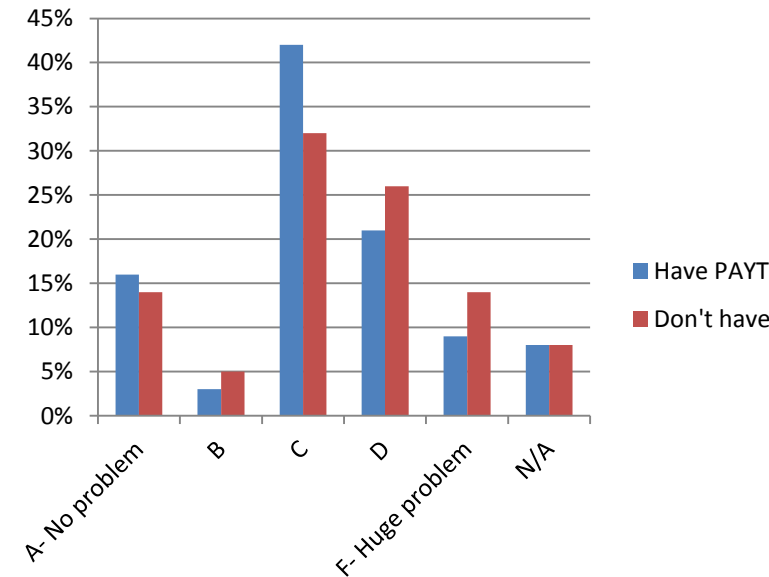
SERA 2009 National Community Survey

In a 2009 survey SERA researchers asked communities to report whether or not they had PAYT and asked communities to rank illegal dumping.

Overall, PAYT does *not* lead to increased illegal dumping.

There was very little difference in the issue of illegal dumping between communities with and without PAYT. Slightly higher proportions of communities *without* PAYT reported that illegal dumping was a large or huge problem. The results of the 2009 community survey are displayed in the figure below:

Results of 2009 Community Survey



PAYT and Trash Carts

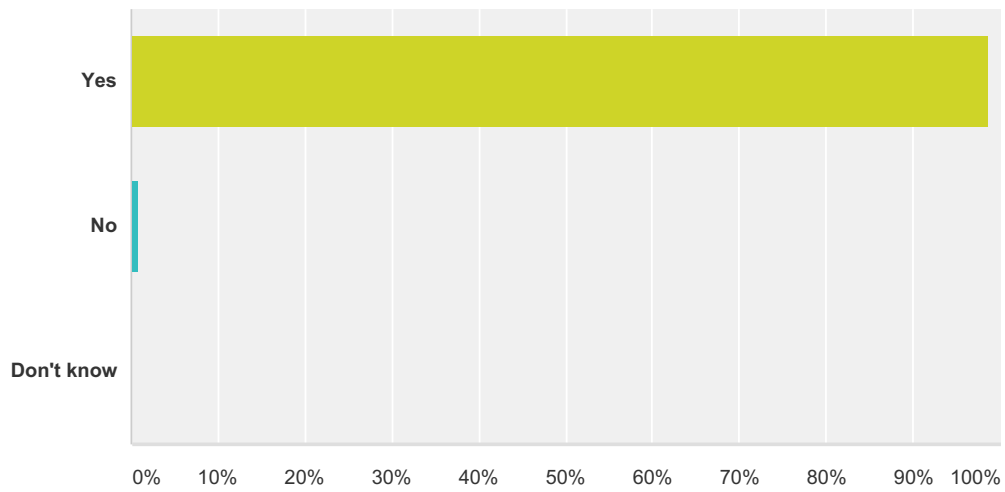
Chandler Variable Rates Plan

An issue closely related to illegal dumping is the perceived concern that residents will put their trash in their neighbors' carts as a way to save money. EI called a number of communities that had recently adopted PAYT (within the last 24 months) to ask the program managers, haulers, and / or staff if they were observing increased incidence of neighbors using each other's carts. The interviewees reported the following major findings:

- 1) **Complaints are few and far between.** One city of 20,000 residents reported that over the last 12 months they have had one household complain about people putting trash in their cart illegally. The household was located next to a bike path and a major intersection and the City suggested to the resident to keep her cart next to her house and away from the path unless it was trash day. Another smaller community (5K households) reported that they had a few complaints over the last year but they were all from the same two households. The other communities interviewed reported similar findings.
- 2) **It is an easy fix.** To prevent the potential issue from occurring residents should be encouraged to keep their trash carts out of the street / off the curb and only wheel them out to the curb on the morning of their scheduled collection day.
- 3) **If it is happening, it is unreported and not an issue.** One regional hauler reported that they thought that neighbors could be putting their trash in each other's cart but that they very rarely received any complaints about it and that it was not an issue. This is due to the fact that if it is occurring, residents are putting their trash in a cart that is not all the way full and no one (the hauler, the household) ever knows about it. In this situation the behavior does not cause any negative impacts for the resident or the hauler.

Q1 Did you receive a "postcard" telling you about this survey?

Answered: 1,679 Skipped: 9

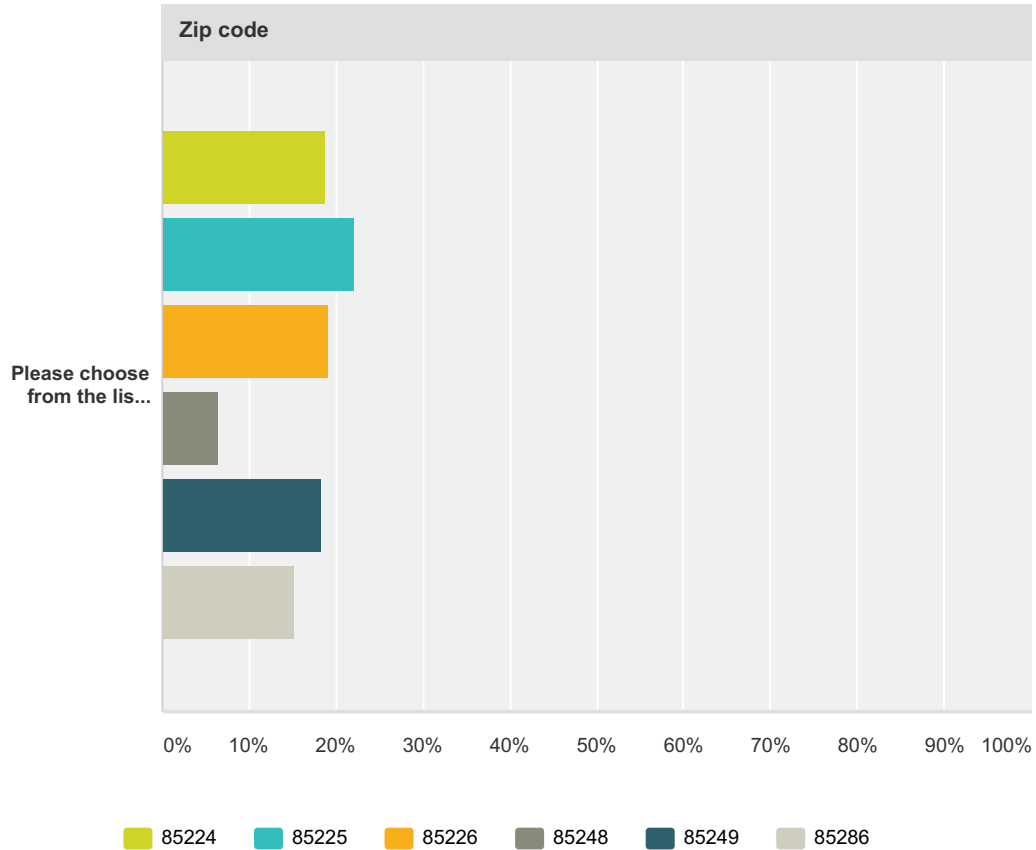


Answer Choices	Responses	
Yes	98.81%	1,659
No	0.89%	15
Don't know	0.30%	5
Total		1,679

Q2 What is your zip code?

Answered: 1,584 Skipped: 104

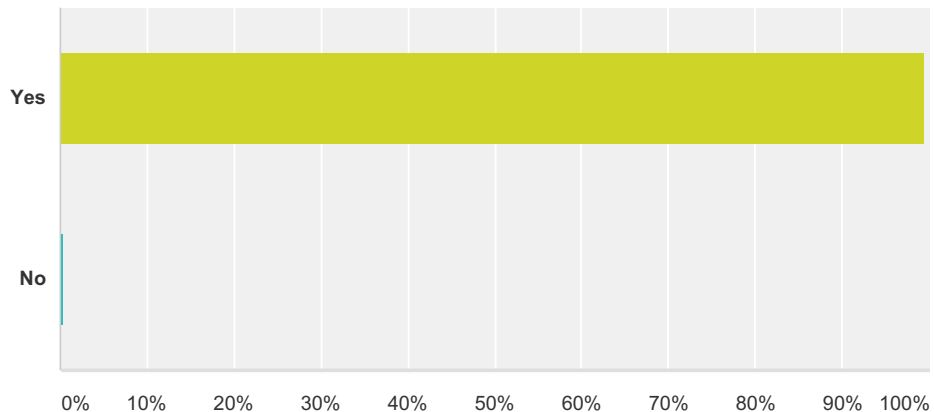
City of Chandler Trash and Recycling Survey 2011



Zip code							
	85224	85225	85226	85248	85249	85286	Total
Please choose from the list of options.	18.69% 296	22.16% 351	19.26% 305	6.38% 101	18.31% 290	15.21% 241	1,584

Q3 Do you receive trash and recycling service from the City of Chandler solid waste services?

Answered: 1,685 Skipped: 3



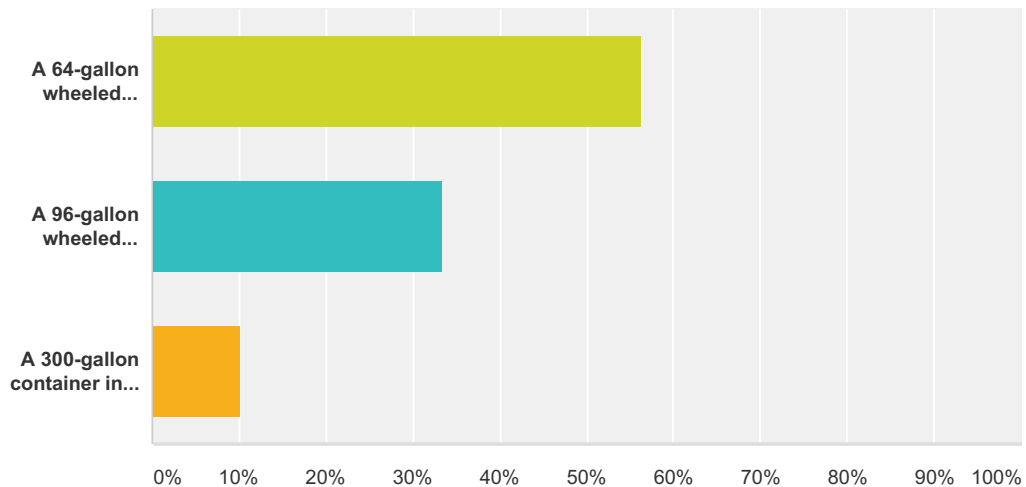
Answer Choices	Responses
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City of Chandler Trash and Recycling Survey 2011

Yes	99.53%	1,677
No	0.47%	8
Total		1,685

Q4 What type of container(s) do you put your trash in when setting it out for collection?

Answered: 1,667 Skipped: 21

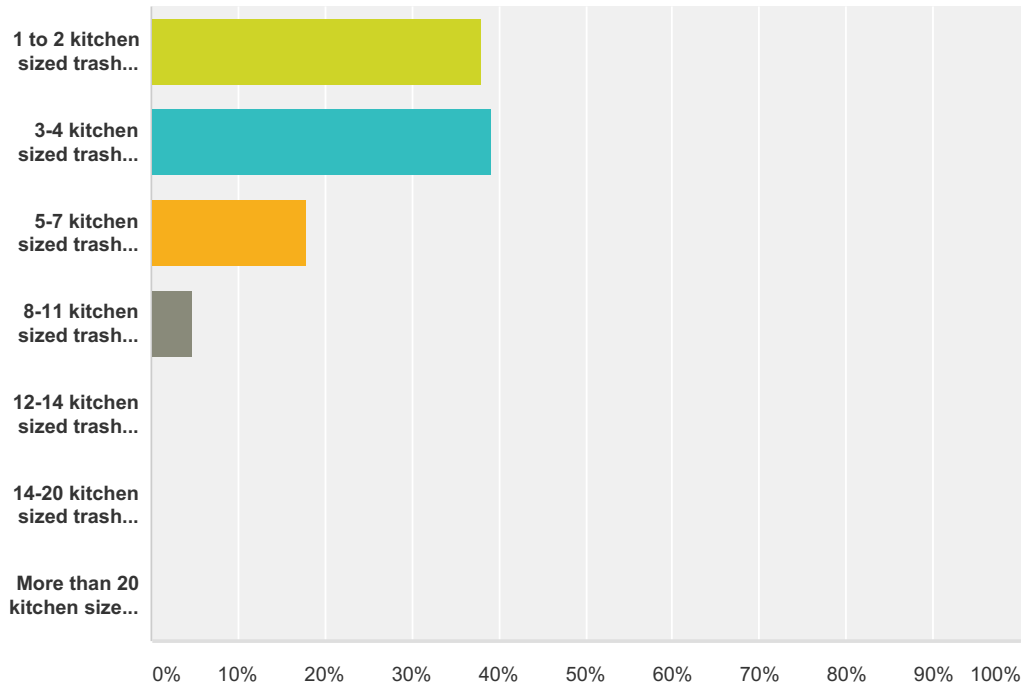


Answer Choices	Responses
A 64-gallon wheeled container at the curb	56.33% 939
A 96-gallon wheeled container at the curb	33.41% 557
A 300-gallon container in the alley	10.26% 171
Total	1,667

Q5 On an average week, how much trash does your household set out in the alley container? (In terms of kitchen sized trash bags)

Answered: 168 Skipped: 1,520

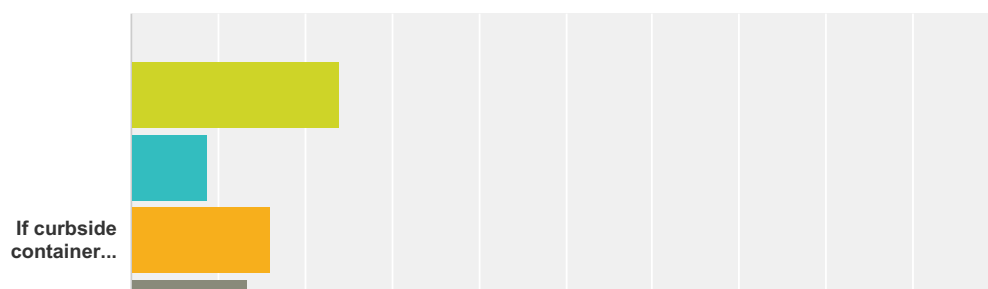
City of Chandler Trash and Recycling Survey 2011



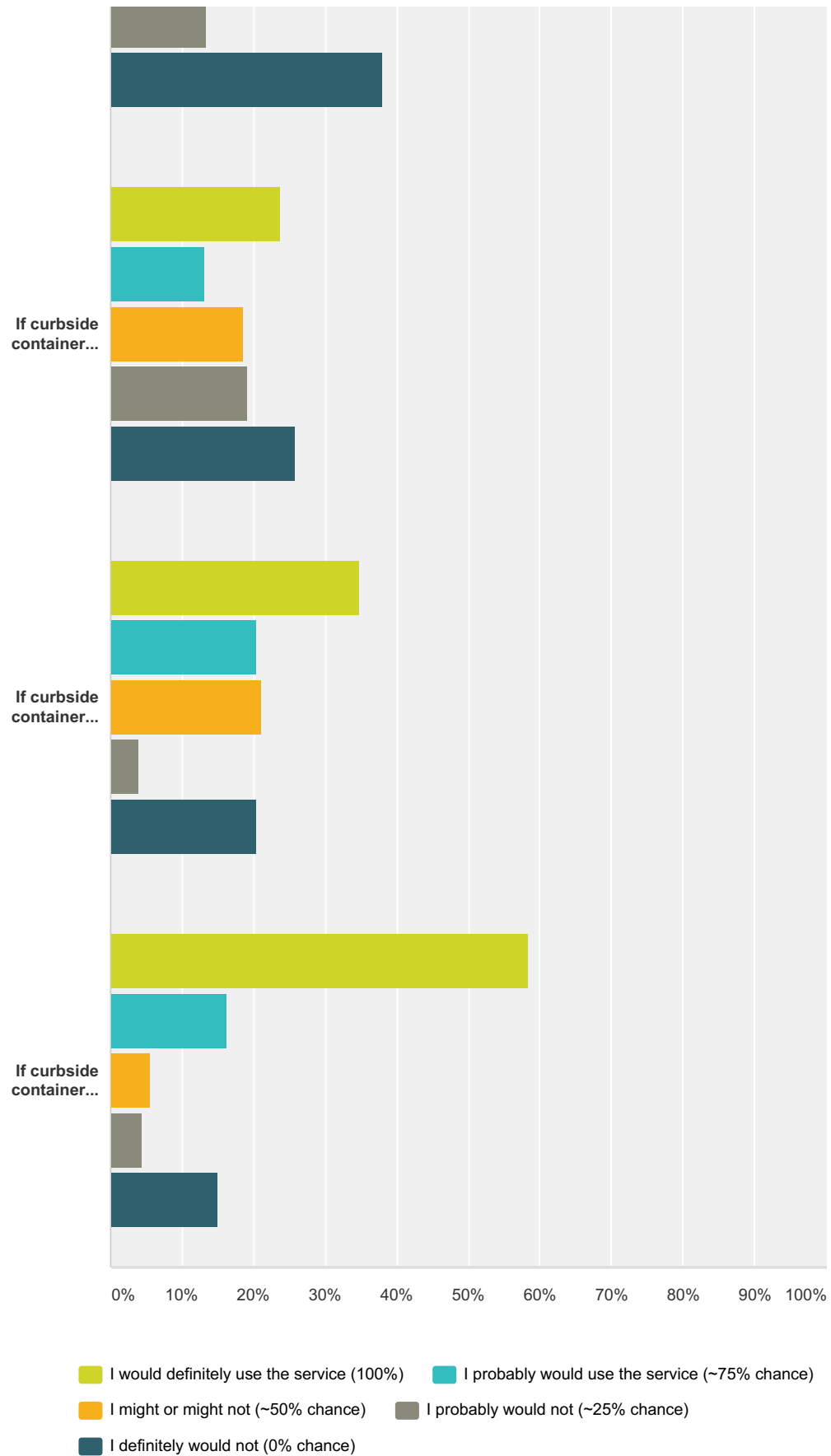
Answer Choices	Responses
1 to 2 kitchen sized trash bags	38.10% 64
3-4 kitchen sized trash bags	39.29% 66
5-7 kitchen sized trash bags	17.86% 30
8-11 kitchen sized trash bags	4.76% 8
12-14 kitchen sized trash bags	0.00% 0
14-20 kitchen sized trash bags	0.00% 0
More than 20 kitchen sized trash bags	0.00% 0
Total	168

Q6 If the City offered you curbside collection in containers for a cheaper monthly rate than alley collection, how willing would you be to use the service under the following conditions?

Answered: 167 Skipped: 1,521



City of Chandler Trash and Recycling Survey 2011

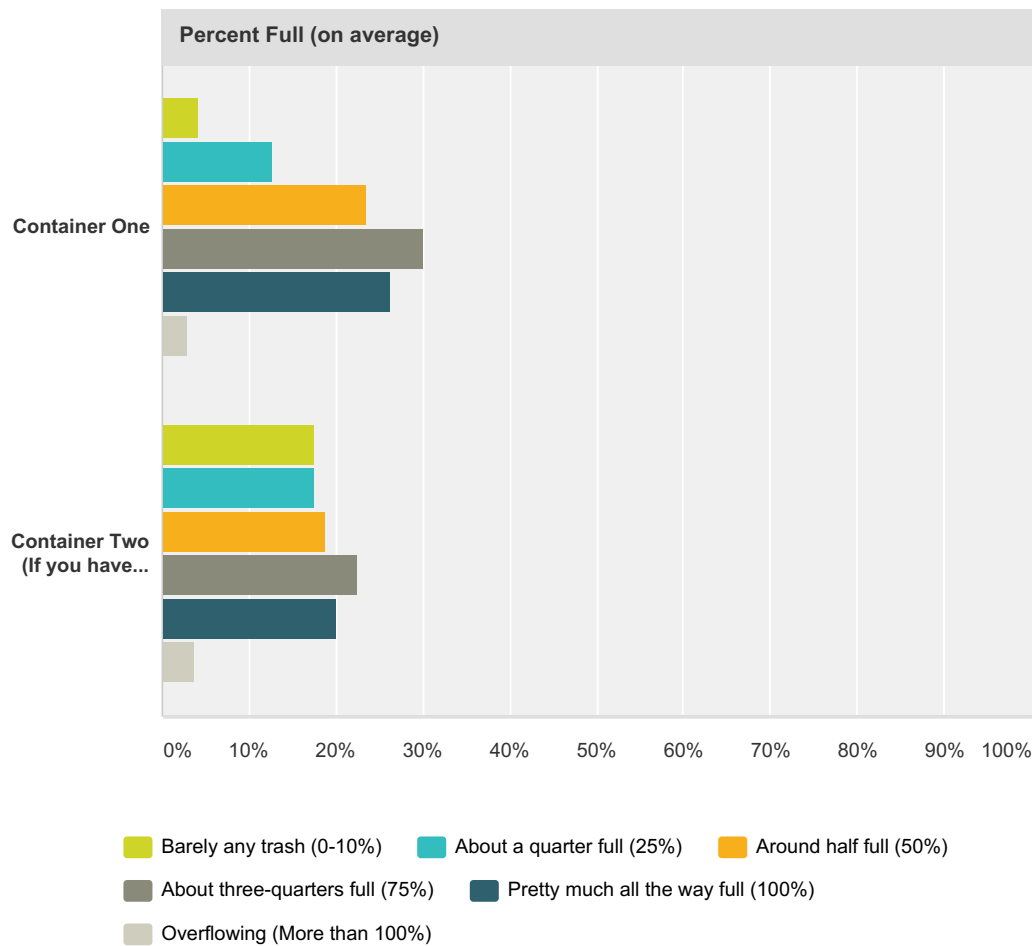


City of Chandler Trash and Recycling Survey 2011

	I would definitely use the service (100%)	I probably would use the service (~75% chance)	I might or might not (~50% chance)	I probably would not (~25% chance)	I definitely would not (0% chance)	Total Respondents
If curbside container service was \$1-\$2 less per month...	24.00% 36	8.67% 13	16.00% 24	13.33% 20	38.00% 57	150
If curbside container service was \$3-\$5 less per month...	23.84% 36	13.25% 20	18.54% 28	19.21% 29	25.83% 39	151
If curbside container service was \$6-10 less per month...	34.87% 53	20.39% 31	21.05% 32	3.95% 6	20.39% 31	152
If curbside container service was \$10-15 less per month...	58.49% 93	16.35% 26	5.66% 9	4.40% 7	15.09% 24	159

Q7 On average, how full is your garbage (black) container(s)?

Answered: 1,647 Skipped: 41



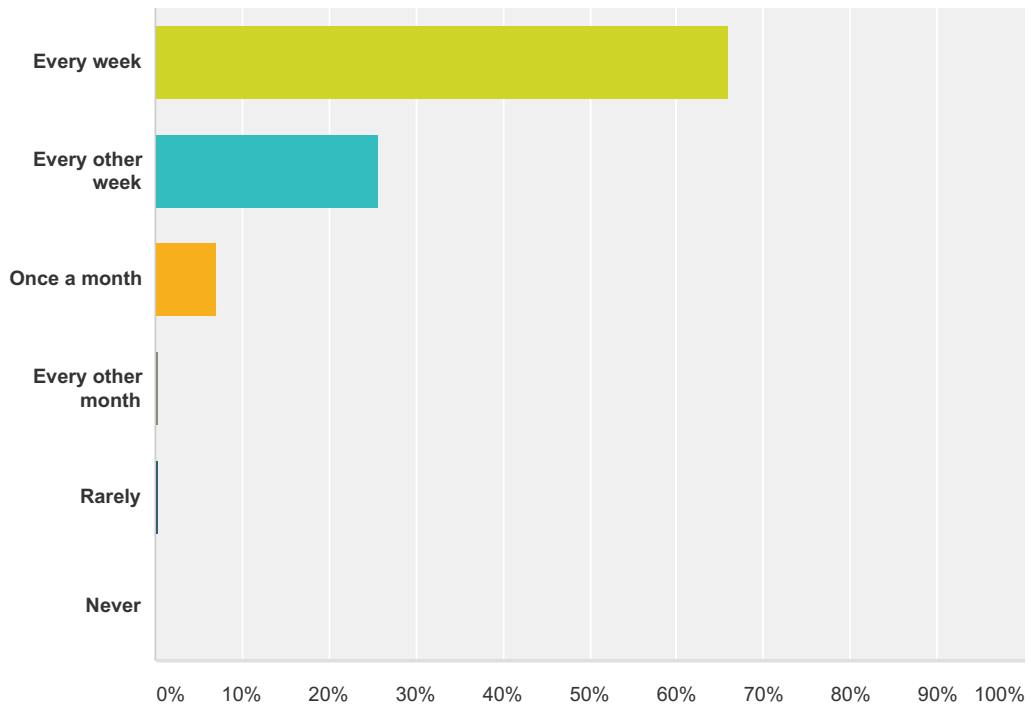
Percent Full (on average)							
	Barely any trash (0-10%)	About a quarter full (25%)	Around half full (50%)	About three-quarters full (75%)	Pretty much all the way full (100%)	Overflowing (More than 100%)	Total

City of Chandler Trash and Recycling Survey 2011

Container One	4.19% 69	12.76% 210	23.69% 390	30.07% 495	26.31% 433	2.98% 49	1,646
Container Two (If you have more than one cart)	17.50% 14	17.50% 14	18.75% 15	22.50% 18	20.00% 16	3.75% 3	80

Q8 About how often do you set out your recycling (blue) container(s) at the curb?

Answered: 1,656 Skipped: 32

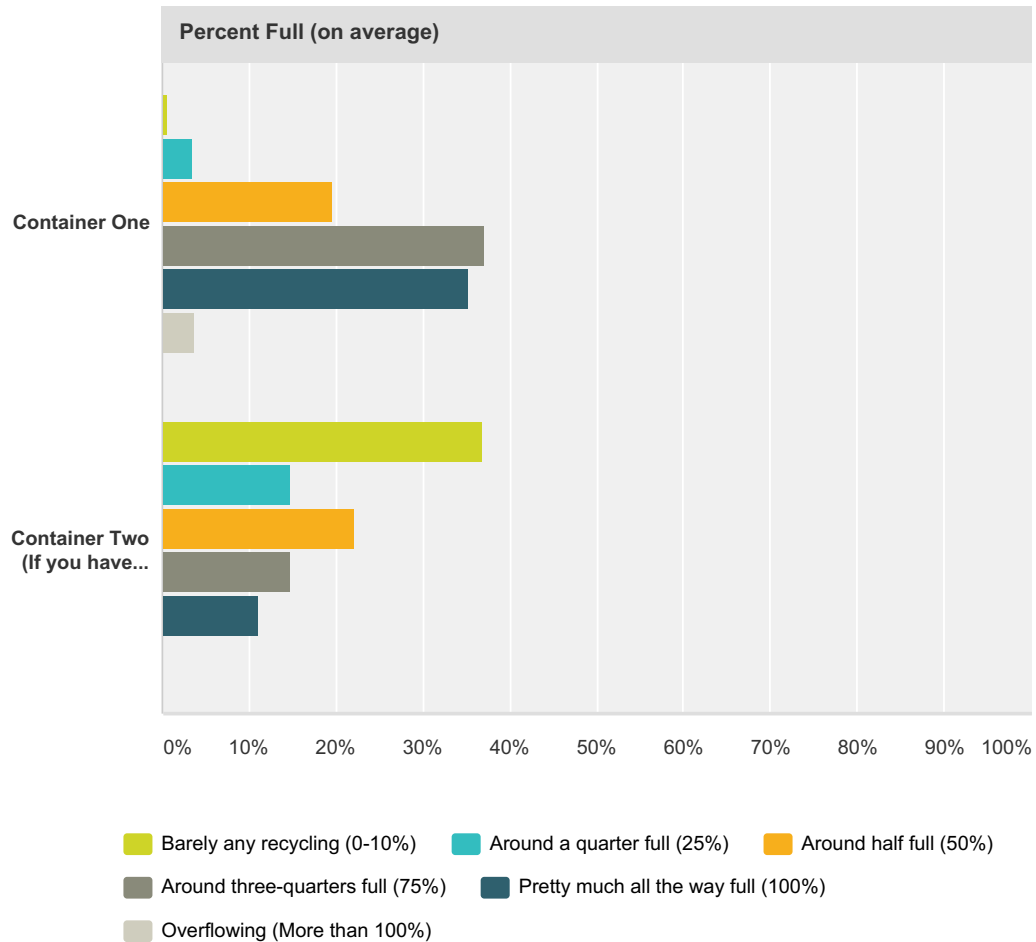


Answer Choices	Responses
Every week	66.00% 1,093
Every other week	25.66% 425
Once a month	7.19% 119
Every other month	0.48% 8
Rarely	0.36% 6
Never	0.30% 5
Total	1,656

Q9 On average, how full is your recycling (blue) container(s)?

Answered: 1,659 Skipped: 29

City of Chandler Trash and Recycling Survey 2011

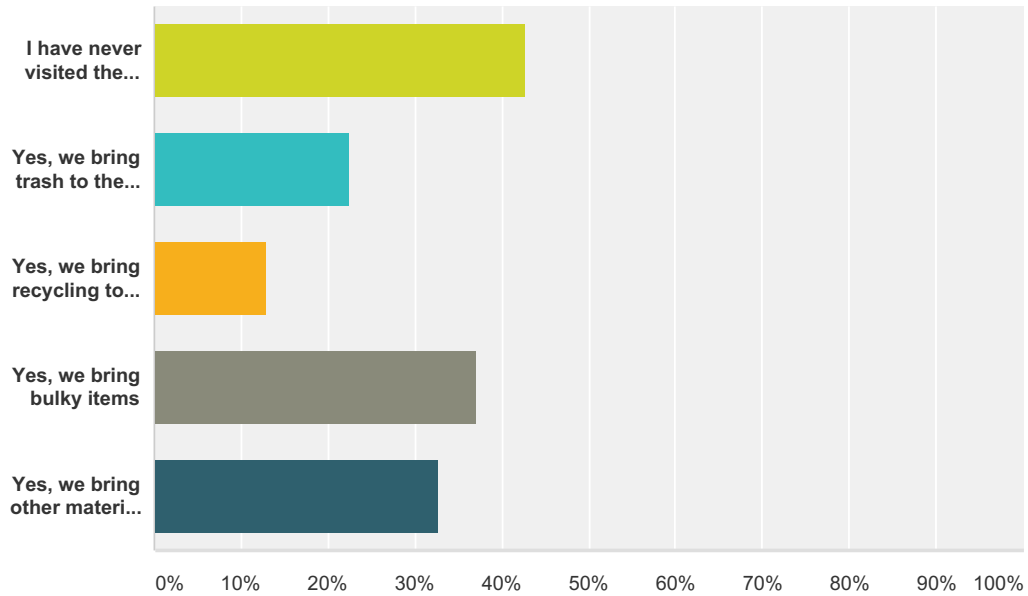


Percent Full (on average)							
	Barely any recycling (0-10%)	Around a quarter full (25%)	Around half full (50%)	Around three-quarters full (75%)	Pretty much all the way full (100%)	Overflowing (More than 100%)	Total
Container One	0.60% 10	3.50% 58	19.65% 326	37.25% 618	35.26% 585	3.74% 62	1,659
Container Two (If you have more than one container)	37.04% 10	14.81% 4	22.22% 6	14.81% 4	11.11% 3	0.00% 0	27

Q10 Do you bring trash or other items to the city drop-off facility (The Recycling-Solid Waste Collection Center on Queen Creek Rd)? (Please select all that apply)

Answered: 1,643 Skipped: 45

City of Chandler Trash and Recycling Survey 2011

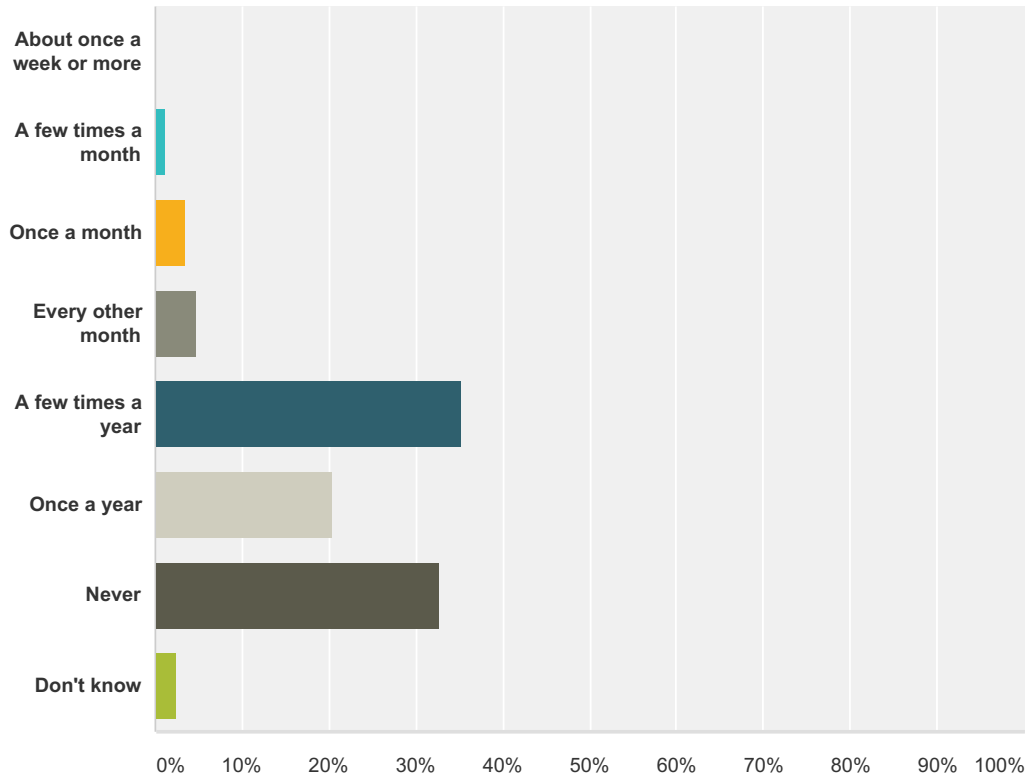


Answer Choices	Responses	
I have never visited the facility	42.73%	702
Yes, we bring trash to the facility	22.46%	369
Yes, we bring recycling to the facility	12.90%	212
Yes, we bring bulky items	37.25%	612
Yes, we bring other materials to the facility (electronics, paint, oil)	32.81%	539
Total Respondents: 1,643		

Q11 If you use the Recycling-Solid Waste Collection Center on Queen Creek Rd., about how often do you bring material to the drop-off?

Answered: 1,390 Skipped: 298

City of Chandler Trash and Recycling Survey 2011

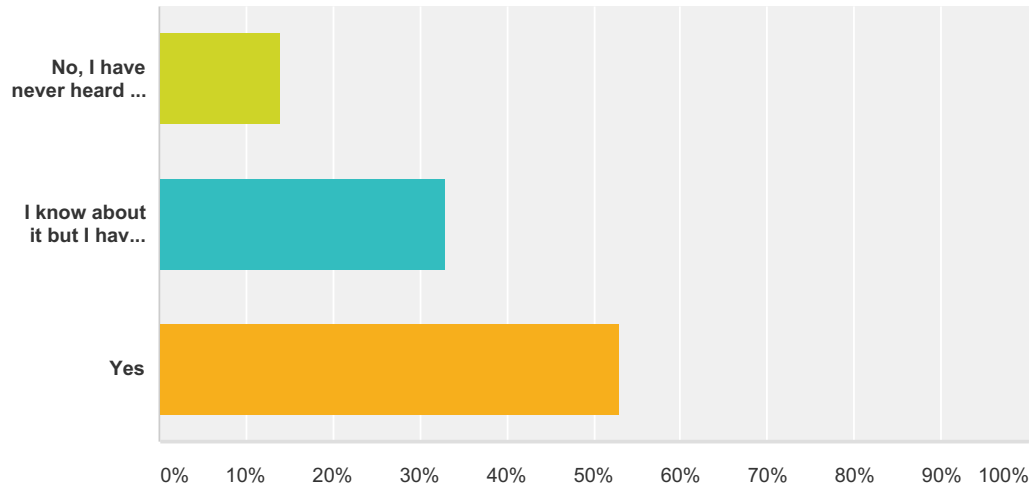


Answer Choices	Responses	
About once a week or more	0.22%	3
A few times a month	1.29%	18
Once a month	3.60%	50
Every other month	4.82%	67
A few times a year	35.18%	489
Once a year	20.50%	285
Never	32.88%	457
Don't know	2.59%	36
Total Respondents: 1,390		

Q12 Have you ever used the curbside bulky item collection service offered in the City?

Answered: 1,652 Skipped: 36

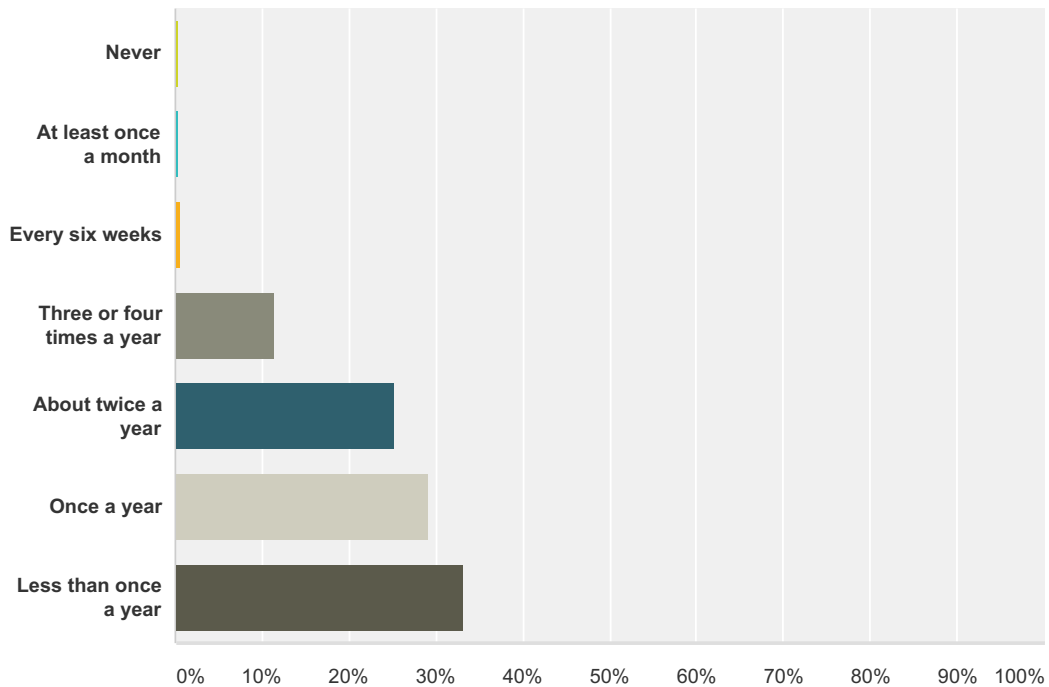
City of Chandler Trash and Recycling Survey 2011



Answer Choices	Responses
No, I have never heard of this service	14.04% 232
I know about it but I have never used it	33.05% 546
Yes	53.03% 876
Total Respondents: 1,652	

Q13 How often do you use the bulky item service?

Answered: 878 Skipped: 810



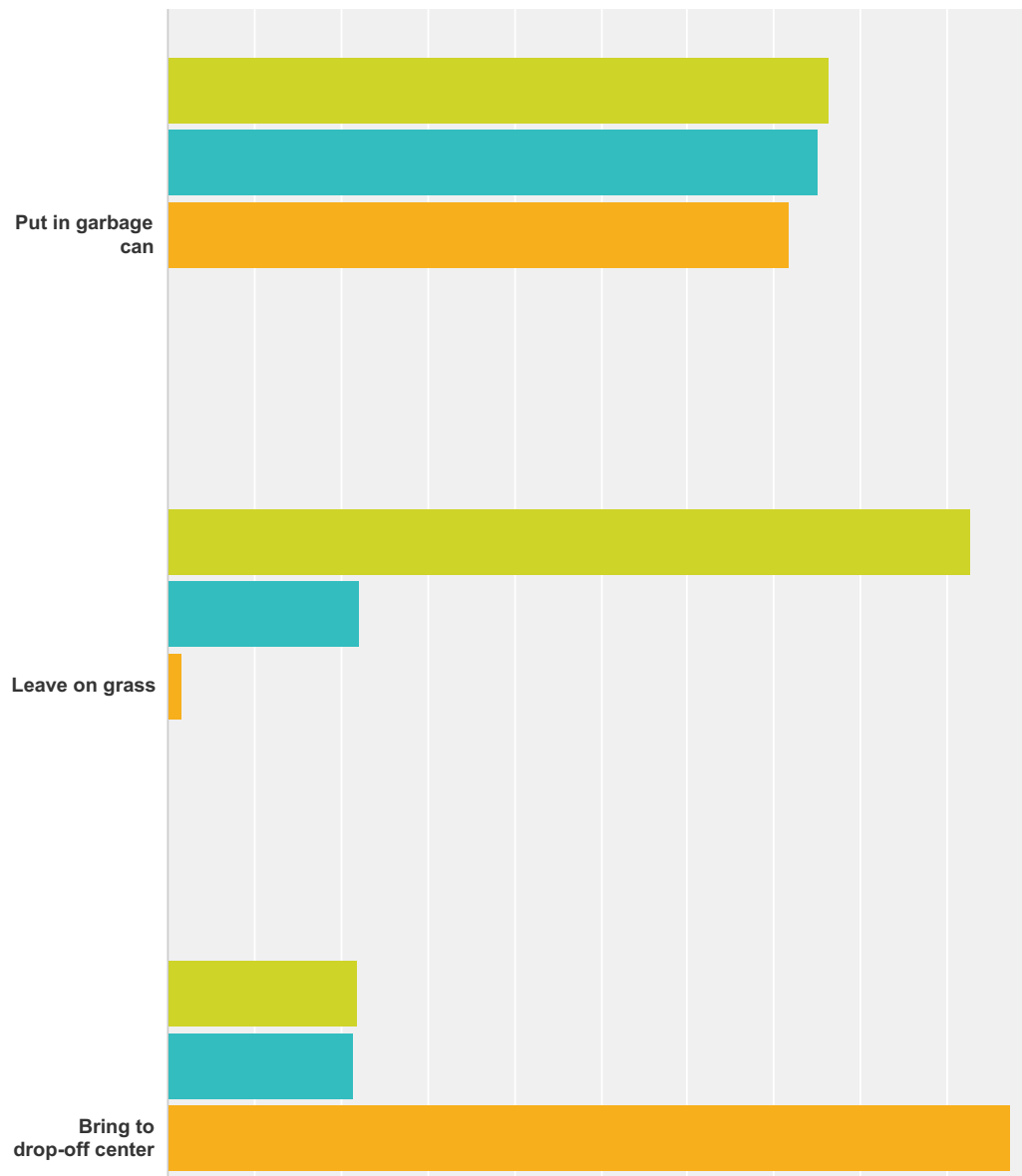
Answer Choices	Responses
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City of Chandler Trash and Recycling Survey 2011

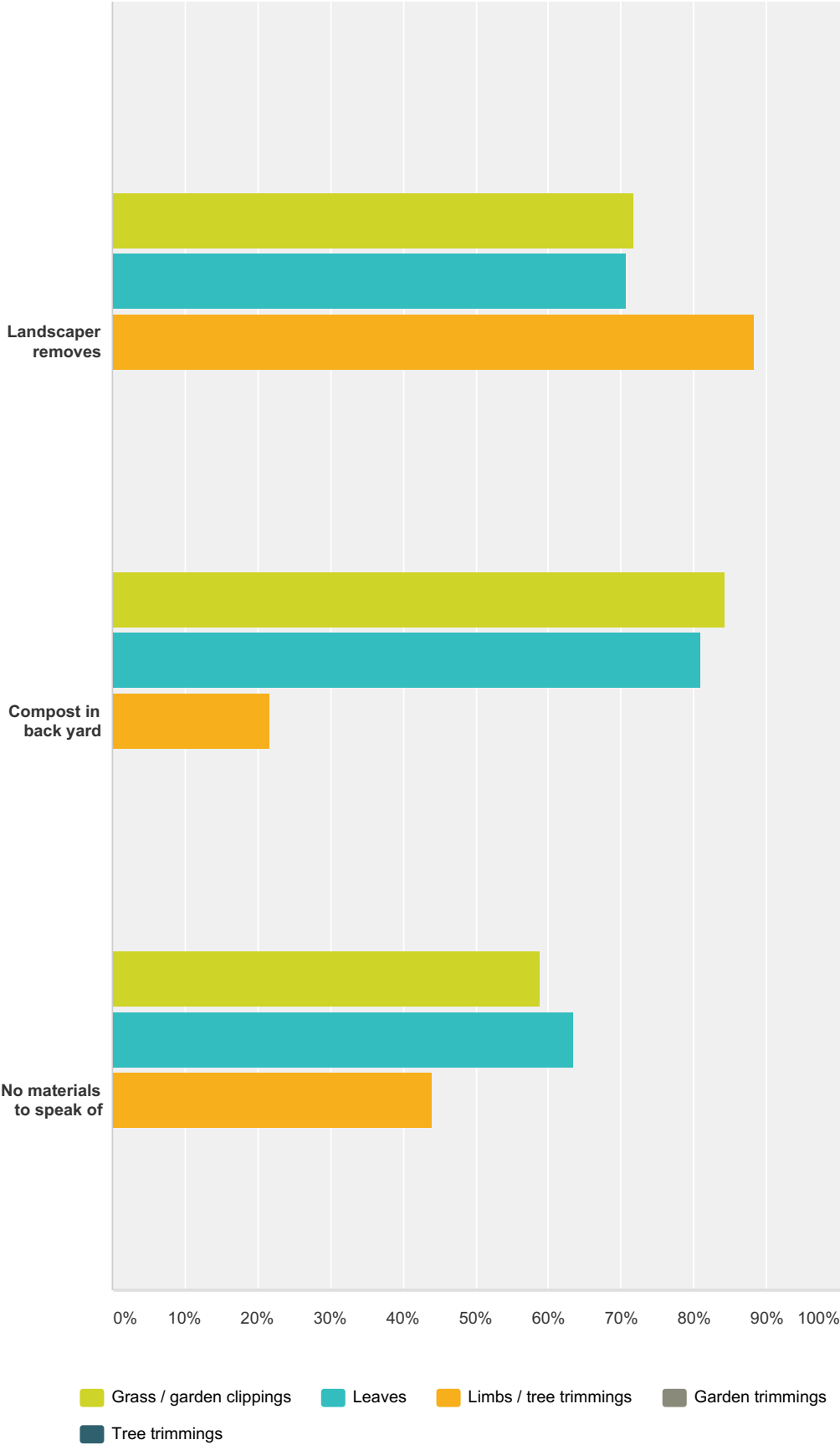
Never	0.34%	3
At least once a month	0.34%	3
Every six weeks	0.68%	6
Three or four times a year	11.50%	101
About twice a year	25.17%	221
Once a year	29.16%	256
Less than once a year	33.14%	291
Total Respondents: 878		

Q14 When you have grass clippings, leaves, garden or tree trimmings what do you do with the waste materials?

Answered: 1,643 Skipped: 45



City of Chandler Trash and Recycling Survey 2011



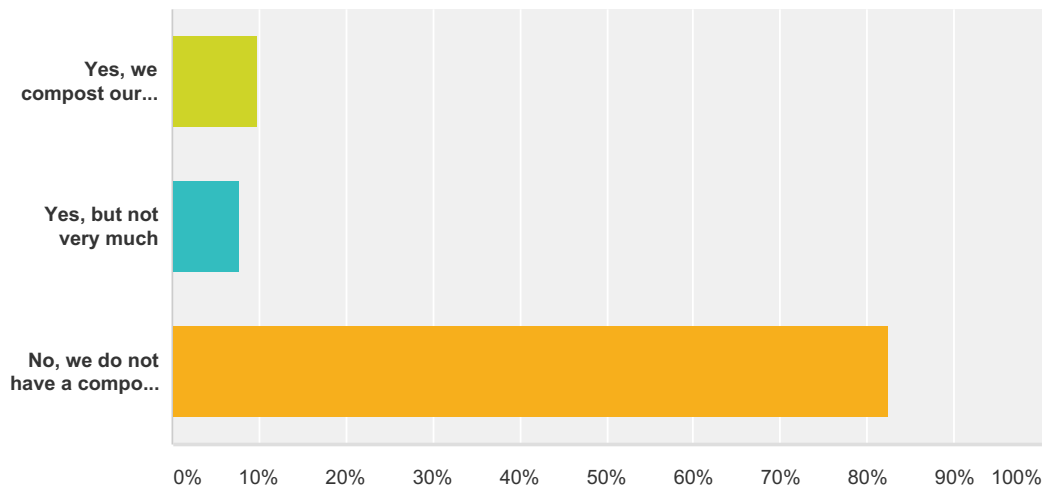
	Grass / garden clippings	Leaves	Limbs / tree trimmings	Garden trimmings	Tree trimmings	Total Respondents
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City of Chandler Trash and Recycling Survey 2011

Put in garbage can	76.43% 937	75.12% 921	71.78% 880	0.00% 0	0.00% 0	1,226
Leave on grass	92.59% 175	22.22% 42	1.59% 3	0.00% 0	0.00% 0	189
Bring to drop-off center	21.95% 81	21.41% 79	97.29% 359	0.00% 0	0.00% 0	369
Landscaper removes	71.90% 330	70.81% 325	88.24% 405	0.00% 0	0.00% 0	459
Compost in back yard	84.24% 155	80.98% 149	21.74% 40	0.00% 0	0.00% 0	184
No materials to speak of	58.91% 119	63.37% 128	44.06% 89	0.00% 0	0.00% 0	202

Q15 Does your household do any home composting?

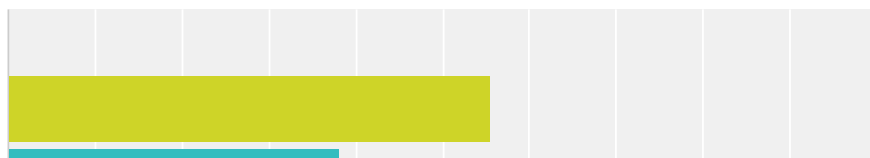
Answered: 1,565 Skipped: 123



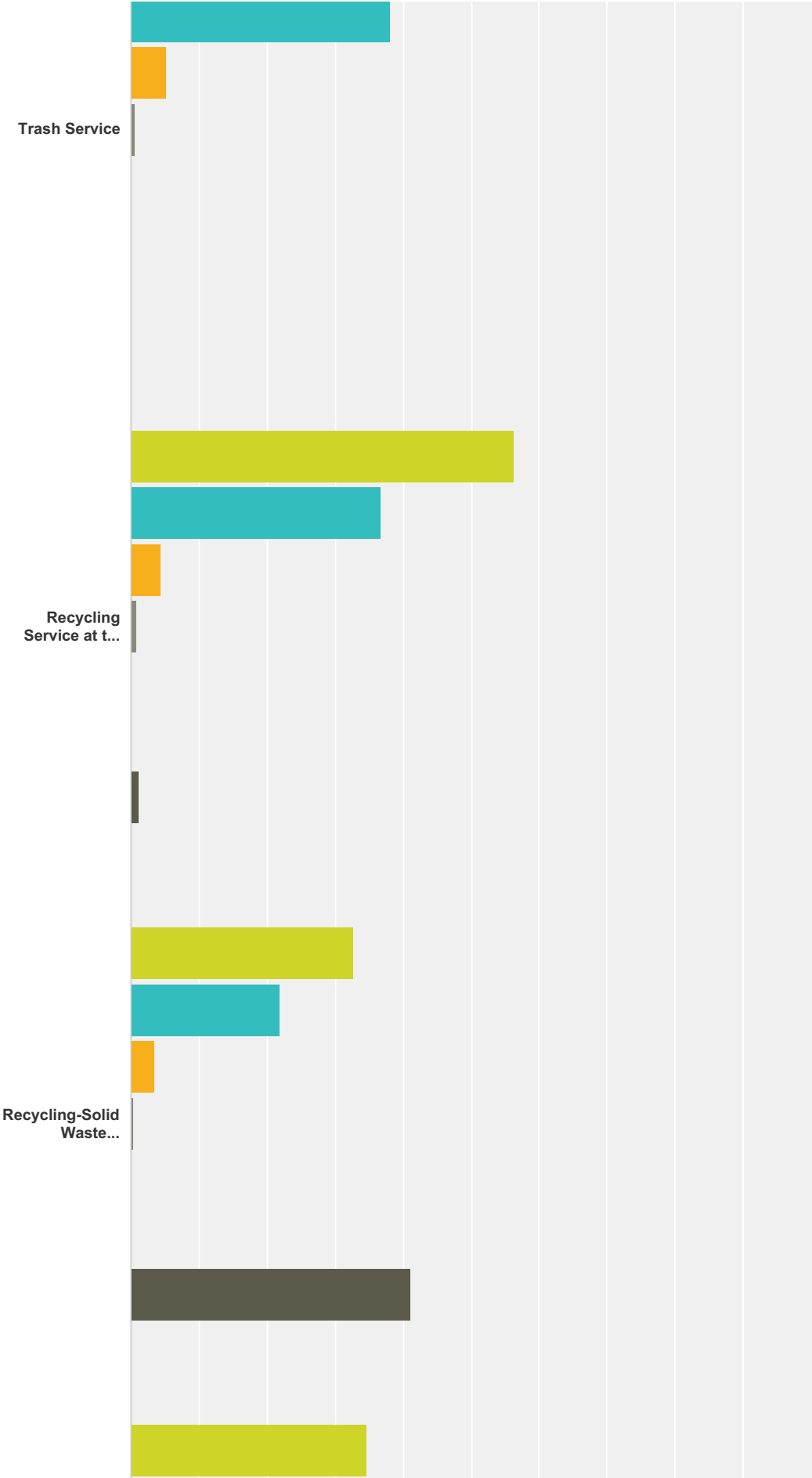
Answer Choices	Responses
Yes, we compost our organic waste	9.90% 155
Yes, but not very much	7.80% 122
No, we do not have a compost bin	82.56% 1,292
Total Respondents: 1,565	

Q16 How satisfied are you with the following services?

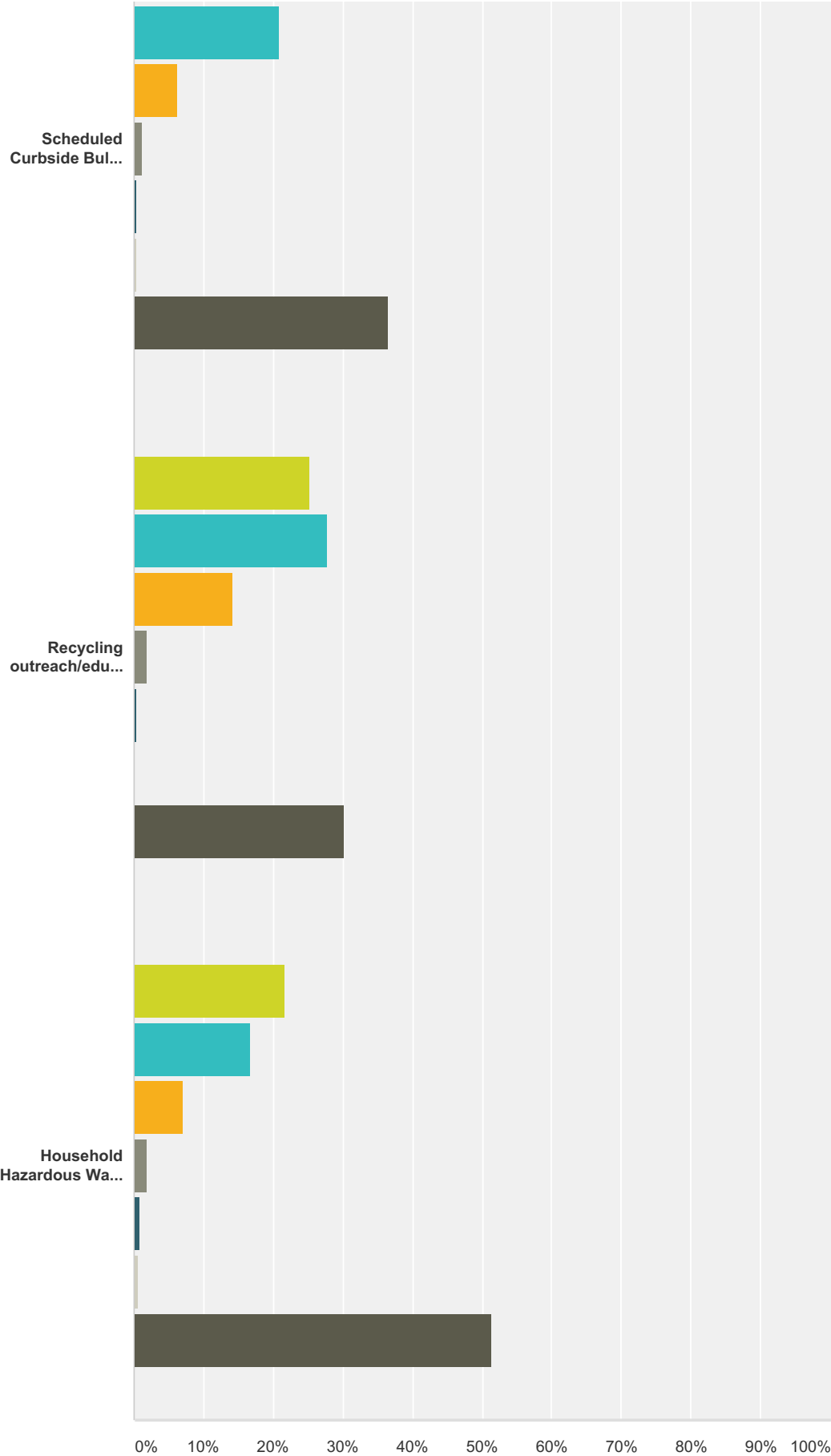
Answered: 1,647 Skipped: 41



City of Chandler Trash and Recycling Survey 2011



City of Chandler Trash and Recycling Survey 2011



City of Chandler Trash and Recycling Survey 2011

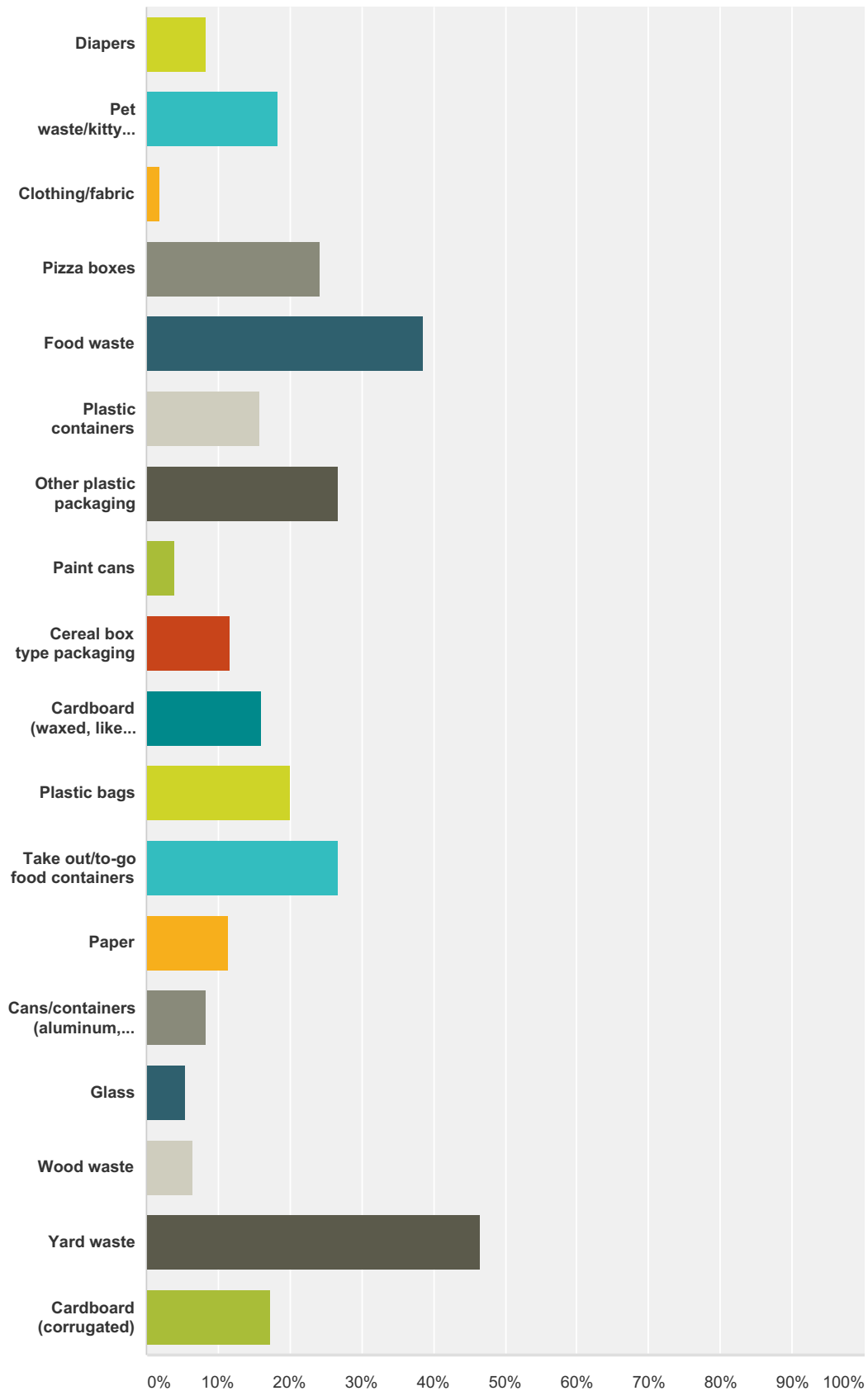
■ Extremely satisfied
 ■ Very satisfied
 ■ Somewhat satisfied
■ Somewhat dissatisfied
 ■ Very dissatisfied
 ■ Extremely dissatisfied
 ■ Don't know

	Extremely satisfied	Very satisfied	Somewhat satisfied	Somewhat dissatisfied	Very dissatisfied	Extremely dissatisfied	Don't know	Total Respondents
Trash Service	55.44% 912	38.18% 628	5.23% 86	0.73% 12	0.30% 5	0.06% 1	0.18% 3	1,645
Recycling Service at the curb	56.41% 924	36.81% 603	4.40% 72	0.79% 13	0.31% 5	0.18% 3	1.34% 22	1,638
Recycling-Solid Waste Collection Center on Queen Creek Rd (drop-off)	32.71% 525	21.99% 353	3.49% 56	0.37% 6	0.31% 5	0.31% 5	41.12% 660	1,605
Scheduled Curbside Bulk Collection	34.70% 557	20.81% 334	6.29% 101	1.25% 20	0.37% 6	0.44% 7	36.45% 585	1,605
Recycling outreach/education	25.22% 404	27.78% 445	14.29% 229	1.87% 30	0.50% 8	0.25% 4	30.27% 485	1,602
Household Hazardous Waste drop-off	21.75% 348	16.69% 267	7.06% 113	1.94% 31	0.75% 12	0.56% 9	51.38% 822	1,600

Q17 Which of the following materials still take up lots of space in your garbage after any diversion activities that you do?

Answered: 1,490 Skipped: 198

City of Chandler Trash and Recycling Survey 2011



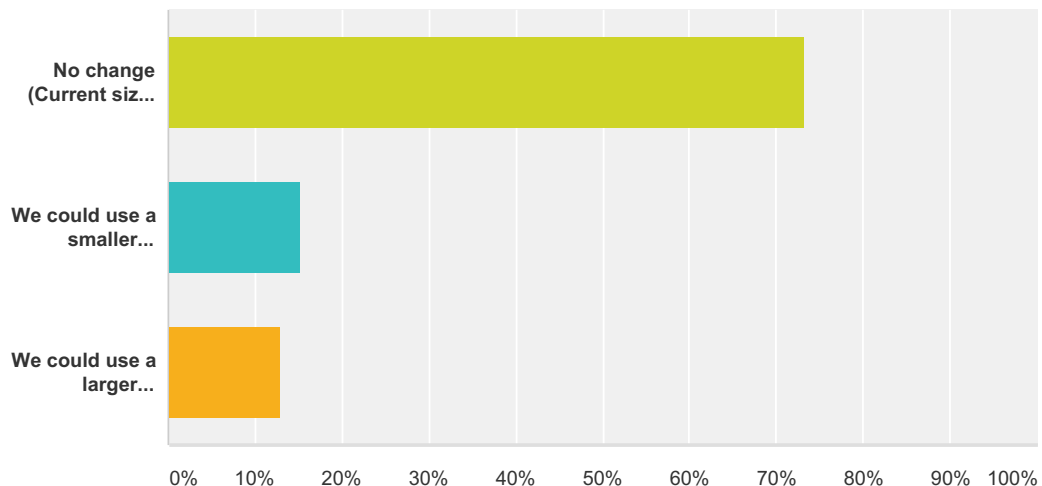
Answer Choices	Responses
Diapers	8.32% 124

City of Chandler Trash and Recycling Survey 2011

Pet waste/kitty litter	18.32%	273
Clothing/fabric	1.88%	28
Pizza boxes	24.23%	361
Food waste	38.72%	577
Plastic containers	15.91%	237
Other plastic packaging	26.64%	397
Paint cans	3.89%	58
Cereal box type packaging	11.74%	175
Cardboard (waxed, like frozen food)	15.97%	238
Plastic bags	20.07%	299
Take out/to-go food containers	26.71%	398
Paper	11.41%	170
Cans/containers (aluminum, soda)	8.32%	124
Glass	5.44%	81
Wood waste	6.38%	95
Yard waste	46.51%	693
Cardboard (corrugated)	17.32%	258
Total Respondents: 1,490		

Q18 If the City were to offer new sizes for trash service, what size trash can do you predict would meet your household needs on an average week?

Answered: 1,616 Skipped: 72

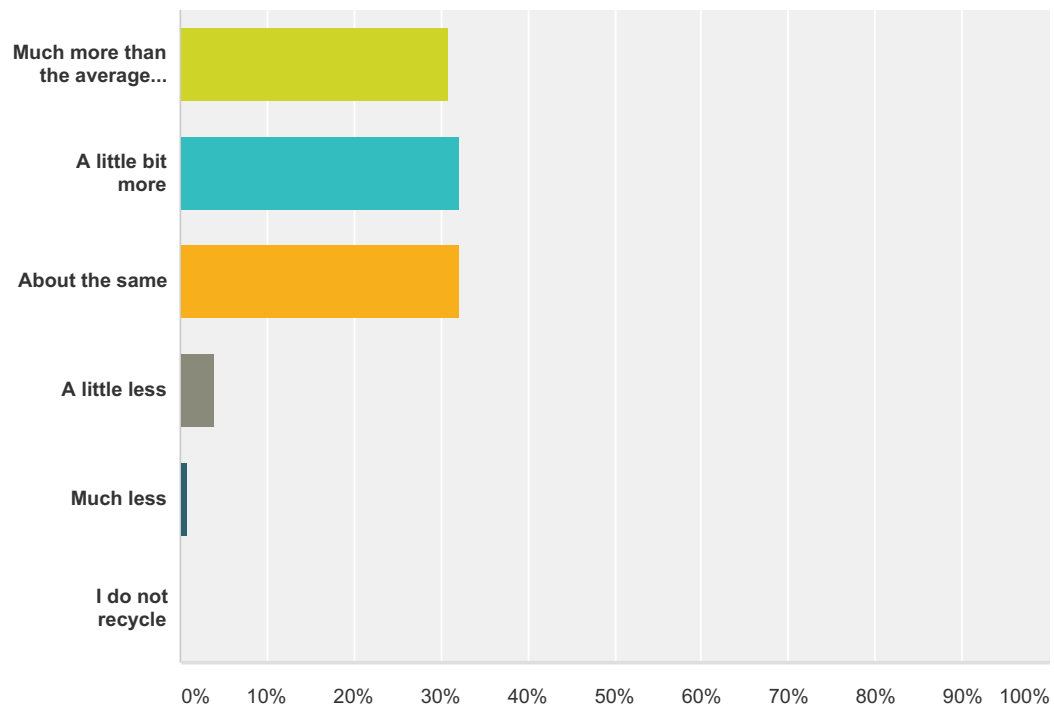


City of Chandler Trash and Recycling Survey 2011

Answer Choices	Responses
No change (Current size is perfect)	73.27% 1,184
We could use a smaller container/cart (We do not often fill up the current container)	15.16% 245
We could use a larger container (We generate more trash per week than can fit in one of the current container)	12.87% 208
Total Respondents: 1,616	

Q19 When compared to other Chandler residents, I usually recycle...

Answered: 1,632 Skipped: 56



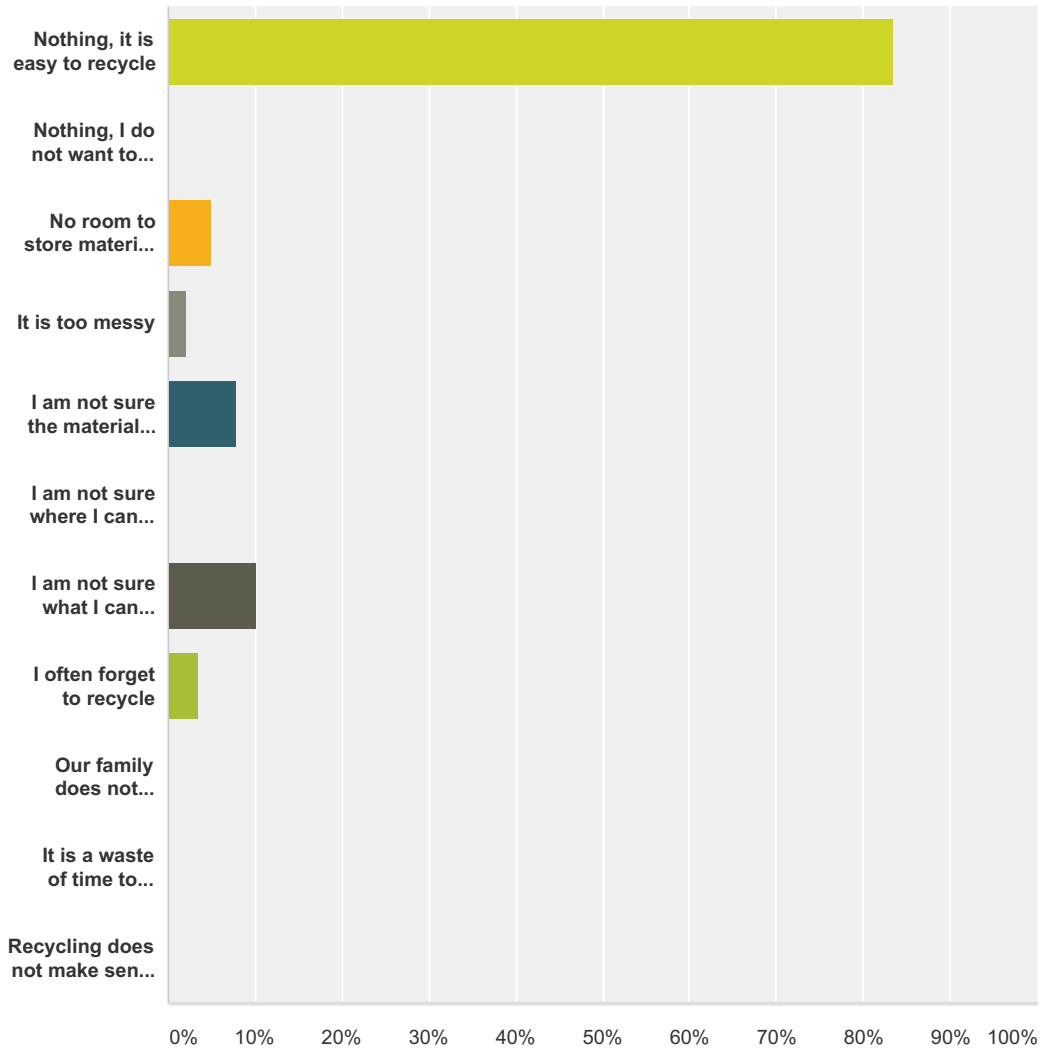
Answer Choices	Responses
Much more than the average resident	30.82% 503
A little bit more	32.05% 523
About the same	32.23% 526
A little less	3.98% 65
Much less	0.80% 13
I do not recycle	0.12% 2
Total	1,632

Q20 What do you believe, if anything, makes it hard for you or your household to recycle in Chandler? (Please select all that

City of Chandler Trash and Recycling Survey 2011

apply)

Answered: 1,522 Skipped: 166



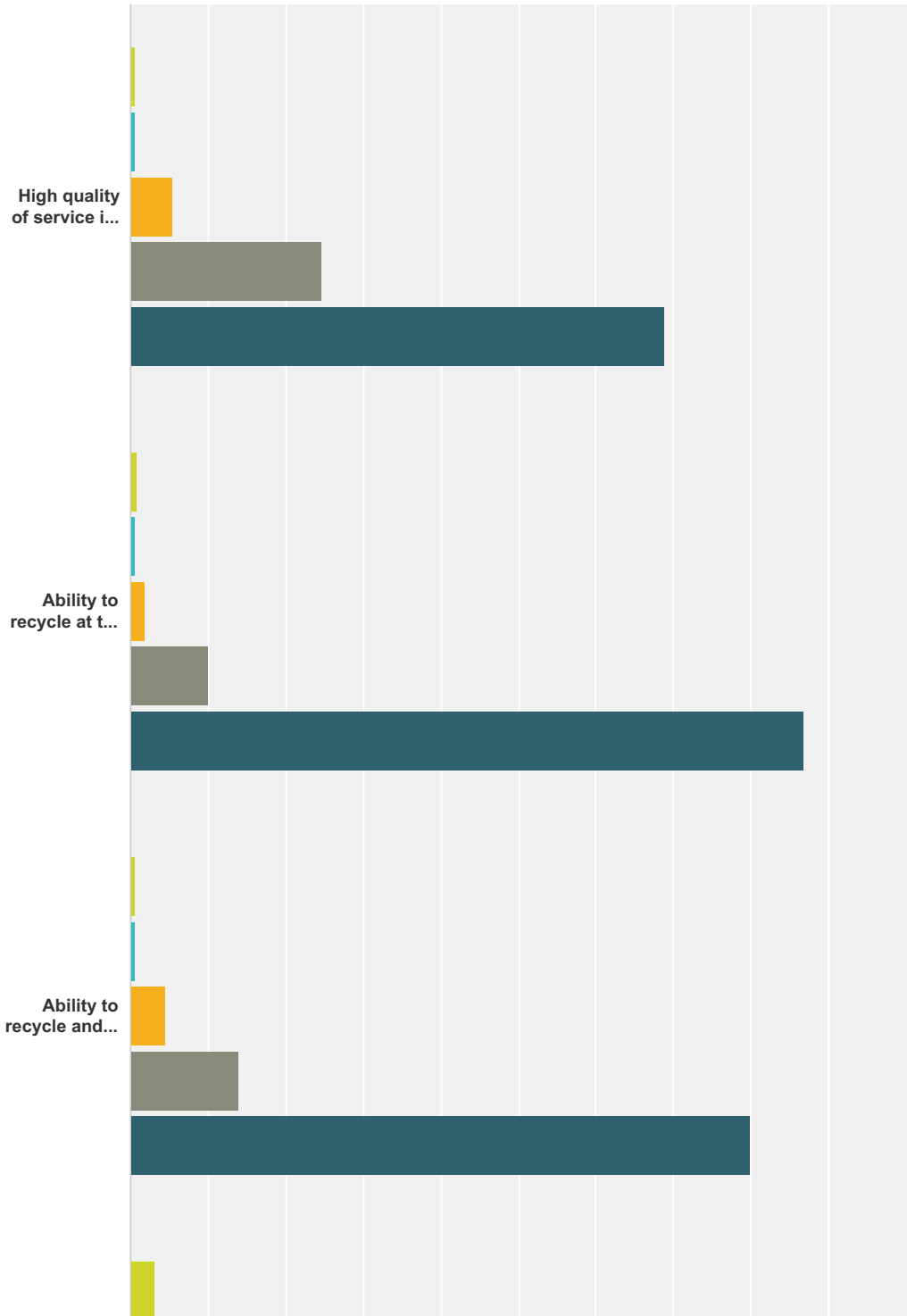
Answer Choices	Responses
Nothing, it is easy to recycle	83.44% 1,270
Nothing, I do not want to recycle	0.26% 4
No room to store materials for recycling	4.99% 76
It is too messy	2.04% 31
I am not sure the materials are really 'recycled'	7.95% 121
I am not sure where I can recycle	0.00% 0
I am not sure what I can recycle	10.18% 155
I often forget to recycle	3.55% 54
Our family does not generate any recyclables	0.13% 2

City of Chandler Trash and Recycling Survey 2011

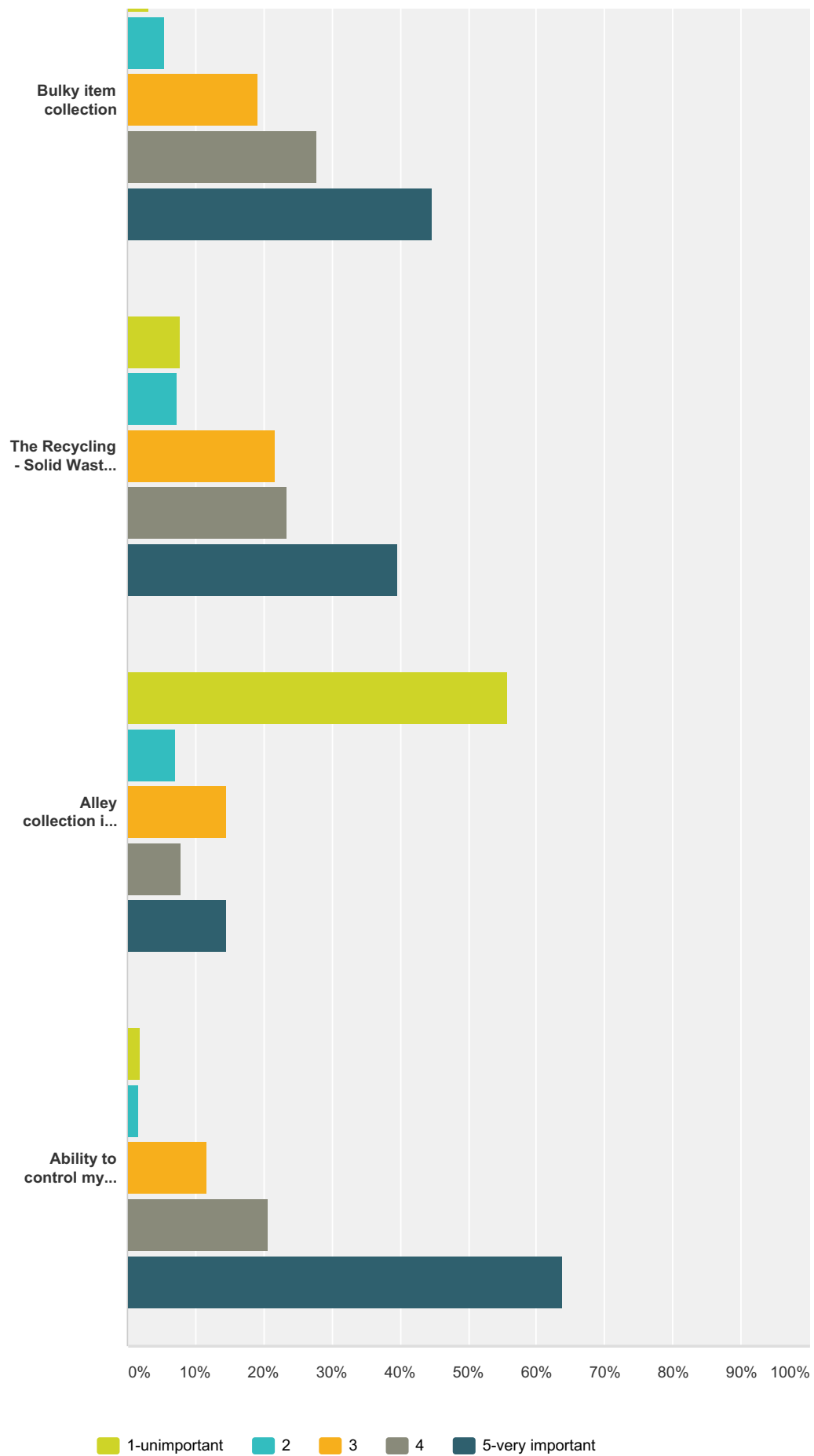
It is a waste of time to recycle	0.26%	4
Recycling does not make sense in our community	0.07%	1
Total Respondents: 1,522		

Q21 How important are the following items to you? (where 1 is unimportant and 5 is very important)

Answered: 1,636 Skipped: 52



City of Chandler Trash and Recycling Survey 2011



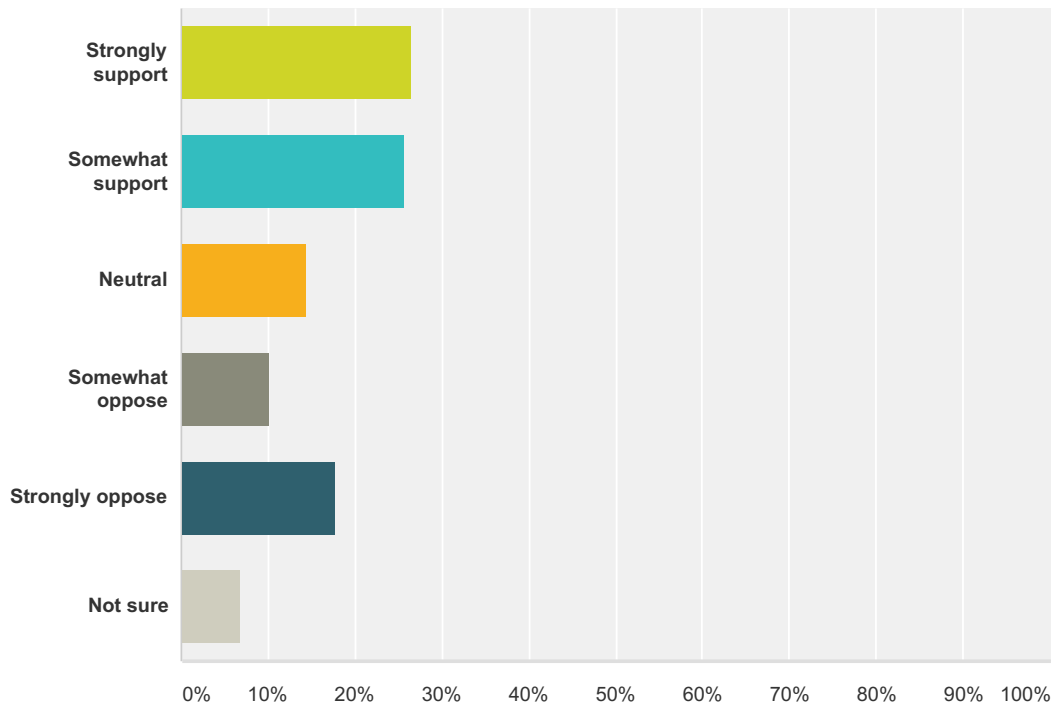
City of Chandler Trash and Recycling Survey 2011

	1-unimportant	2	3	4	5-very important	Total
High quality of service in trash collection	0.61% 10	0.55% 9	5.46% 89	24.54% 400	68.83% 1,122	1,630
Ability to recycle at the curb	0.80% 13	0.61% 10	1.90% 31	9.92% 162	86.77% 1,417	1,633
Ability to recycle and divert many materials	0.62% 10	0.68% 11	4.62% 75	14.06% 228	80.02% 1,298	1,622
Bulky item collection	3.03% 49	5.39% 87	19.20% 310	27.68% 447	44.71% 722	1,615
The Recycling - Solid Waste facility (Queen Creek Rd.)	7.70% 123	7.33% 117	21.73% 347	23.48% 375	39.76% 635	1,597
Alley collection in 300-gallon containers (for some households)	55.66% 801	7.16% 103	14.66% 211	7.99% 115	14.52% 209	1,439
Ability to control my trash costs/rates	1.98% 32	1.61% 26	11.76% 190	20.67% 334	63.99% 1,034	1,616

Q22 If the city were to offer a variable rate program for trash where households are charged for how much trash they throw away (similar to your other utilities like water or electricity) would you support or oppose this type of program? Under this type of program each household only pays for what they throw away, the less you dispose, the less you pay, the more you dispose, the more you pay. All households are also provided with unlimited recycling as a way to control their trash disposal costs.

Answered: 1,631 Skipped: 57

City of Chandler Trash and Recycling Survey 2011



Answer Choices	Responses	
Strongly support	26.55%	433
Somewhat support	25.75%	420
Neutral	14.47%	236
Somewhat oppose	10.30%	168
Strongly oppose	17.72%	289
Not sure	6.87%	112
Total Respondents: 1,631		

Q23 Are there any changes you would like to see Chandler make to their trash and recycling services?

Answered: 904 Skipped: 784

Q24 Are there any aspects of Chandler's trash and recycling program you would like to see left unchanged or any other comments you may have?

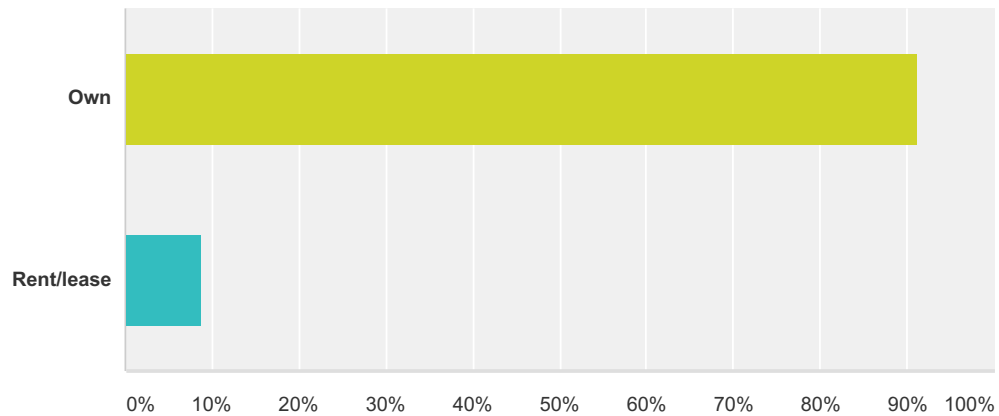
Answered: 770 Skipped: 918

Q25 Do you or members of your house own

City of Chandler Trash and Recycling Survey 2011

or do you rent?

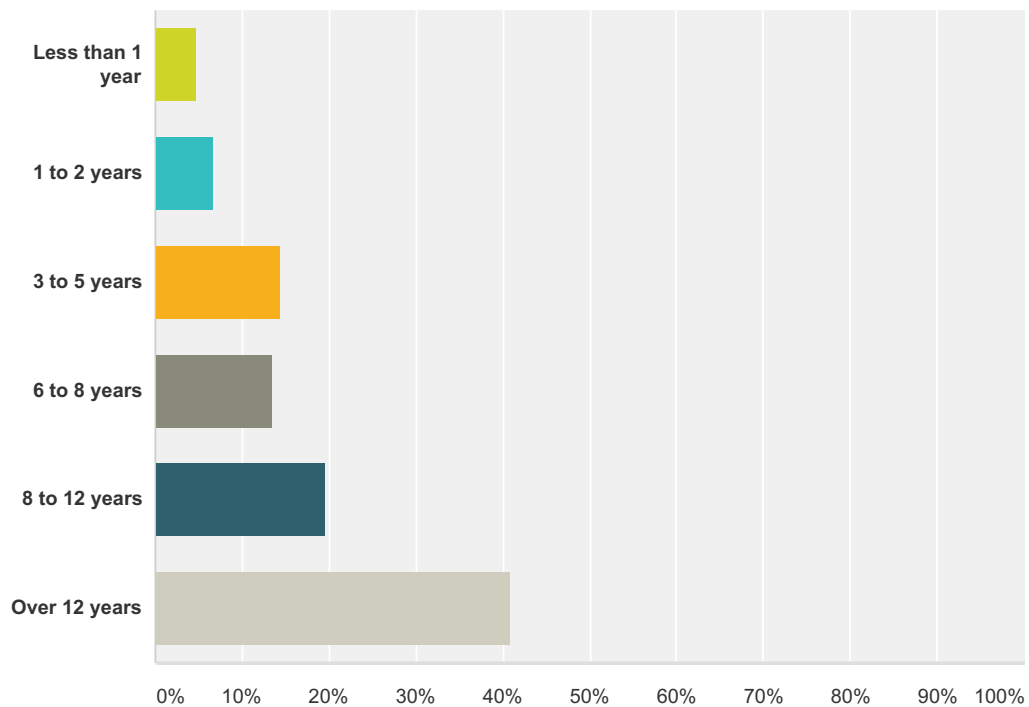
Answered: 1,631 Skipped: 57



Answer Choices	Responses
Own	91.23% 1,488
Rent/lease	8.77% 143
Total	1,631

Q26 How long have you lived in Chandler?

Answered: 1,632 Skipped: 56



Answer Choices	Responses
Less than 1 year	4.84% 79

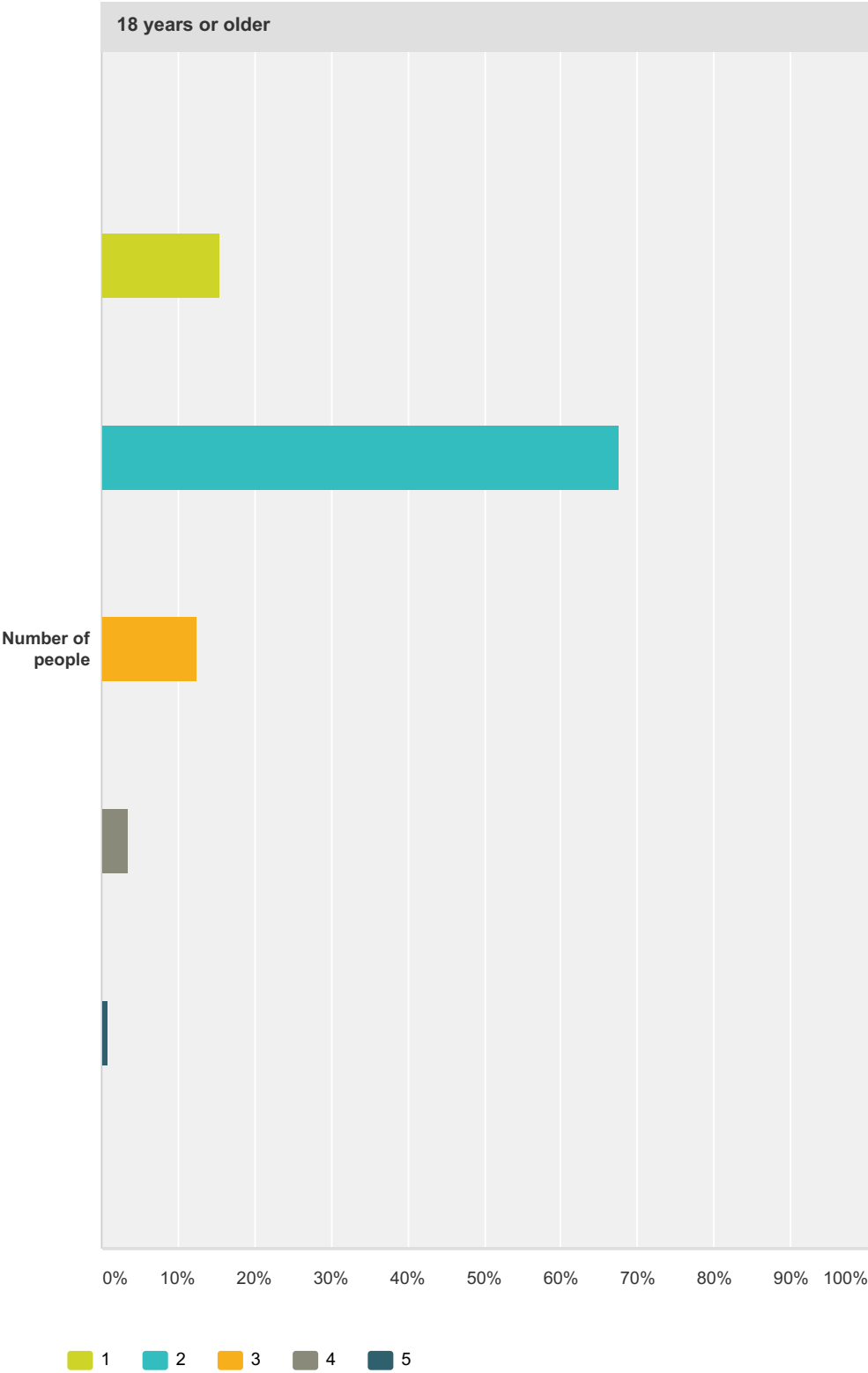
City of Chandler Trash and Recycling Survey 2011

1 to 2 years	6.68%	109
3 to 5 years	14.40%	235
6 to 8 years	13.48%	220
8 to 12 years	19.67%	321
Over 12 years	40.93%	668
Total		1,632

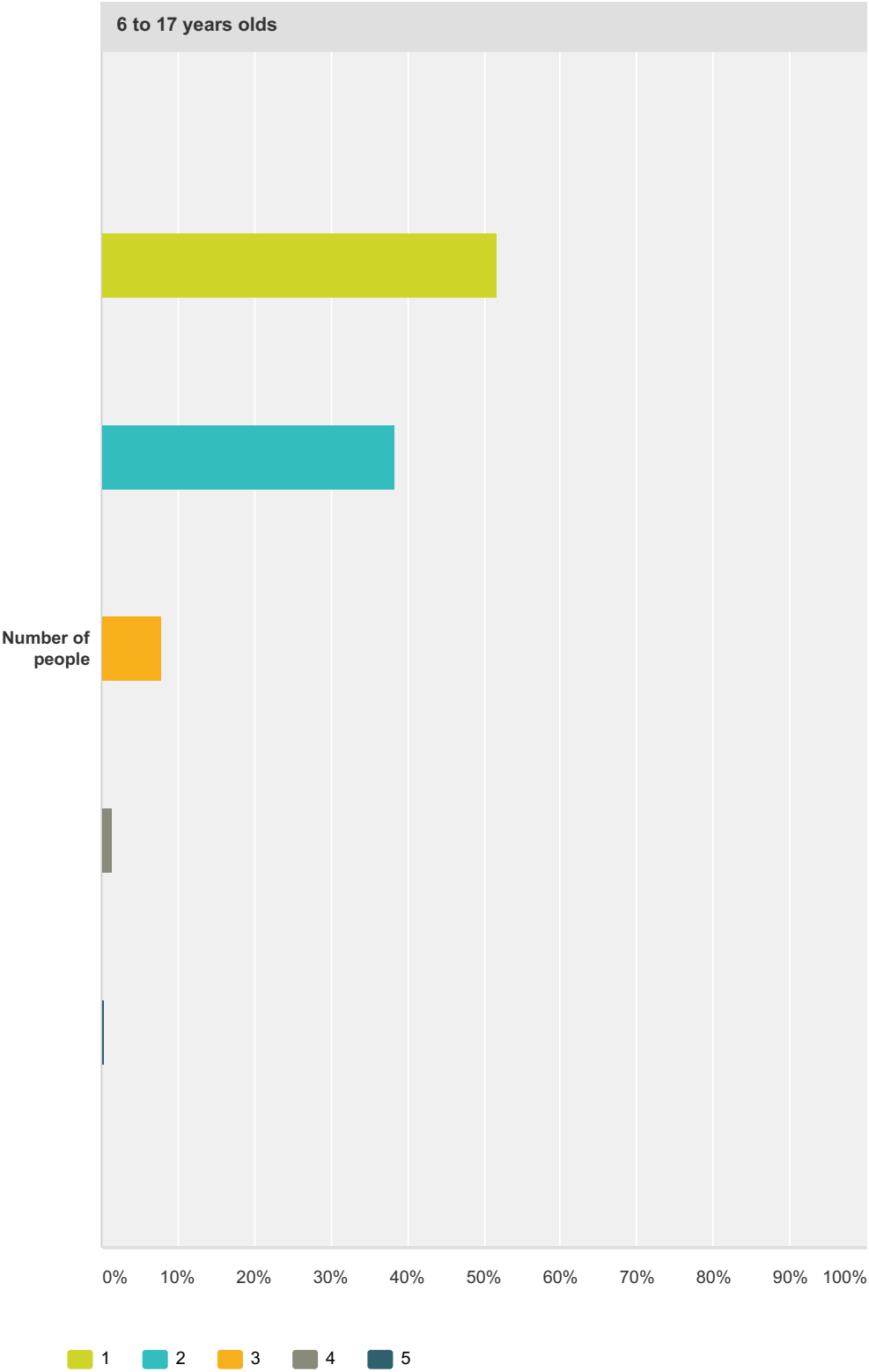
Q27 Including yourself, how many people normally live in the household on a full time basis? (exclude children away at college or military, include all members of the household whether they are related to you or not)

Answered: 1,608 Skipped: 80

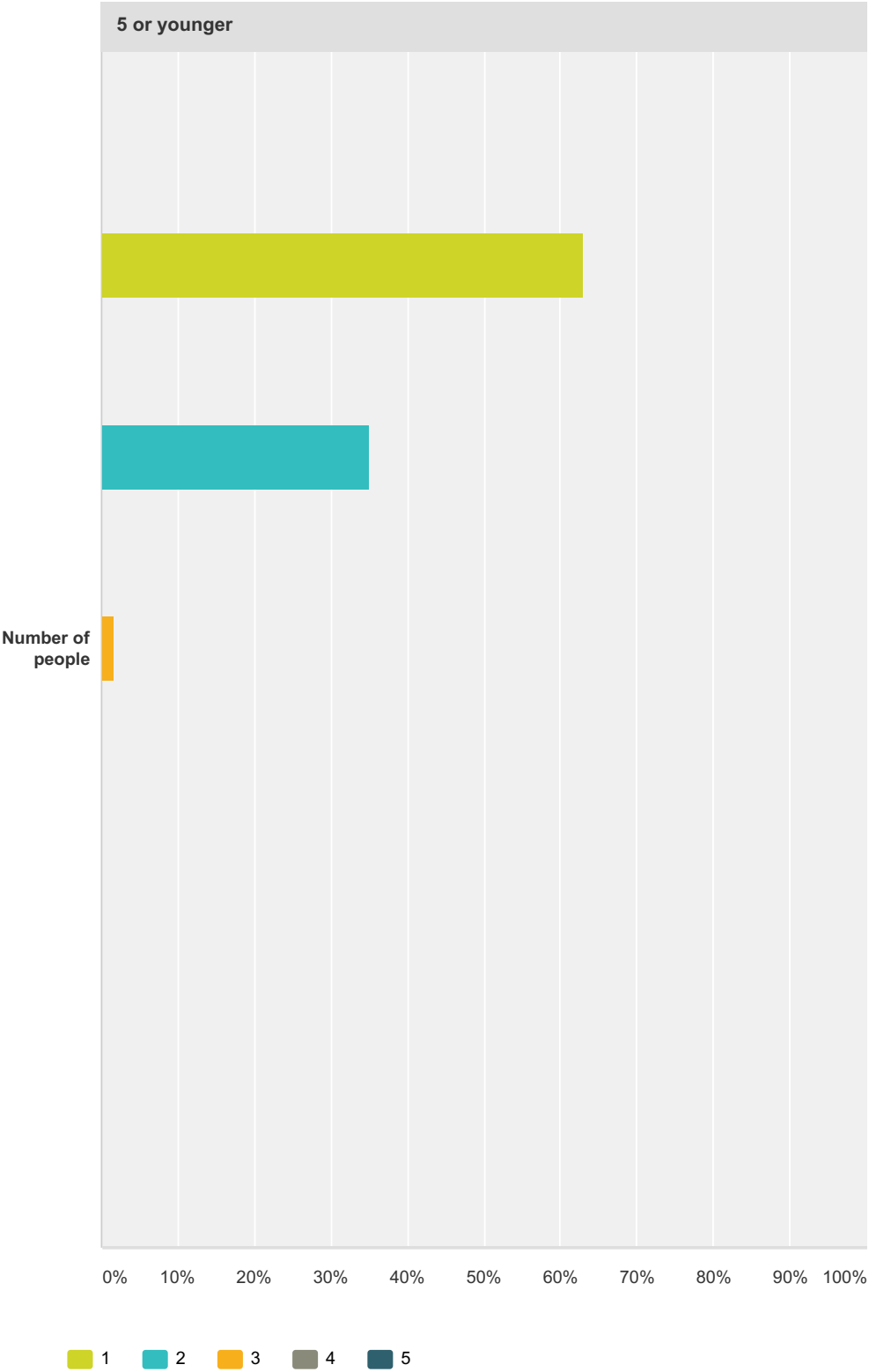
City of Chandler Trash and Recycling Survey 2011



City of Chandler Trash and Recycling Survey 2011



City of Chandler Trash and Recycling Survey 2011



18 years or older						
	1	2	3	4	5	Total
Number of people	15.48% 247	67.73% 1,081	12.53% 200	3.51% 56	0.75% 12	1,596

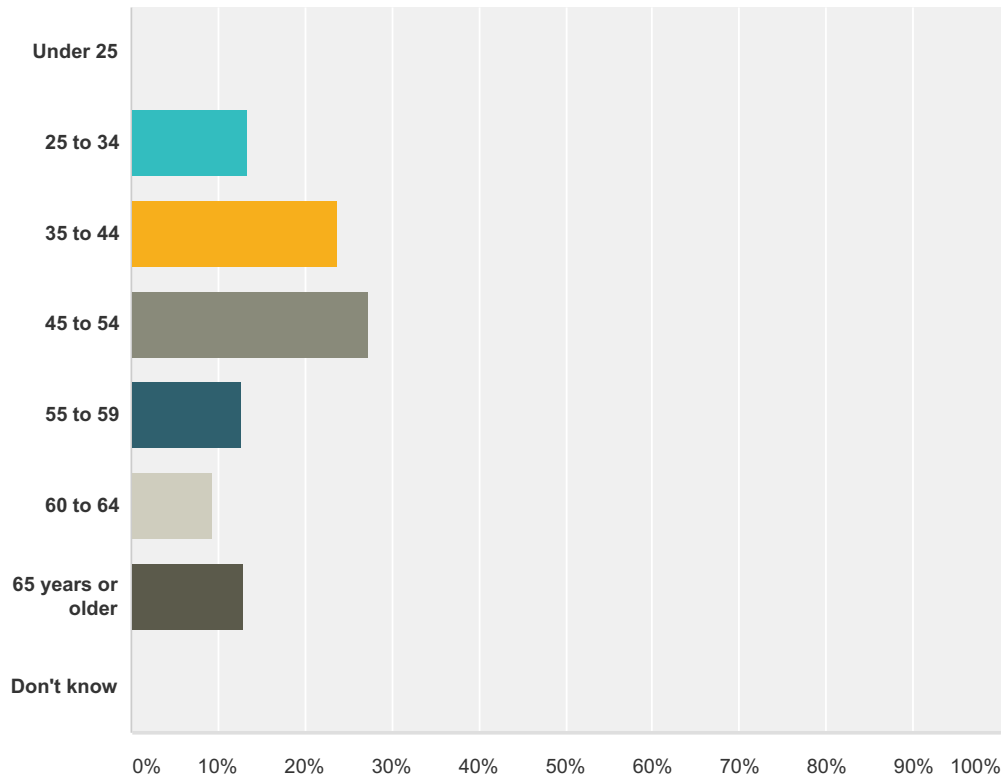
6 to 17 years olds						
	1	2	3	4	5	Total

City of Chandler Trash and Recycling Survey 2011

Number of people	51.75% 266	38.33% 197	7.98% 41	1.56% 8	0.39% 2	514
5 or younger						
	1	2	3	4	5	Total
Number of people	63.12% 178	35.11% 99	1.77% 5	0.00% 0	0.00% 0	282

Q28 How old is the head of household?

Answered: 1,626 Skipped: 62



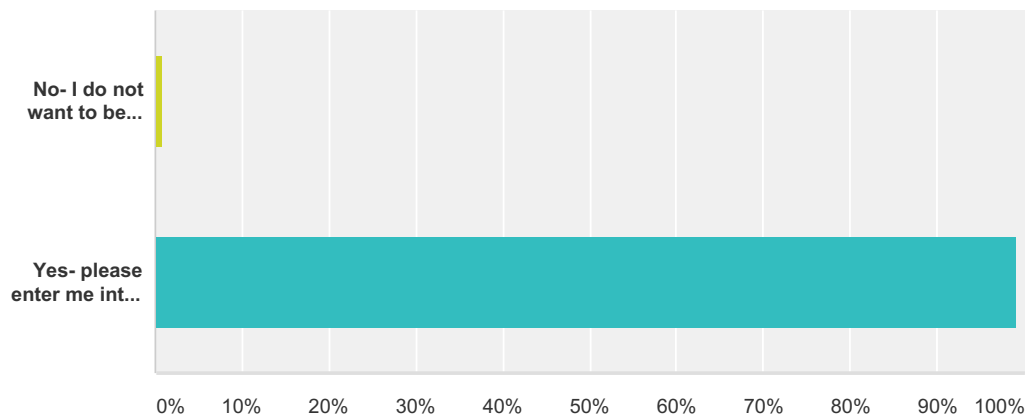
Answer Choices	Responses
Under 25	0.31% 5
25 to 34	13.28% 216
35 to 44	23.80% 387
45 to 54	27.37% 445
55 to 59	12.67% 206
60 to 64	9.35% 152
65 years or older	13.04% 212
Don't know	0.18% 3
Total	1,626

Q29 Are there any other comments you would like to make regarding trash and/or recycling services in Chandler, AZ?

Answered: 525 Skipped: 1,163

Q30 Thank you very much for your help. If you would like to be entered into the drawing for the Kindle please select "Yes" from the choices below.

Answered: 1,631 Skipped: 57



Answer Choices	Responses
No- I do not want to be entered into the drawing for the Kindle	0.92% 15
Yes- please enter me into the drawing	99.08% 1,616
Total Respondents: 1,631	

Q31 Please enter your contact information so that we may reach you if you win the Kindle E-Reader Drawing. Good Luck!

Answered: 1,618 Skipped: 70

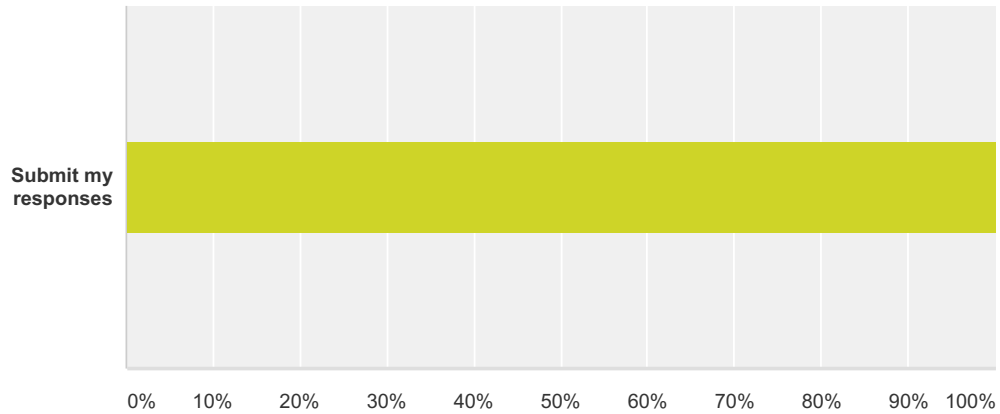
Answer Choices	Responses
Name	99.88% 1,616
Address	98.95% 1,601
Email	92.71% 1,500
or Phone	59.21% 958

Q32 Thank you for completing our survey. If

City of Chandler Trash and Recycling Survey 2011

**you would like to submit your responses
please click on the button below.**

Answered: 1,615 Skipped: 73



Answer Choices	Responses
Submit my responses	100.00% 1,615
Total	1,615



Boulder Office: 762 Eldorado Drive, Superior, CO 80027
Voice: 303/494-1178 FAX: 303/494-1177
email: skumatz @ serainc.com
Website: www. serainc.com; payt.org

Sedona Recycle and Save

Frequently Asked Questions

Communities have been implementing variable trash rate incentives in earnest since the late 1980s – as of today, they are in place in more than 7,100 communities nationwide. The programs can provide a cost-effective method of reducing landfill disposal, increasing recycling, and improving equity, among other effects.

What is the Recycle and Save Program?

The **Sedona Recycle and Save** program is based on the idea of variable trash rates (also called Pay-As-You-Throw (PAYT), volume-based rates, and other names). The program provides a different way to bill for garbage service.

Instead of paying a fixed bill for unlimited collection, the systems require households to pay more if they put out more garbage. In other communities that have adopted the program it is usually measured by the size of the cart the customer subscribes to (32, 64, or 96 gallon) or the number of cans or bags (pre-paid) of garbage the resident sets out for disposal. Paying by volume (like you pay for electricity, water, groceries, etc.) provides households with an incentive to recycle more and reduce disposal. Importantly, the Recycle and Save program will create a more equitable trash system for Sedona residents, households only pay for what they throw away, the less they dispose, the less they pay.

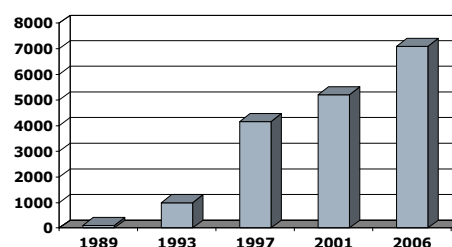


The Recycle and Save program does not set rates, only a rate structure. The program is designed to work with multiple haulers in an open subscription system and to create a level playing field for all actors in the market.

How common are Variable Rates Programs?

According to the most recent available national data, variable rates or PAYT is available in more than 7,100 communities.¹ This has grown substantially since the 1990s (see chart). These programs are available to about 25% of the population, about 25% of all communities, and about 30% of the largest 100 cities in the US. Variable rate programs are in place in 46 states (Kentucky, Hawaii, and Mississippi and the District of Columbia lack programs). The states with the most PAYT programs include MN, CA, WI, WA, IA, NY, OR, VT, MI, OH, among others. Arizona is lagging behind much of the rest of the nation in the adoption of PAYT rates.

Number of communities with PAYT available (Source: SERA Surveys)



Why are communities adopting these programs?

These programs increase equity, dramatically reduce disposal, and allow recycling households to save money (as well as offering environmental and cost benefits). Community surveys find common reasons for adopting the program include: rising landfill/disposal costs; adoption of diversion goals; reports of successful programs, and legislative mandates.

¹ Skumatz, Lisa A., Ph.D. and David J. Freeman (2006), "PAYT in the US: 2006 Update and Analyses", Skumatz Economic Research Associates and USEPA, Superior, CO.

Why would Sedona consider implementing the Recycle and Save Program? Does the program really reduce disposal?

It is critical for communities to have realistic expectations about what will happen if they implement PAYT. Data from more than 1,000 communities around the country was used to identify the impacts of PAYT above and beyond any other recycling or yard waste program differences, demographics, and other factors. The research showed the following impacts on residential solid waste:²

- ▶▶ Disposal decreases by 16%-17%
- ▶▶ Increases in recycling of 5-6 percentage points of residential waste generation (usually about a 50% increase in current recycling)³
- ▶▶ Increases in yard waste diversion of about 4-5 percentage points
- ▶▶ Source reduction of about 6% of generation⁴
- ▶▶ Overall, we would expect a town with 100,000 tons of residential disposal to see a reduction to about 84,000 tons. Recycling tonnage would increase by about 5,500 tons, and yard waste programs would see an additional 4,500 tons. About 6,000 tons would be avoided through waste prevention, based on the study's estimates.

The research indicates that the adoption of the Recycle and Save program is the single most effective change Sedona can make to increase recycling. According to the research, the program can increase recycling more than adding a new material, changing collection frequency, or many other potential program design or collection changes.

Common Variable Rate / PAYT Misperceptions

The Recycle and Save program will cost more for the city, haulers, and households.

- ⇒ City costs: Two large statewide surveys (WI, IA) showed that PAYT led to no increase in costs (or town workloads) in 2/3 of communities implementing the program.
- Hauler costs: PAYT itself can be implemented in ways that lead to virtually no cost increase (bag programs without special cans or billing, keeping the same collection system, etc).⁵ If the hauler does not currently provide recycling service there will be some costs associated with new carts, collection routes. These are typically passed thru to the households in the rates. Recycling can be cheaper than trash, but not free, as trucks must still stop by the house, collect materials, and deliver them to a recycling center.
- Household costs: The program works by charging residents for the volume of trash they dispose and encouraging recycling. Thus, under a variable rate program some households will pay more (those throwing away a lot of trash and not recycling), others will not see significant changes in their rates, and other households (strong recyclers, small households, elderly households, etc.) will pay less.

PAYT puts small haulers out of business

- ⇒ The Recycle and Save program can be enacted under an ordinance in an "open" system (citizens can choose from multiple haulers) to provide a level playing field for all haulers without prohibiting any hauler from competing in the marketplace. PAYT with embedded recycling service (as PAYT is often implemented) can be a business opportunity for haulers. Under a PAYT system haulers may be required to offer recycling to all

² Skumatz, Lisa A., Ph.D., "Beyond case studies: Quantitative effects of recycling and variable rates programs", *Resource Recycling* 9/1996; and Skumatz, Lisa A., Ph.D., "Achieving 50% diversion: Program elements, analysis, and policy implications", *Resource Recycling*, 8/2000.

³ Analyzing Iowa communities, Frable, 1994, found an increase of 30% to 100% with an average of 50% increase in recycling tonnages.

⁴ Skumatz, Lisa A., Ph.D., (2000) "Measuring Source Reduction: PAYT / Variable Rates as an Example", Skumatz Economic Research Associates Technical Report, prepared for multiple clients, included on USEPA website; and Skumatz, Lisa A., Ph.D., "Source Reduction can be Measured", *Resource Recycling*, 8/2000.

⁵ Potential cost increases occur if towns or haulers need to purchase new containers (this is no extra cost if they are already buying new cans to go "automated" – they just buy different sizes); however, if they already purchased big cans, a cost can result from purchasing new, smaller cans. This can be mitigated by offering an every-other-week service at the lower cost, and keeping the large cans (buying smaller ones through attrition, perhaps) or switching the big cans to recycling or yard waste containers.

households for an appropriate fee – leading to more corporate revenues. They may also use the PAYT experience to expand their capabilities and are therefore ready and experienced when other communities select PAYT. Several haulers have used PAYT as a business edge, to distinguish themselves from haulers that provide basic trash-only service as a “commodity” product.

The Recycle and Save program will cause more illegal dumping

⇒ Illegal dumping happens with and without a variable rate trash program. Hundreds of communities with PAYT have been asked about the impact on illegal dumping. About 20% say there is an issue that lasts about 3 months, and that enforcement helps. All say illegal dumping sites should be cleaned up promptly to avoid attracting more illegal dumping. Research on illegally dumped waste in PAYT communities shows the majority is not household in origin (and thus, not due to PAYT), but the most common household items dumped are bulky items (appliances, sofas, etc.). PAYT programs should have convenient methods for citizens to get rid of bulky items (tags, fees, appointments, coupons for one free dump, etc.) to avoid illegal dumping issues.

Making people pay for more trash is unfair to large families or large generators

⇒ PAYT works under the basic environmental law principal of *polluter pays*. The premise is that the person or entity responsible for the pollution, in this case trash and its related impacts on landfills, water, air, is the one responsible for paying the costs. Unlike programs where everyone pays to benefit all regardless of personal use or responsibility, *polluter pays* requires each person to be responsible for their own pollution. Under unlimited trash disposal, a small generator (i.e. one bag disposer) subsidizes services for a large generator (a household with 5 or 6 bags). Under the Recycle and Save program, each household only pays for what they throw away. This is a more equitable system than unlimited trash disposal that has been adopted by all types of communities nationwide.

The City of Sedona has secured the assistance of the **Econservation Institute** (paid for through an EPA Region IX grant supporting recycling and diversion in Arizona communities) to help design the Recycle and Save program. Econservation Institute's staff of economists and analysts have literally decades of experience in variable rate program design and are available to answer questions from haulers including how to set rates to meet current and future revenue requirements, collection and containerization issues, and billing questions. If you have additional questions about the program contact Lisa Skumatz Ph.D. at (303)494-1178 or skumatz@econservationinstitute.org



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VARIABLE RATES FOR TRASH COLLECTION IN SEDONA, AZ

- IMPLEMENTATION PLAN-

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1. Introduction

Under the EPA Region 9 Solid Waste Management Assistance Grant Solicitation #EPA-R9-WST7-09-002, *Econservation Institute (EI)*¹ is funded to provide no cost consulting to communities in EPA Region 9. The consulting assistance is designed to encourage communities to adopt variable rate pricing or Pay-As-You-Throw (PAYT) for solid waste. Under the awarded grant only a few communities were selected for in-depth PAYT consultation and Sedona, AZ was one of the communities.

Why Consider Pay-as-you-throw?

Pay-as-you-throw (PAYT; also called variable rates, volume-based rates, and other names) provides a different way to bill for garbage service. Instead of paying a fixed bill for unlimited collection, these systems require households to pay for services based on how much trash they set out for collection – the less set out, the lower the bill, the more set-out, the higher the bill. Individual household rates are based on the size of trash can subscribed to², the number of bags set-out, charging for pre-paid bags and tags, or some combination of these efforts. One of the benefits of PAYT is that the program works well under any hauler arrangement regardless of whether it is multiple haulers serving a community under an open subscription system, a contracted hauler arrangement, or municipal collection.

Paying by volume (like you pay for electricity, water, groceries, etc.) provides households with an incentive to recycle more, reduce disposal, and creates a more equitable way for households to pay for trash services. Under PAYT each household is only responsible for paying for what they dispose of, low generators, good recyclers, small households, and others no longer need to help cover the costs of disposal for households that throw away large amounts of trash on a regular basis



It is critical for communities to have realistic expectations about what will happen if they implement PAYT. PAYT is a commonly adopted program and is in place in over 7,100 communities in the United States³. Data from more than 1,000 communities around the country was used to identify the impacts of PAYT above and beyond any other recycling or yard waste program differences, demographics, and other factors. The research showed the following impacts on residential solid waste:⁴

¹ Econservation Institute is a 501c3 non-profit based in Superior Colorado dedicated to sharing information and real world data on sustainable issues including recycling. EI has a small staff of economists, analysts, and researchers dedicated to its mission.

³ Skumatz, Freeman. PAYT in the United States. 2006 Update and Analysis. US EPA. Unpublished research recently conducted by the EI indicate that the number of communities with PAYT has increases significantly since 2007.

⁴ Skumatz, Lisa A., Ph.D., "Beyond case studies: Quantitative effects of recycling and variable rates programs", *Resource Recycling* 9/1996; and Skumatz, Lisa A., Ph.D., "Achieving 50% diversion: Program elements, analysis, and policy implications", *Resource Recycling*, 8/2000.

Disposal decreases by 16%-17%

Increases in recycling of 5-6 percentage points or 5-6% of residential waste generation (usually about a 50% increase in current recycling)⁵

Increases in yard waste diversion of about 4-5 percentage points

Source reduction of about 6% of generation⁶

Years of research indicates that adding a PAYT program is the single most effective change a community can make to increase recycling. According to published research, PAYT increases recycling more than adding a new material, changing collection frequency, or many other potential program design or collection changes.

2. Variable Rate System Design

The basics of the new variable rate system for the City of Sedona are displayed in figure 1.1.

Figure 1.1. PAYT System Design

PAYT Rate Incentives Details	Description
What	Each hauler servicing residential accounts in the city is required by ordinance to charge customers for trash service based upon the volume of trash disposed. The base unit of trash is 32 gallons and more trash service costs more. The ordinance does not set the trash rates, only the framework for the rates. Rates are set by each hauler to meet their revenue requirements. Additionally, EI recommends that the cost of recycling is 'embedded' in the trash rates for all households.
Why	Modify rates so residents pay different rates for different amounts of trash service, providing a recycling and source reduction incentive.
Who	Single family residents up to 4 units.
Facilities issues	None
Equipment	The City is not responsible for any additional equipment. Each hauler must determine the best way to charge households. Some haulers may opt to use variable sized carts (those with automated collection) while other may choose to implement a bag program.
Staff Effort / Admin	Staff effort is low. The staff must work with City council to draft and pass an ordinance. A low level of enforcement is needed to make sure that each hauler is complying with the ordinance and ensure it is a level playing for all market actors.
Cost	PAYT is a fully user paid program. The cost for the City is answering questions when the program is implemented and a low level of enforcement subsequently. This is perhaps a ¼ FTE for the first three months of the program (answering questions) and minimal commitment after.

⁵ Analyzing Iowa communities, Frable, 1994, found an increase of 30% to 100% with an average of 50% increase in recycling tonnages.

⁶ Skumatz, Lisa A., Ph.D., (2000) "Measuring Source Reduction: PAYT / Variable Rates as an Example", Skumatz Economic Research Associates Technical Report, prepared for multiple clients, included on USEPA website; and Skumatz, Lisa A., Ph.D., "Source Reduction can be Measured", *Resource Recycling*, 8/2000.

Public Acceptance

The technical aspects of variable rates or PAYT are rarely the barrier to implementation. Although studies have shown that after implementation the vast majority of residents support PAYT⁷, perceived concerns about rate changes, changes to existing trash systems, illegal dumping (see Section 7) , and other barriers can make 'selling' the program to the public challenging.

The common areas of concern prior to implementation include:

- Concerned about illegal dumping
- Concerned about how it will impact rates
- Household sizes (unfair for large households)
- Government overextending itself

Marketing the Program

As one last note, to maximize the effectiveness of the program, we believe a renaming of the program may be useful. The term "Pay as you throw (PAYT)" may not resonate well with residents or decision-makers. A locally tailored name that avoids the word "pay" may lead to a more successful implementation (we are using "Recycle & Save" in some locations) – and tailoring it further to provide a Sedona flavor may enhance the program's success.



⁷ 85-90% of residents prefer PAYT to flat trash rates *after* implementation Skumatz and Freeman 2006

3. Background Information and Current Situation

Based on interviews and a review of existing data, the following background information will be useful in PAYT planning:

Population: 11,405

HHs Serviced: 6,400

Tons Residential MSW: Unknown

Tons Residential Recycling: Total tons unknown, tons recycled at drop-off (may include some small commercial) - 1,773

Total Tons Generated: Unknown

Residential diversion rate: Unknown

Trash Collection:

The city has of low level of involvement in residential trash services.

Trash service is provided by four private haulers operating in an open subscription system

Trash service is for the most part provided through automated collection of 96-gallon.

Two haulers offer a 64-gallon container option. The majority of residents are subscribed to 96-gallon carts.

Trash is required to fit into the subscribed carts

Recycling:

Curbside residential recycling service is available to households for an extra fee

Curbside service is offered by two of the five waste haulers

There is an independent recycler providing curbside service

Curbside diversion and participation are unknown

Sedona Recycles, a local non-profit that is funded by the city, operates three drop-off recycling facilities located on city owned land

In 2010 the drop-off facilities received 1,773 tons of recyclables, it is assumed that only a portion of this total is from single-family residential households

Other Services:

The City does not offer bulky item collection, if available, it is offered by haulers for an added fee

Sedona Recycles accepts batteries and e-waste for a fee

HHW materials from Sedona are no longer accepted at the drop-off facility

Fees:

The city of Sedona does not charge residents directly for either trash or recycling services

Trash fees, charged to residents by private haulers, are around \$18/month

Two haulers offer a variable rate for residents where the 64-gallon carts are 16% cheaper than the default 96-gallon cart

Recycling collection varies from \$8/month to \$14.60/month

Contracts:

The City does not have any contracts in place for delivering residential trash, recycling, or composting services

There a number of HOA's in the City that may have contracts for trash collection

Facilities:

Sedona Recycles operates recycling drop-offs and a processing facility that accepts materials from the City and surrounding communities. In 2010 the facility accepted and processed over 4,500 tons of material

MSW is sent to the County Landfill which is owned and operated by Waste Management.

Potential Issues:

There is no mixed incentive for waste haulers that also own landfills under PAYT. PAY*T reduces the amount of MSW going to the landfill.

Only 3 of the 4 haulers currently provide an option for recycling

The City currently has little involvement in solid waste services

PAYT will be new to most residents and may require significant public outreach to gain support

4. PAYT System Design

A description of what the future pay-as-you-throw systems might look like in Sedona is included below:

Implementation:

The program would be implemented though the adoption of one (or two) city-wide waste hauler ordinances⁸. The ordinance(s) requires that all haulers have a license to provide service in the town. In order to receive a license, the haulers must meet certain requirements, one of them being charging residents based on the volume of trash disposed. The ordinance(s) creates a level playing field for all haulers operating in Sedona. More details on the ordinance can be seen in Sections 6 and 7.

Containerization:

Collection will continue to be provided by private haulers in a fully open subscription system. It is up to each hauler to determine how they will implement the volume based program. It is assumed that since most haulers use automated collection that they will choose to use a variable cart system. Under this system, households subscribe to a variable sized cart (32, 64, or 96-gallon) and are charged based on the size cart. Other options include a bag program where all residential trash must be placed in pre-paid bags provided by the hauler and the cost of the bags



⁸ If haulers are currently not licensed, the City may need to adopt two ordinances (a licensing requirement and a PAYT ordinance) or a combined ordinance (includes licensing and PAYT in one ordinance)

covers the cost of collection (perhaps \$3 - \$5 per bag). A hybrid of a cart and bag program is also possible. The ordinance allows for flexibility in design.

Rates and Billing:

Billing continues to be by the haulers directly to households.

IMPORTANT: The ordinance does not set the rates but instead sets a rate structure. Rates recommended include an 80% rate differential⁹ for each 32-gallon unit of trash. Under this type of rate structure the rates would look something like this:

- 32 gallons = \$X
- 64-gallons = \$X+ (\$X × 80%)
- 96-gallons = \$X+ ((\$X × 80%) + (\$X × 80%))

If for instance, if a hauler choose to set the base rate at \$10/month for 32-gallons, 64-gallons would cost \$18/month and 96-gallons would cost \$26/month.

In order to meet high-disposal periods (parties, holidays, guests visiting) haulers should be encouraged to provide collection of extra trash for an added fee. Typically this is done through tags or bags. Residents can set-out extra trash during high generation times but the hauler only picks up the extra trash if it has a pre-paid tag on it. The cost of the tag is set by the hauler to cover the cost of getting out of the truck and manually collecting the extra trash.

Recycling:

In the best case scenario the ordinance would require that hauler fully embed the costs of recycling in trash services. Under this option, the costs for recycling are included in the trash fees and all residents are provided with curbside collection. Residents do not need to participate in the recycling program but all residents are paying for service in their trash fees. It is possible for the haulers that do not currently provide curbside service to sub-contract with the recycling only hauler(s) to provide service to their customers. Due to the existing conditions in Sedona (only 2 of the five haulers currently offer curbside recycling) the following alternatives may be attractive:

- *Alternative 1:* Allow for a two-year ramp up to embedded recycling fees. Under this option the ordinance states that by 2014 (or some other date) the curbside recycling fees must be fully embedded, This option allows ample time for the haulers not currently providing service to determine how they will comply with the ordinance requirements. *Pros:* allows ramp-up period for haulers to develop cooperative agreements, order carts, etc. *Cons:* delay of 2 years not needed by some haulers, loss of recycling potential
- *Alternative 2:* The city of Sedona could contract directly with a private company to provide curbside recycling to all households. The rates for recycling would be included in property taxes or utility bills. *Pros:* cost effective, recycling collection is uniform for all households, city has control over contract *Cons:* new city service, perceived as some as too much city interference, needs legal review

⁹ This value – 80% -- is based on statistical studies of data from hundreds of communities (for more information in these studies see www.paytnow.org or previous Skumatz articles in *Resource Recycling* magazine) that balance two objectives: 1) providing a strong recycling incentive, and this value was found to provide almost the same recycling incentive to households as rates that double for double the service; and 2) backing off from very aggressive rates to recognize the fact that the largest cost in providing trash or recycling service is getting the truck to the door – arguing for flatter rates. This differential tries to provide incentives, but also help decrease the risk of not covering fixed costs of the operations.

- *Alternative 3:* Do not require the costs of recycling to be embedded and increase the number of drop-offs in the community. This is the least attractive option and the one that would result in the lowest level of diversion. *Pros:* least political resistance, least change for haulers or residents, *Cons:* Least effective option, haulers don't realize economies of scale through more households recycling

Facilities:

No change in solid waste or recycling processing facilities

5. Key Elements of an Ordinance

The key elements of a PAYT ordinance are:

- ❑ Safety Issues: Requirements for truck and operator safety issues, avoiding leakage, etc.
- ❑ Recycling Opportunities: All haulers providing service within the community boundaries must:
 - 1) offer curbside recycling to every entity subscribing to garbage service; ("entity" could be single family households under X units in size)
 - 2) provide recycling service at least every other week;
 - 3) must collect at least a base set of materials for recycling that the community lists (usually newspaper, waste paper, cardboard, chipboard / paperboard, aluminum and steel / bimetal cans, glass bottles, and #1 and #2 plastics, but the list will vary based on what the MRF accepts); and
 - 4) must provide recycling container(s);
- ❑ Fees and PAYT: The cost of the recycling program must be embedded in the trash rate, with no separate charge, fee, or line-item for recycling. The cost for trash service must be in a PAYT structure. The PAYT system must:
 - 1) Offer, as its smallest container, a container (or bag) no larger than 32 gallons, and must offer service in 32 gallon increments above this service;
 - 2) The cost of the trash container service must be set so that, throughout the service levels available, double the service volume cannot cost less than 80% more in total to the household.

The community should establish auditing rights.

- ❑ Reporting and Audit Authority: The community should require haulers to report the trash and recycling tons collected within the community's boundaries, with reporting at least quarterly. This will allow the community to monitor progress in recycling. Establishing the authority to audit compliance with the ordinance is also important.
- ❑ Educational responsibilities: The community should designate minimum requirements for frequency of recycling education (e.g. requiring haulers to provide annual outreach or mailers to customers).¹⁰

¹⁰ Often the best programs have both the hauler and the community providing education to households. This establishes the portion for which the hauler is responsible. This can augment community outreach efforts and provide a coordinated message.

Figure 1: PAYT Implementation Steps

PAYT Rate Incentives Details	Description
What	Each hauler servicing residential accounts in the city is required by ordinance to charge customers for trash service based upon the volume of trash disposed. The base unit of trash is 32 gallons and more trash service costs more. The ordinance does not set the trash rates, only the framework for the rates. Rates are set by each hauler to meet their revenue requirements. Additionally, EI recommends that the cost of recycling is 'embedded' in the trash rates for all households.
Why	Modify rates so residents pay different rates for different amounts of trash service, providing a recycling and source reduction incentive.
Who	Single family residents up to 4 units.
Facilities issues	TBD
Equipment	The City is not responsible for any additional equipment. Each hauler must determine the best way to charge households. Some haulers may opt to use variable sized carts (those with automated collection) while other may choose to implement a bag program.
Staff Effort / Admin	Staff effort is low. The staff must work with City council to draft and pass an ordinance. A low level of enforcement is needed to make sure that each hauler is complying with the ordinance and ensure it is a level playing for all market actors.
Cost	PAYT is a fully user paid program. The cost for the City is answering questions when the program is implemented and a low level of enforcement subsequently. This is perhaps a ¼ FTE for the first three months of the program (answering questions) and minimal commitment after.
Potential Impacts	Perhaps a 16 – 17% point decrease in the tons of materials landfilled. A third of this impact is through increased recycling, a third is through source reduction, and a third is through at home composting, mulch mowing, and other organics diversion options.
Implementation Steps – 1-3 months	<ul style="list-style-type: none"> Find champion on City council for PAYT who is good at gaining support from other board members Informational session for City council, educational session if possible First draft of ordinance Begin addressing specific barriers to Sedona (recycling options, timeline, bulk items, etc.) Preliminary discussions with haulers
Implementation Steps- <i>Political</i>	<ul style="list-style-type: none"> Work with elected officials/city staff to gather buy-in Public survey or hold public hearing for education, support, opposition, barriers, others
Implementation Steps – 3-6 months (if Ok'd by city council, citizens)	<ul style="list-style-type: none"> Refine draft ordinance based on comments from public / haulers Finalize the draft ordinance Working session with City Council on the draft ordinance Continue education / outreach program with residents / haulers Schedule first reading for City Council
Implementation Steps – 6-9 months	<ul style="list-style-type: none"> First reading of ordinance for City Council (usually including a public hearing) Refine ordinance (if needed) Final reading and vote Begin PAYT program Monitor / refine / track

6. Sample Variable Rate Ordinance

AN ORDINANCE OF THE [insert name of THE GOVERNING BODY] OF [insert name of LOCAL JURISDICTION¹¹], REGARDING IMPLEMENTATION OF VARIABLE RATES FOR COLLECTION OF MUNICIPAL SOLID WASTE BY SERVICE PROVIDERS OPERATING IN THE [insert name of LOCAL JURISDICTION]

ORDINANCE NO. 20XX-x

SECTION 1. [Chapter x] ____ of the [local jurisdiction code] is added as follows:

101. **FINDINGS.** The [GOVERNING BODY] of the [LOCAL JURISDICTION] makes the following findings:

(a) **Disposal of wasted resources.** In 2011, residents and businesses in this [LOCAL JURISDICTION] discarded over ____ tons of materials for disposal, or ____ pounds per capita. (These materials are referred to in this [Chapter], as “municipal solid waste”.) But an estimated ____% of these discarded materials and could be reused, recycled or put to other beneficial use, resulting in significant energy and resource savings.

[(b) **Green house gas or non-beneficial disposal.** An estimated ____% of these discarded materials are disposed in landfills that do *not* collect and burn discharged landfill gases and therefore emits green house gases into the atmosphere. An estimated ____% of those discarded materials are disposed in landfills that collect and burn, but do not *recover* landfill gases for beneficial purposes or generate power. As these landfills reach permitted capacity, it is becoming more difficult and expensive to site, permit and develop new landfills]¹².

(c) **Variable Rates: disposal diversion incentive.** Increasingly, state and local governments across the United States and the world require that waste generators pay **variable rates** (or PAYT / Pay as You Throw): charges for refuse and garbage collection services that incrementally increase with disposed refuse and garbage volume (such as 32, 64 or 96 gallon carts) with lesser or no charges for recyclables and / or organics collection services, to encourage recycling and discourage disposal. Variable rates do not necessarily reflect actual operational costs but rather constitute behavioral incentives (or disincentives) proportionate to the waste they discard.

102 **[LOCAL JURISDICTION] POLICY.** In order to provide generators of municipal solid waste with the financial incentive to divert municipal solid waste from disposal by source reduction, reuse, recycling or other beneficial use, the [GOVERNING BODY] declares that it is **[LOCAL JURISDICTION]** policy to establish and charge variable customer charges for municipal solid waste collection, transportation and disposal services.

¹¹ Such as “City Council” or “County Board of Supervisors”.

¹² Adapt this finding to local disposal options.

103 REFUSE AND GARBAGE SERVICE LEVEL OPTIONS. Every public or private provider of residential refuse and garbage service must offer each of its customers the option to subscribe to different levels of service with different capacities of refuse and garbage containers, such as 32, 64 and 96 gallon carts, bags, or other system capable of charging residents for trash disposal based on the volume. For residential customers, the base unit of trash service must be no larger than the approximate capacity equivalent of a 32 gallon can, cart, or bag. If a customer does not exercise its option, the provider may establish a default level of service that is not larger than 2 units of service or 64-gallons.

104 MANDATORY RECYCLABLES SERVICE. Every municipal or private provider of residential refuse and garbage service must offer each of its residential customer's curbside recyclables collection service at least every other week, in lidded containers no smaller the 64 gallons capacity¹³. The [insert APPLICABLE ADMINISTRATOR¹⁴] may define "residential" for purposes of this Chapter¹⁵ and promulgate regulations governing additional recyclables collection service specifications and standards, such as prescribing the types of recyclables that the provider must collect (for example, newspaper, waste paper, cardboard, chipboard / paper board, aluminum and steel / bimetal cans, glass bottles and #1 and #2 plastics). .

105. VARIABLE RATES. Every provider of residential refuse and garbage collection service must charge variable rates described in Section 101(c) for the corresponding level of service or units of trash collection. To the extent permitted by the State constitution and applicable law, the provider may structure its incremental charges on either a cost-basis or incentive-basis.

106. INCENTIVE STRUCTURE OF VARIABLE RATES

(a) Prescribed variable rate increments.

(1) Multiples prescribed by service providers. As a condition of any permit, license or franchise to collect residential recyclable materials or as an obligation under any contract to collect residential recyclables materials¹⁶, the permittee, licensee, franchisee or contractor must structure the increments of its variable rate at a prescribed multiple of the base unit of trash collection which is no larger than 32-gallons. Such increment shall be equal to 80% or more of the charges for the first unit of trash (for example, \$X for unit 1, \$X + (\$X * 80%) for two units, \$X +)(\$X * 80%) + (\$X * 80%)) for three units).

¹³ This is the preferred option.

¹⁴ such "Director of Public Works", "Director of Natural Resources" or "Director of Health"

¹⁵ or alternatively:

"Residential" has the meaning provided in INSERT RELEVANT LOCAL CODE CITATION, such as Section XX of the City/County Code" or

"Residential means "related to detached, single family homes or duplexes, other than condominiums or townhouses."

¹⁶ Or alternatively, implementation merely as a local law . /code requirement: "Every public or private provider of municipal solid waste collection service. . . ."

(2) Multiples prescribed by [LOCAL JURISDICTION]. The [GOVERNING BODY] by resolution may prescribe a specific multiple applicable to all permittees, licensees, franchisees or contractors uniformly. However, that prescription of a specific multiple may not be construed as regulating or in any way setting the underlying service rate multiplicand, which the provider may establish and set in its sole discretion.

107. CUSTOMER NOTICE. Every public or private provider of residential municipal solid waste collection service must give each of its customers written notice of service options and corresponding variable rate charges upon commencement of service. Each licensed solid waste hauler shall provide an informational insert at least annually to all residential accounts, The insert will describe pay-as-you-throw rate structure and charges and the recycling service options.

108. COMBINATION OF REFUSE AND RECYCLABLES COLLECTION CHARGES. On each bill, every licensed provider of private residential of municipal solid waste collection service must combine charges for refuse and recyclables collection service and may not itemize them separately, one from the other.

109. BILLING FREQUENCY. Every public or private provider of residential municipal solid waste collection service must bill each of its customers at least quarterly, once every 3 months.

110. REPORTING. Every public or private provider of residential municipal solid waste collection service must keep records of the weight or volume of refuse and garbage, and recyclables that it collects and disposes or diverts. A [LOCAL JURISDICTION] may also require by law or regulation, each provider collecting municipal solid waste in the [LOCAL JURISDICTION]'s jurisdiction to report those weights or volumes to the [LOCAL JURISDICTION] no less than bi-annually and in the format that the [LOCAL JURISDICTION] requests.

111. [LOCAL JURISDICTION] COMPLIANCE AUDIT. A [LOCAL JURISDICTION] may audit a municipal solid waste provider's subscription, billing and other relevant records to determine whether or not the provider has complied with the provisions of this Chapter at the provider's office located nearest to the [LOCAL JURISDICTION] during hours that the office is open for business, on at least one week's notice.

109. DEFINITIONS. The following words used in this chapter have the meanings ascribed to them in [INSERT CROSS REFERENCE TO A PROVISION OF ANY EXISTING LAW THAT DEFINES MSW TERMS]: [municipal solid waste, [LOCAL JURISDICTION], refuse, garbage, recyclables, residential, source reduction, disposal, etc.]

7. Sample Licensing Requirement

(a) **License required.** In order to protect the public health and welfare of residents no person shall engage in the business of collecting or hauling garbage, municipal waste, white goods, landscape waste, brush, or other refuse from sites in the county without first procuring for each vehicle the appropriate license issued by [LOCAL JURISDICTION], for a hauler.

(b) **Business licenses.** Any hauler who is required to have a valid business license in order to conduct business in the city must hold such a valid business license(s) prior to applying for a [LOCAL JURISDICTION] hauler license.

(c) **Duration.** Each [LOCAL JURISDICTION] vehicle license shall expire on [INSERT DATE] of each year.

(d) **Application.** [LOCAL JURISDICTION] shall prepare and make available to all haulers an application form for vehicle licenses. The licensee shall notify [LOCAL JURISDICTION] in writing within thirty (30) days following a change in any information contained in the licensee's application.

(e) **Conditions of license.** The [LOCAL JURISDICTION] Manager shall establish regulations and minimum standards for the licensing of waste refuse haulers who wish to operate within the boundaries of [INSERT JURISDICTION], which shall be subject to approval by the City Council and shall include at least:

(1) Minimum standards for vehicles, insurance, and equipment to be employed in waste and refuse pick-up and collection, including standards for handling presorted recyclables

(2) Minimum standards for trash, rubbish, recyclables, green waste, white goods, and other refuse material collection and pick-up

(3) The designation of volume based fee structures designed to provide economic incentives for resource recovery

(f) **License issuance, denial, suspension, or revocation.**

(1) The department shall have thirty (30) days from the receipt of the license or renewal application to issue or deny the license, license renewal, or conditional license. The department will issue a temporary license valid for thirty (30) days upon its failure to act upon the application within thirty (30) days.

(2) The department shall notify the applicant in writing of its decision. If issued, the license shall be mailed by first class mail to the address provided in the application. If

denied, a written decision shall be served personally or by certified mail upon the applicant at the address provided in this application.

(3) A license denial, suspension, or revocation shall provide written notice stating the basis for the action and shall provide notice to the applicant that if an appeal is desired, a written request for a hearing must be received by the department within fifteen (15) calendar days following service, exclusive of the day of service. Upon receipt of a request for hearing, the department shall set a time and place for the hearing. The hearing shall be conducted pursuant to the procedures in section XXXX of the [LOCAL JURISDICTION] code.

(4) Violation of conditions of the license shall be subject to the following schedule of fines:

- (II) 1st offense
- (III) 2nd offense....
- (IV) 3rd offense....

(g) License and vehicle registration fee.

(1) The following fees shall be required: For each business and for vehicle used in collecting or hauling garbage, municipal waste, recyclable materials, landscape waste, brush, or other refuse

- (I) Fee per business \$XXX
- (II) Fee per waste or refuse vehicle.....\$XX
- (III) Fee per recyclable collection vehicle.....\$XX
- (IV) Fee per XXX.....\$XX

Payment of all fees must accompany the license application or license renewal.

(2) The county reserves the right to issue to each applicant or licensee a vehicle and/or receptacle registration decal to be placed conspicuously on the outside of each vehicle and/or receptacle so utilized by the hauler operating in [LOCAL JURISDICTION]. Such decals may be issued annually. The number of said vehicles and receptacles utilized by the hauler shall be reported in the application.

7. PAYT and Illegal Dumping

Invariably, one of the first questions municipalities ask about pay-as-you-throw is its impact on the incidence of increased illegal dumping. Overall, PAYT does *not* lead to increased illegal dumping. A series of surveys and interviews with hundreds of communities conducted over the past two decades by Econservation staff have shown that the vast majority of communities that adopt PAYT do not report increased incidences of illegal dumping. Communities report that illegal dumping is a “perceived” barrier and not an actual barrier. Although many communities report that they thought illegal dumping would increase with PAYT only a small portion actually do see increases. Virtually all of the communities that report an increase of illegal dumping after implementing PAYT also report that illegal dumping returns to pre-PAYT levels within one to three months. The bottom line is that if your community had illegal dumping before implementing PAYT, PAYT will not solve the issue, on the other side, if your community does not have issues with illegal dumping adopting a PAYT program will not cause illegal dumping to start. Illegal dumping happens with or without the presence of a PAYT program.

Overall, PAYT does *not* lead to increased illegal dumping.

2010 National Community Survey

Communities with PAYT programs in place were asked to rank illegal dumping before and after implementing PAYT on an A to F scale (where an A means that there is no incidence of illegal dumping and F means it is a huge problem). After implementation, none of the communities with PAYT reported that illegal dumping was a *huge problem* and those that reported it was a D decreased from 21% to 14% after implementing PAYT.

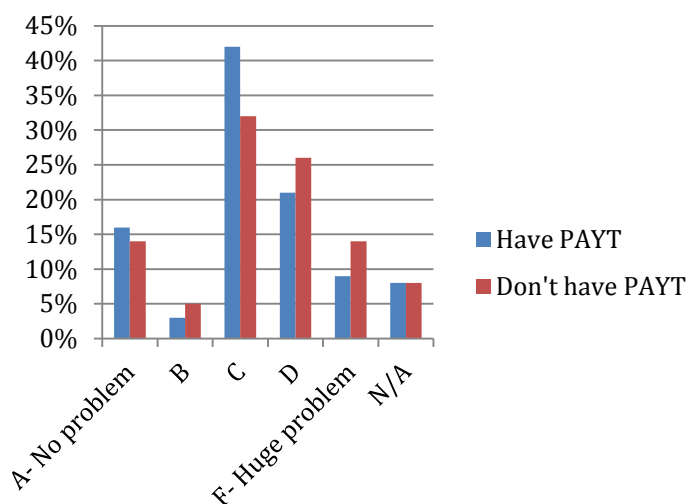
Results of 2010 Community Survey

Ranking	Before PAYT	After PAYT
A- No problem at all	0%	0%
B- Very slight issue	21%	43%
C- Medium problem	7%	7%
D- Large issue	21%	14%
F- Huge Problem	7%	0%
Don't know / wasn't there	43%	28%

2009 National Community Survey

In a 2009 survey EI staff researchers asked communities to report whether or not they had PAYT and asked communities to rank illegal dumping. There was very little difference in the issue of illegal dumping between communities with and without PAYT. Slightly higher proportions of communities *without* PAYT reported that illegal dumping was a large or huge problem. The results of the 2009 community survey are displayed in the figure below:

Results of 2009 Community Survey



PAYT and Trash Carts

An issue closely related to illegal dumping is the perceived concern that residents will put their trash in their neighbors' cans as a way to save money. EI called a number of communities that had recently adopted PAYT (within the last 24 months) to ask the program managers, haulers, and / or staff if they were observing increased incidence of neighbors using each other's carts. The interviewees reported the following major findings:

- 1) **Complaints are few and far between.** One city of 20,000 residents reported that over the last 12 months they have had one household complain about people putting trash in their cart illegally. The household was located next to a bike path and a major intersection and the City suggested to the resident to keep her cart next to her house and away from the path unless it was trash day. Another smaller community (5K households) reported that they had a few complaints over the last year but they were all from the same two households. The other communities interviewed reported similar findings.
- 2) **It is an easy fix.** To prevent the potential issue from occurring residents should be encouraged to keep their trash carts out of the street / off the curb and only wheel them out to the curb on the morning of their scheduled collection day.
- 3) **If it is happening, it is unreported and not an issue.** One regional hauler reported that they thought that neighbors could be putting their trash in each other's cart but that they very rarely received any complaints about it and that it was not an issue. This is due to the fact that if it is occurring, residents are putting their trash in a cart that is not all the way full and no one (the hauler, the household) ever knows about it. In this situation the behavior does not cause any negative impacts for the resident or the hauler.

KAUAI PAYT RATES FOR TRASH COLLECTION

Feasibility / Implementation Plan

Lisa A. Skumatz, Ph.D. and Juri Freeman
The Econservation Institute
September 24, 2012
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AGENDA

- Basics of PAYT
 - Concept
 - Benefits
 - Issues / Concerns
- Overview of Proposed Implementation Plan
 - Design
 - Implementation
 - Public Education
- Proposed Rates and Phasing
 - Current Full Costs (preliminary)
 - Proposed Rates and Schedule
- Discussion / Q&A
 - Financial Issues
 - Implementation Issues

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THE BASICS OF PAY AS YOU THROW (PAYT)

Pay more for more trash service – pay less for less... “fee for service”

Measured by bags or cans
Equity and Incentive

“Recycle&\$ave”

3

PAYT RESULTS IN...

- Almost doubles recycling
- Reduces residential trash by 17%
- Significantly reduces greenhouse gas and increases job creation

PAYT is preferred, once implemented, by more than 90% of the residents where it is in place...

➔ **This is Pay As You Throw (PAYT)...**



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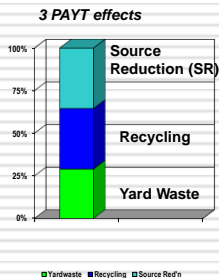
PAYT – BEST OPTION TO CONTROL (OVER)-USAGE

- Biggest Impact AND Most Cost Effective:

- Statistical studies show it is the BEST of more than 2 dozen options for increasing diversion

- One of top 3 strategies in increasing residential diversion.

- Goals/Measurement
 - Funding
 - PAYT



Source for graphs and figures: Skumatz Economic Research Associates, ©
Source for top 3 drivers, Skumatz & Freeman / SERA, "Colorado Roadmap Report, 2008.

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PAYT - COST-EFFECTIVE

- 1/3 of the reduction in landfilling comes at NO Cost (Source Reduction)
- PAYT needs NO separate funding system – paid by users (more equitably)
- No increase in costs (or workload) for 2/3 communities (short / long run)
- No new trucks down the street other than already proposed programs



Source for graphs and figures: Skumatz Economic Research Associates ©

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PAYT ACCEPTANCE

- Preferred by households as More Equitable

Communities – after PAYT	89%-95%
PARADE™	2/3 in favor

- Strengths / weaknesses

Key Advantages	Disadvantages
Rewards all diversion activities	Concerns about illegal dumping, change...
Behavior Change	More complex rate study, outreach
Reminder	Costs & savings - "Net" depends on local conditions
Choice	
Runs like a Utility – Provides equity	
NEEDS NO SEPARATE FUNDING!	

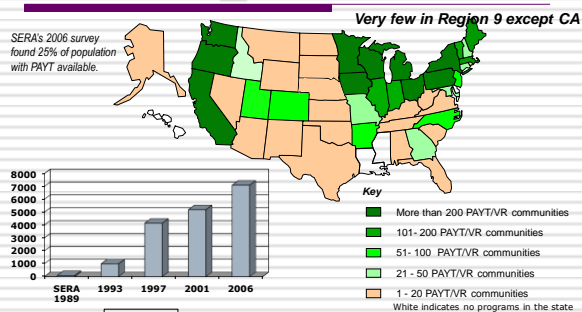
Source: SERA ©2008; Iowa State Survey by Frable.

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PAY-AS-YOU-THROW (PAYT)/ VARIABLE RATES COMMUNITIES

SERA's 2006 survey found almost **7,100** PAYT/VR communities and only 3 states without programs



Superior, CO, 2006 Survey © SERA, all rights reserved, may be used with permission of author

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BMP FOR MOST SUCCESSFUL PAYT PROGRAM

- ☐ Works with Drop-off recycling
- ☐ Recycling / Greenwaste
 - Costs are embedded in base fee
- ☐ Incentive:
 - Small container option (32 gallon can)
 - Price incentive (80%)
 - Ease of access to data to evaluate performance / participation
- ☐ Do-able at city, county, state level
 - Several states mandate PAYT



Sample Ordinances & case studies on web site www.paytwest.org.
Paytnow.org, paytinfo.org map from © SERA all rights reserved

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POTENTIAL CONCERNS ABOUT PAYT

- ☐ Equity - Large families / poor families
 - Current system is unfair for small families, seniors on fixed income, avid recyclers subsidize large disposers
 - Behavior affects bill now; options for any household to reduce bill- control!
- ☐ Cost and Workload
 - State surveys find 2/3 have NO increase under PAYT
 - Fielding customer calls (6 weeks, 10-20% of customers)
- ☐ Confusion, resistance to change – wait 6 months!
 - 89-95% prefer
 - Keep rates SIMPLE

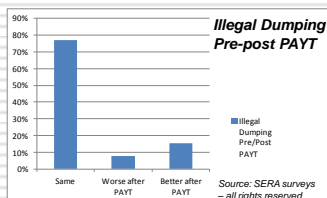
Source: SERA surveys
– all rights reserved

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POTENTIAL CONCERN – ILLEGAL DUMPING

- ☐ Most illegally-dumped materials are bulky items, not typical residential trash
- ☐ Surveys of over 1000 communities - Bigger fear than reality
- ☐ Some increase in 10-30% of the communities; solved after 3 months. Some communities showed improvements!

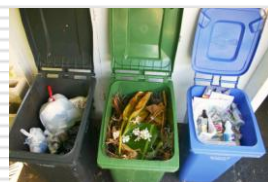


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TYPES OF NAYSAYER ISSUES TO ADDRESS

- ☐ Too costly
- ☐ Doesn't work
- ☐ Current system works fine
- ☐ Large families / poor families
- ☐ Recycling goes to China (or the landfill)



See "Q&A / Naysayer" materials on website www.paytnow.org

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PROPOSED IMPLEMENTATION PLAN

Phased approach

- Phase 1: introduce 64 gallon option with the completion of automation
- Phase 2: Implement MRF, curbside recycling (96 gal) & yard waste (96 gal). Add 32 gallon for trash. Diversion costs embedded in fees
- Phase 3: 2-3 years later – move towards self-sufficiency



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IMPLEMENTATION PLAN



- Staffing / Ordinances
- Outreach / education / marketing / public acceptance
- Recycling, Green waste, MRF
- Container selection, delivery, billing, container switches
 - Exchanges free 3-6 months
 - Then fee for upsize / downsize free

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IMPLEMENTATION TIMELINE – Phase 1



Implementation 0 – 6 Months

*Note – Assumed
Start Date 7/1/13

- Work with elected officials and Administration to gather buy in
- Order trucks to complete implementation of automation
- Conduct set out survey to estimate cart size distribution
- Order 64 & 96 gallon carts for automation
- Begin rate analysis and cart size estimates
- Establish PAYT Ordinance

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IMPLEMENTATION TIMELINE - Phase 1



Implementation 6 – 12 Months

- Revise billing system
- Public education and outreach
- Refine rate analysis / cart estimates
- Conduct web/ mail survey for final cart sizes
- Insert requested cart sizes into billing system

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IMPLEMENTATION TIMELINE - Phase 1



Implementation 12 - 24 Months

- ☐ Receive carts and trucks
- ☐ Continue education & outreach
- ☐ Address staffing needs for implementation
- ☐ Switch out 64 / 96 gal carts
- ☐ Fully automate refuse collection and begin PAYT
- ☐ Monitor / Refine / Track

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IMPLEMENTATION TIMELINE - Phase 2



Implementation 24 - 48 Months

- ☐ Revise ordinance / adjust rates
- ☐ Order trucks for recycling & green waste
- ☐ Re-survey customers on cart size
- ☐ Order carts (96 gal. for recycling & greenwaste, 32 for refuse)
- ☐ Initiate education & outreach on Phase 2 – curbside recycling & greenwaste
- ☐ Review, revise routing for new programs
- ☐ Address staffing needs for implementation
- ☐ MRF in operation
- ☐ Switch out 32 / 64 / 96 gal carts & deliver diversion carts
- ☐ Monitor / Refine / Track

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IMPLEMENTATION TIMELINE - Phase 3



Implementation 48 - 72 Months

- ☐ Assess Phase 2 program performance
- ☐ Continue education & outreach
- ☐ Revise ordinance and adjust rates to maximize diversion incentives and move towards program self-sufficiency

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FACTORS INFLUENCING RATES

1. Current cost of service
2. Net cost changes from PAYT
3. Net cost changes from other programs
4. Number of cans / subscriptions
5. Rate design options
 - Size of differential (80%); tradeoffs
 - Embedded fees for other programs



Source: Skumatz, SEEA research

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ANNUAL CURRENT COST OF SERVICE

	Wages	OT	Fringe	Misc	Ops	Vehicle lease	Fuel & Maint.	Admin	Indirect (900)	CIP	Total
Admin	\$340	\$100	\$400	\$35	\$50			\$(1025)			
LF	\$870	\$255	\$1,020	\$85	\$2,710			\$400	\$350	\$3,400	\$9,090
TS	\$615	\$120	\$660	\$215		\$280	\$185	\$90	\$80		\$1,545
Coll	\$1,105	\$210	\$1,180	\$135		\$460	\$130	\$245	\$215		\$3,680
Recy.	\$140		\$125	\$10	\$660			\$70	\$65		\$1,070
Green				\$50	\$1,200		\$25	\$100	\$90		\$1,445
Divert	\$40		\$35	\$45	\$1,115			\$100	\$90		\$1,405
Total											\$18,235

* All costs in \$1,000

Source: Harder, July 2012

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CURRENT COST OF SERVICE

Landfill	\$18.40 per hsd per mth*
Transfer	\$7.00 per hsd per mth
Collection	\$16.60 per hsd per mth
Rcycl & Grnwste	\$11.30 per hsd per mth
Diversion Programs	\$6.50 per hsd per mth
Total	\$59.80 per hsd per mth

*residential portion of landfill costs (approx 45%)

Current rate for collection service: \$12/hh/mo

Source: Harder, July 2012

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RATE EXAMPLES

□ Base fee, 75% differentials

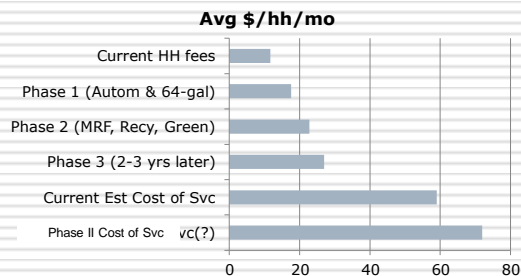
	Current	Phase 1	Phase 2	Phase 3
Base Fee	\$6	\$6	\$6	\$9
32 gal (can) total			\$12	\$16
64 gal (can) total		\$12	\$21	\$28
96 gal (can) total	(+\$6) \$12	\$21	\$36	\$49
Average paid	\$11.70	\$17.55	\$22.80	\$27.05
* Subscr. assumptions (32 gal/64 gal/96 gal)	0/0/95%	0/30/65%	30/30/35%	35/40/20%

* Assumes approx. 5% of customers will opt out

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COST OF SERVICE AND RATES CHARGED... PHASING



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QUESTIONS /DISCUSSION:

- ☐ *Implementation Issues*
- ☐ *Proposed rates*
- ☐ *Financial Issues*

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PAY-AS-YOU-THROW / VARIABLE RATES FOR TRASH COLLECTION IN KAUAI, HI

- IMPLEMENTATION PLAN-

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September 2012

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1. Executive Summary

Pay As You Throw (PAYT) programs (also known as volume-based, or variable rate programs) charge residents for collection of their solid waste in relation to the volume of trash they set out for collection. This kind of “fee-for-service” option provides incentives for reducing trash and increasing recycling and related “diversion” behaviors that are not present in the traditional “unlimited collection for a fixed fee” trash collection model.

Research and hundreds of case studies show that PAYT (or, more recently named, “Recycling & Save”) programs are the single most effective, and most cost-effective method of increasing waste diversion. Under PAYT programs, participation in recycling programs increases dramatically, and tons to landfill decrease on the order of 15-20% from the residential sector, extending the life of the landfill. PAYT does not limit options for collection, but it allows customers that put out less trash to save money and get control over their municipal solid waste (MSW) bill.

The recommended PAYT system for County of Kauaʻi includes a three-stage transition with the potential for a 3-can system – curbside trash, recycling, and green waste collection.

Phase 1 (Years 1 and 2): A transitional variable rate system in conjunction with the final automated refuse collection transition for all residential accounts. This phase would include 64 and 96 gallon cart options for MSW.

Phase 2 (Years 3 and 4): Once the Materials Recovery Facility (MRF) is constructed,, the County will add curbside recycling and green waste collection services to the system. This phase includes 32, 64, and 96 gallon cart options for MSW. Under the fully implemented 3-cart system in Phase 2, residents will: choose a trash cart size from 32, 64, or 96 gallons,, receive a 96-gallon cart for recyclables, and receive a 96-gallon cart for green waste.

Phase 3 (Years 5 through 8): The County will assess the performance of the PAYT program, continue outreach and education to residents to encourage diversion and source reduction, and adjust the PAYT fees to move towards program self sufficiency.

A more detailed recommendation and implementation plan for this program is provided within this document.

2. Introduction

Under the EPA Region 9 Solid Waste Management Assistance Grant Solicitation #EPA-R9-WST7-09-002, *Econservation Institute (EI)*¹ is funded to provide no cost consulting to communities in EPA Region 9. The consulting assistance is designed to encourage communities to adopt variable rate pricing or Pay-As-You-Throw (PAYT) for solid waste. Under the awarded grant only a few communities were selected for in-depth PAYT consultation and Kauai, HI was one of the communities.

Why Consider Pay-as-you-throw?

Pay-As-You-Throw provides a different way to bill for garbage service. Instead of paying a fixed bill for unlimited collection, these systems require households to pay for services based on how much trash they set out for collection – the less set out, the lower the bill, the more set-out, the higher the bill. Individual household rates are based on the size of trash can subscribed to, typically increasing by 32-gallon units. One of the benefits of PAYT is that the program works well under an automated collection system similar to the one Kaua'i is transitioning to, and it can be implemented with a minimal impact on costs and workload to the County.

Paying by volume (like you pay for electricity, water, groceries, etc.) provides households with an incentive to recycle more, reduce disposal, and creates a more equitable way for households to pay for trash services. Under PAYT each household is only responsible for paying for what they dispose of. Low generators, good recyclers, small households, and others no longer need to help cover the costs of disposal for households that throw away large amounts of trash on a regular basis.



It is critical for communities to have realistic expectations about what will happen if they implement PAYT. PAYT is a commonly adopted program and is in place in over 7,100 communities in the United States². Data from more than 1,000 communities around the country was used to identify the impacts of PAYT above and beyond any other recycling or yard waste program differences, demographics, and other factors. The research showed the following impacts on residential solid waste:³

Decreases residential disposal by 16%-17% - this is a critical impact considering the remaining lifetime of the existing landfill.

¹ Econservation Institute is a 501c3 non-profit based in Superior Colorado dedicated to sharing information and real world data on sustainable issues including recycling. EI has a small staff of economists, analysts, and researchers dedicated to its mission.

² Skumatz, Freeman. PAYT in the United States. 2006 Update and Analysis. US EPA. Unpublished research recently conducted by the EI indicate that the number of communities with PAYT has increases significantly since 2007.

³ Skumatz, Lisa A., Ph.D., "Beyond case studies: Quantitative effects of recycling and variable rates programs", *Resource Recycling* 9/1996; and Skumatz, Lisa A., Ph.D., "Achieving 50% diversion: Program elements, analysis, and policy implications", *Resource Recycling*, 8/2000.

PAYT reduces trash disposal by impacting three behaviors, recycling, yard waste diversion, and source reduction:

- Increases in *recycling* decrease residential trash disposal by 5-6% (usually representing about a 50% increase in residential recycling).
- Increases in *yard waste* diversion further decrease trash disposal by about 4-5%.
- Aggressive *source reduction* efforts incentivized by variable rates result in an additional decrease of trash disposal about 6% in generation. This includes reuse, (including donations to thrift stores), waste prevention (smaller packaging), buying in bulk, etc.

Years of research indicates that adding a PAYT program is the single most effective change a community can make to increase recycling. According to published research, PAYT increases recycling more than adding new materials to a recycling program, changing collection frequency, increased outreach / education, or many other potential program design or collection changes.

3. PAYT System Design

The basics of the new PAYT system for the Kauai County are displayed in figure 1.1.

Figure 1: PAYT System Design

PAYT Rate Incentives Details	Description
What	The County will undertake a three stage transition to a variable rate program with a 3-cart system that includes curbside trash, recycling, and green waste collection). <u>Phase 1</u> (Years 1 and 2): The County will implement a PAYT system in conjunction with the final automated collection transition for all residential accounts which includes 64 and 96 gallon cart options for MSW. <u>Phase 2</u> (Years 3 and 4): Once the Materials Recovery Facility (MRF) is constructed, the County will add curbside recycling and green waste collection services to the system. This phase includes 32, 64, and 96 gallon cart options for MSW..Under the 3-cart system residents will be given a choice of cart size from 32, 64, or 96 gallons for trash, a 96 gallon container for recyclables and a 96 gallon container for green waste. <u>Phase 3</u> (Years 5 through 8): Under this phase the county will transition toward a self-sufficient program in which the residential fees cover more of the costs of the trash, recycling, and organics systems. The County will also assess the program and make any necessary adjustments as well as continue outreach and education efforts to encourage diversion and source reduction.
Why	PAYT has been statistically proven to be the single most effective program a community can implement to reduce trash disposal. This is a critical impact considering Kauai's landfill lifetime and space considerations. PAYT is supported by the US EPA as a recommended strategy for increasing community environmental and economic sustainability as well as equity in solid waste rates. The program will modify rates so residents pay different rates for different amounts of trash service, providing a recycling and source reduction incentive. Phase 1 will rely on recycling and green waste drop-off programs, backyard composting, and source reduction to reduce the waste stream going to the landfill, Phase 2 will fully incorporate curbside recycling and green waste collection for increased diversion, Phase 3 will transition toward

PAYT Rate Incentives Details	Description
	program self-sufficiency.
Who	Single family residents up to 4 units serviced by County solid waste staff and paying the RRCA fee.
Facilities issues	The landfill is nearing the end of its life and there is no MRF on the island. Phase 2 of the recommended plan cannot be implemented until there is adequate capacity to sort and process the comingled recyclables and process the organics.
Equipment	The County is half way through the transition to automated refuse collection with 96-gallon carts. The PAYT program will require the ordering, purchase, and delivery of carts to complete the transition (combination of 64-gallon and 96-gallon) in Phase 1. Phase 2 will require the ordering, purchase, and delivery of some 32 gallon trash carts, switching a portion of the current 96-gallon trash carts into recycling carts (using labels and stickers), and the ordering, purchase, and delivery of additional recycling carts and green waste collection carts (96-gallon). Phase 2 will also require the purchase of collection trucks for recycling and green waste service provided every other week. No new carts or equipment are needed for Phase 3.
Staff Effort / Admin	Staff effort in Phase 1 includes an amendment to the associated ordinance, outreach / education about the program, surveying customers to determine number and size of trash containers needed by households, ordering and delivering carts, administrative and programming time to update the county billing system, answering customer questions and concerns once the program starts, and monitoring the program for impacts and any needed adjustments. Phase 2 includes another ordinance amendment, additional outreach and education, administrative and programming time to update the county billing system, surveying customers to determine number and size of trash containers needed by households, and ordering and delivering carts and trucks. Adequate staff to assist in the outreach / education and planning of the planned program will be integral to a smooth transition to the PAYT program. Phase 3 will require amending the ordinance a final time, additional outreach and education, administrative and programming time to update the county billing system.
Cost	PAYT is a user paid program; the costs are built into the residential trash bills. However, the County will incur implementation costs associated with PAYT system changes in Phase 1 and Phase 2. The most significant implementation costs for PAYT will include updating the billing system, increased outreach / education efforts, monitoring of the program, and cart change-outs ⁴ . The switch to automated collection will require delivery of new trash carts. In Phase 2, budget to cover delivery of recycling and green waste carts, and additional education / outreach is needed. There will be costs associated with implementation of PAYT and recycling/green waste system changes (Phase 1 and Phase 2) including the delivery of both green waste and recycling carts that will need to be recovered under the new rates. ⁵

Public Acceptance

⁴ The County is switching to automated collection in a cart based system and will incur cart order, purchase, and delivery costs with or without a PAYT program. The cost estimate is for the switch to PAYT from current manual collection practices.

⁵ The County (Harder) estimates these costs, excluding cart and truck purchase, will run between \$500,000 and \$600,000.

The technical aspects of variable rates or PAYT are rarely the barrier to implementation. Although studies have shown that after implementation the vast majority of residents support PAYT⁶, perceived concerns about rate changes, changes to existing trash systems, illegal dumping (see Section 6) , and other barriers can make ‘selling’ the program challenging.

The common areas of concern prior to implementation include:

- How it will impact rates
- Household sizes (particularly large households / generators)
- Government overextending itself
- Illegal dumping

More information regarding some of the misperceptions about PAYT are included in Section 7 of this document.

Marketing the Program

To maximize the effectiveness of the program, we believe a renaming of the program may be useful. The term “Pay as you throw (PAYT)” may not resonate well with residents or decision-makers. A locally tailored name that avoids the word “pay” may lead to a more successful implementation (we are using “Recycle & Save” in some locations) – and tailoring it further to provide a Kauai flavor may enhance the program’s success.



4. Background Information and Current Situation

Based on interviews and a review of existing data from FY 2012, the following background information will be useful in PAYT planning:

Population: 65,000

HHs Served: 18,500

Tons MSW to Landfill: 70,945 (roughly a 50/50 split between residential and commercial sources)

Tons at Recycling Drop-Off: 1,986 (doesn't include HI5 redemption)

Tons of Redemption (deposit) Containers: 2,744

Tons Composted: 19,217

Total diversion rate: Approximately 30%

Trash Collection:

County staff operates and manages the solid waste system including the transfer stations, drop-offs, and ownership of the landfill

Curbside collection is provided by county staff to benefitted properties in serviceable areas of the county

⁶ 85-90% of residents prefer PAYT to flat trash rates *after* implementation Skumatz and Freeman 2006

Many of the large multi-family and commercial facilities are serviced by the private sector through an open market system

The County is in the process of transitioning to automated collection. Approximately 11,000 of the residential accounts have been switched to automated collection of 96-gallon carts. The other ~8,000 customers have manual trash collection in containers (bags or cans) supplied by the residents.

Recycling:

A 12 month curbside pilot for 1,300 homes has been completed, however due to a lack of cost effective sorting and processing of a mixed stream of recyclables, curbside collection is not available to residential customers

There are 8 residential drop-off sites and 8 Certified Redemption Centers located in the County that accept traditional recyclables, as well as several programs for 'special' materials such as HHWs, electronics, appliances and scrap metals, shoes, batteries, propane tanks, etc.

The residential drop-off for traditional recyclables was estimated to divert approximately 1,986 tons last year it is assumed that most of this total is from single-family residential households. The statewide recycling rate for H15 aluminum, plastic, and glass beverage containers is 77%.

Organics:

The County does not offer curbside organics collection

Organics can be dropped off at the four County transfer stations as well as at the landfill Greenwaste collected and/or shredded from County sites was 19,217 tons last FY.

Food scraps are not allowed in the organics stream

The County supports at-home composting with outreach and bin give-aways

Fees:

In September 2010 the County introduced Ordinance 905 to add a Residential Refuse Collection Assessment (RRCA) to the property tax and switch a portion of the solid waste cost burden from the general fund to a user fee / tax

The ordinance went into effect July 1, 2011

Customers are charged bi-annually for solid waste services as a line item on their property taxes

The fee has two parts- a \$6 base assessment charged to all eligible households and a \$6 collection assessment charged to those with subscribed collection services

There is a \$12 assessment for each additional increment of 96 gallon collection service per dwelling

Approximately 5% of the eligible households do not subscribe to collection services

The \$12 fee does not cover the true costs of collection and solid waste services

A full cost accounting of the solid waste collection system has been estimated and is presented in Section 9 of this document.

Contracts:

The County has contracts for hauling and processing residential recyclables and green waste materials dropped off at recycling drop bins and transfer stations. The proposed program does not impact or impede the existing contracts and the contracts can remain in place 'as is'. The County also notes that when curbside services are in effect, contract prices will decrease due to a reduction in need / service.

County Facilities:

The County owns the one landfill located on the island located in Kekaha. The landfill is nearing the end of its life (perhaps 6 – 9 years left) and the County is pursuing other options for MSW disposal.

Tip fees at the landfill are \$90/ton for all items except asbestos containing waste, which costs \$175/ton to dispose.

A MRF is not located on the island.

Potential Issues:

The program will be implemented in three phases over multiple years to coordinate full implementation with the commissioning of a cost-effective option for a MRF

Over half of the households with refuse collection service already have a 96-gallon trash cart and a portion must be switched out with 64-gallon carts during Phase 1.

New carts (MSW, recycling, and green waste) must be ordered, purchased, stored, and delivered

The \$12 RRCA does not cover the true costs of collection, transfer, and disposal or processing. Rates may need to be adjusted for customers, and an estimate of the full cost of the solid waste collection system is being developed.

Need to amend the related ordinance for each phase of the PAYT system

PAYT will be new to the vast majority of residents and may require significant public outreach to gain support

PAYT will be new to the majority of County staff and elected officials and may require significant education and training

5. PAYT System Design

A description of what the future pay-as-you-throw systems might look like in Kauai is included below:

Implementation:

The program would be implemented in a three phases:

Phase 1 (0 - 24 months): During the final phase of automation the County will transition the current RRCA which charges one subscription fee of \$6 for all households with one 96-gallon cart (under automated collection routes) or 3 32-gallon can or bag equivalents (under manual collection routes) to a variable rate. The variable rate will be a recurring charge on the property tax bill and will be based on the cart size the customer subscribes to. Customers with automated collection will be given an option of a 64-gallon trash cart and a 96-gallon trash cart. The subscription rates will be designed to encourage residents to subscribe to the 64-gallon trash carts. By the end of Phase 1 all eligible households eligible for automated service will have either a 64 or 96 gallon trash cart collected on an automated route⁷.

⁷ The few homes that cannot receive automated service will remain on manual collection and the County will have a specific route to collect these homes. These homes will be on a subscription based service where they sign up for 32-gallon equivalents of trash service but they provide their own cans or bags and materials are collected manually.

Phase 2 (24 – 48 months) depending on construction of a MRF): Under Phase 2 the County will add curbside recycling and green waste collection to all eligible households and provide an option for 32-gallon cart subscription. The rates charged to households under the PAYT program are based on the size of trash cart, not the size of recycling. All households will be provided with a 96-gallon recycling cart and a 96-gallon green waste cart serviced every other week. A portion of the cost of providing recycling and green waste service will be included in the base assessment and a portion will be included in the subscription assessment. There will also be an option for ‘diversion only’ in which residents can pay a lower rate than the 32-gallon trash level and receive only curbside recycling and green waste collection without trash collection services⁸. Of course, households may opt out of waste, recycling, and/or green waste and use the transfer stations and recycling programs to manage their waste.

Phase 3 (48 through 72 months): The current Residential Refuse Collection Assessment does not cover the full costs of services. Under the final implementation phase the County will set the PAYT to cover a greater portion of the costs of solid waste and diversion services and move towards program self sufficiency. Additionally, the County will assess the performance of the PAYT program implemented in phases I and II, make program adjustments as necessary, continue to trade out cart sizes as needed to help residents ‘right size’ their trash services, and conduct residential outreach and education to encourage diversion and source reduction.

New Carts:

Cart ordering, delivery, and change out will be one of the most significant challenges the County will face in the design and implementation of the program. Econservation Institute staff can provide guidance to the County in the estimation of the distribution cart sizes and counts for both phases as well as estimating the costs of delivery and change out time. However, additional data is needed to develop reasonable estimates. Econservation can also help guide the County on how to gather the needed baseline data.



Under Phase 1, the County will order both 64 and 96 gallon carts. Prior to ordering the carts, the County will conduct a very brief web or mail survey asking customers to report their choice of cart size. If they do not make a choice EI recommends making the 64-gallon the default size for all new customers. For existing customers, the 96-gallon carts will be replaced with new 64-gallon carts if requested. Those same 96-gallon carts will be re-used for new automated customers who do not want 64-gallon carts.

Under Phase 2 the county will add the 32-gallon trash option along with curbside recycling. EI recommends using the same carts for all services (trash, recycling, and green waste) with stickers on the front, lid, and inside of the cart to distinguish the material stream (see section 8 for examples). By using the same carts for all streams the County will be able to keep a lower reserve inventory of carts, use the same parts for all cart repairs, and be able to transition 96-gallon trash carts to recycling carts when the 32-gallon trash carts are offered.

⁸ The County may wish to monitor the households that sign-up for the ‘diversion only’ service for the first few months to ensure that they are not gaming the system by putting trash in their recycling and yard waste carts. Other communities that provide this option have developed programs where they meet with generators prior to allowing the service to make sure they are really generating no curbside trash.

Under Phase 3 no new carts will be added. The County will continue to offer cart exchanges to ensure that all residents are subscribed to the correct trash, recycling, and green waste service levels.

Cart Exchanges:

The most common approach to cart exchanges is one free switch within the first 3-6 months, and to impose a service fee of approximately \$15-20 per switch thereafter. This assures households get “on the right size”, and allowing it in a limited time helps figure out which sizes are needed and allows the community to move carts around first, and re-order second. The cart switch would be billed separate from the property tax bill.

It is important to note that a cost for a switch later on can create a barrier to households “downsizing” their carts, sending a mixed signal to generators. Under PAYT the goal is to have households maximize their recycling / diversion and minimize their trash disposal. We recommend the following: a free switch in the first 3-6 months, free downsizing exchanges (you shouldn’t need a maximum per year, but could limit to one), and a fee to exchange up in size (a bit higher than cost of service to help subsidize the cost of downsizes).

Rates and Billing:

Setting rates to incentivize customer behaviors while attempting to cover costs and maintaining revenues is one of the most important aspects of a PAYT program. The costs for collection include the costs to get to the door (a high cost element), transfer and disposal of the waste, and the costs of diverting waste. Rates for higher levels of trash service would incorporate the incremental cost of landfilling additional trash. The rates would also be designed to embed the cost of the planned recycling and green waste programs.

Under PAYT the challenge is to set the base fee and the incremental cost of additional trash to balance two competing considerations. While incremental amounts of trash do not cost the County significantly more to collect or dispose, they must also vary enough between incremental service levels to provide a meaningful economic signal to the rate payer to reduce trash. The base rate will vary depending on the County’s particular costs, and the goal (recommended by research in the literature) is to provide **total rate levels** to customers that show an incremental price increase of at least 80% for additional multiples of trash volumes to incentivize diversion. This value, 80%⁹, is based on statistical studies that balance two objectives: **1)** providing a strong waste diversion incentive; and **2)** backing off from very aggressive rates to recognize the fact that a major cost in providing trash or diversion services is getting the truck to the door – arguing for flatter rates. This differential provides for pricing incentives, but also helps decrease the risk of not covering fixed costs of the operations.¹⁰

⁹The studies also note that reflecting price differentials less than about 50% for double the service are considerably less effective than higher price incentive differentials. Skumatz, Lisa A., “PAYT rate...”, 199X.

¹⁰ A number of communities have interpreted the results to mean that the 80% increment applies to the part of the rate beyond a base fee. We are the authors of the original research, and this is not a correct application of the research, but has been used in a number of communities. Some others assign a base fee and then apply “can is a can”, or a 100% increase for double the service as the second part of the rate (80% would be replaced by 100%). The first option commonly results in increments in total bills of even less than 50%; the latter sometimes approaches 80%, depending on the level of the base fee. These dollar thresholds can be low enough that households decide the risk of exceeding the can size isn’t worth the savings. This decreases the recycling incentive, and we generally recommend increases in total bills of no less than 50% for double the service, and when the differential is that low, we usually recommend a phase-up over time. Computing rates for higher service levels would continue the dollar cost increment for additional 32 gallon service level increases for other options. This interpretation does not result in an overall rate increase of 80%, only an 80% increase in the *subscription assessment* portion of the rate based on the

The computation of new PAYT rates to be charged to households depends on five key inputs:

1. The current cost of providing service, or the current rates (status quo rates per average household);
2. The net changes in costs due to the implementation of PAYT (e.g. containers, changes in trash and recycled tonnage, etc.)
3. The net changes in costs associated with any other programs / services being implemented concurrently;
4. The number and size of trash containers needed by households ("subscription levels"); and
5. The rate design selected and the incentives embedded in that design (see next section).

Costs, Subscriptions, and Phasing Discussion (Inputs 1-4):

Kaua'i residents are currently charged about \$12 per household per month to cover trash service (charged through taxes). Recent computations imply that these fees fall short of covering full cost of service.¹¹ This would not be a successful way to implement PAYT, because PAYT would be blamed for the increase. Rates would increase even more once recycling was introduced, but Kaua'i might never get to that phase if the rates were increased to (full) cost of service.¹²

In concurrence with staff, we recommend that Kaua'i move toward cost of service, but do so on a phased schedule. The initial increases, timed with the introduction of PAYT in Phase 1, should not be a very high increase because no new services are being introduced at the same time. It might be perceived as a rate increase without new benefits, or a cost increase fully due to PAYT, which would also undermine the longer-term goal of getting control of the usage of waste services.

Finally, the size of carts selected by residents also directly affects the rate computations. If there are no new programs, the number of households moving to smaller carts will be less than under the case in which new and convenient diversion options are introduced at the same time. And if most customers select the smallest size – generally a subsidized rate – the rate for the higher service levels (e.g. 96 gallons) will end up higher than if more customers select larger cans (e.g. 96). Some examples of the types of results deriving from these tradeoffs – subscriptions, introductions of new programs, and phasing -- are shown below.

Designing the Rate Structure (Input 5)

For Kaua'i, per County preferences, we assume the rates will consist of two pieces – a "base rate" and an incremental cost for increases in trash volumes. Under the new system:

Billing would continue to be a two part fee with a base assessment like the with the current RRCA

The two part fee will include:

number of gallon subscribed to. An example is provided. If the base assessment is \$6/hh/month and the subscription assessment is \$9/hh/month for 64 gallons, the computed rates would be \$15 (total) for 64 gallons, and 96 gallons is \$19 (total), an incentive of only 27% for 50% more trash service.

¹¹ Tables of cost computations provided by Kaua'i staff (John Harder) show per-household per month costs for landfill, transfer, collection, recycling and green waste, and diversion programs total about \$51/household / month. Harder email, July 2012.

¹² Rather than the current model of some costs recovered through rates, and some through other funds.

- *Base assessment:* In Phase 1 it will cover a portion of the fixed costs of collection transfer and disposal of trash and in Phase 2, transfer and disposal trash, and curbside transfer and diversion of green waste and recycling. It may include the costs of other recycling and solid waste services used by residents as needed. The base assessment would be the same for all eligible households
- *Subscription assessment:* This is the variable portion of the rate. It will include a portion of the collection and management of the material streams, and it would be based on the size of the refuse cart subscribed to.

How the Rates Might Look:

Under this type of rate structure the rates might look similar to the values presented in Table 2.¹³

Current RRCA Rate

Base	\$6	
96 gal cart	\$6	\$12/month/household

Phase 1 (completion of automation and the introduction of 64 gallon cart options for refuse). Assume for these computations that without new programs, about 30% would select 64 gallon carts, and 65% would select a 96 gallon cart. Assuming we want to 1) cover incremental costs of PAYT, and 2) start to recover *some* of the cost of service not being covered now (a move to an average of about \$17/month, we might see rates as follows.

Base	\$6	
64 gal cart	\$9	\$15/month
96 gal cart	\$13	\$19/month

Phase 2 (completion of the MRF, implementation of curbside recycling & greenwaste and introduction of optional 32 gallon carts for refuse). We expect significant drift downward in can subscriptions. For computation examples, we assume 30% of households select a 32-gallon container, 30% select a 64 gallon can, and the remaining 40% select 96 gallon trash cans.¹⁵ If the cost of service to be recovered increases a bit more, to an average of almost \$20/hh/month, the following rates result.

Base	\$9	
32 gal cart	\$6	\$15/month
64 gal cart	\$11	\$20/month
96 gal cart	\$17	\$26/month

Phase 3 (2 to 3 years following the initiation of curbside recycling and greenwaste). Here we would expect to see limited additional drift in subscriptions (perhaps shifting to 35% on 32 gallons, 45% on 64 gallons, and the remaining 20% on 96 gallon), but we expect to increase the share of cost of service that is covered. On average, if we strive to recover \$27/hh/month, the following rates would result.

Base	\$12	
32 gal cart	\$9	\$21/month

¹³ Note that we assume 5% of the households opt not to subscribe to service.

¹⁵ This assumes there are no separate fees for recycling or yard waste service. Subscriptions would be greatly altered if there were separate and optional fees for curbside recycling.

64 gal cart	\$18	\$30/month
96 gal cart	\$26	\$36/month

Of course the rate results will vary based on assumptions related to the 5 inputs mentioned above.

Resulting Rate Incentives for Kaua'i: After reviewing the pros and cons of different rate structure options, Kaua'i selected rates with a strong base fee, to mitigate revenue risk (all subscribers are paying toward programs before variations related to container size). The rate example (Figure 2) shows total rate amounts that increase by nearly the 80% goal (for double the gallons) suggested by the statistical work on incentivizing recycling. The option with the base fee (the County's preference) reduces the revenue risk associated with variable rates to the County, as all customers – even those “opting out” – appropriately contribute toward the solid waste system's operation. These levels of differentials are noticed by households and should provide substantial incentives for modifying recycling and diversion behavior – and subscribing to smaller trash cans.

Figure 2 displays a rate structure example over the 3 phases with a move toward a rate that covers a greater portion of the costs of service¹⁶.

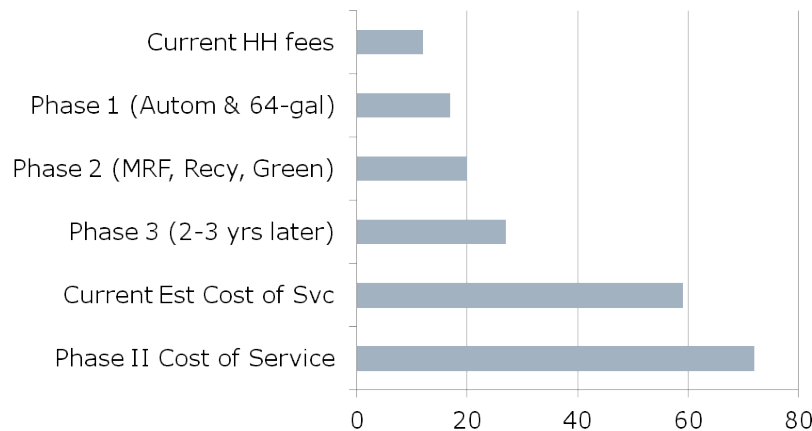
Figure 2: Rate Structure Examples with Base Assessment and Estimated Subscription Levels; Phasing toward Larger Shares of Cost of Service

	Current	Phase 1	Phase 2	Phase 3
Base Fee	\$6	\$6	\$9	\$12
32 gal (can) total			(+\$6) \$15	(+\$9) \$21
64 gal (can) total		(+\$9) \$15	(+\$11) \$20	(+\$18) \$30
96 gal (can) total	(+\$6) \$12	(+\$13) \$19	(+\$17) \$26	(+\$26) \$38
Average paid	\$11.40	\$16.85	\$19.60	\$26.95
* Subscr. assumptions (32 gal/64 gal/96 gal)	0/0/95%	0/30/65%	30/30/35%	35/40/20%

Figure 3 displays the average rates paid over the three phases, and compares to County-estimated full cost of service..

Figure 3: Average Monthly Rates per Household for Proposed Phase-In

¹⁶ Kauai staff designed the ramp-up of the rates to cover an increased portion of the system costs. The rates could be designed to cover a greater portion of the system costs (or lesser). Full cost of service is currently estimated (by the County) to be approximately \$50 (see Figure 3)



Recycling:

Recycling options remain unchanged in Phase I of the program implementation. Under Phase II recycling and green waste collection will be curbside in 96-gallon carts and embedded in the RRCA charges. All households subscribing to collection services will be provided with 96-gallon recycling carts collected every-other-week¹⁷.

Facilities:

No change in solid waste facilities needed.

Outreach and Education:

The concept of PAYT will be new to the majority of Kauai residents and will require public meetings, outreach, and education. EI recommends using free media (websites, newsletters, press releases) and public meeting to announce and advertise the variable rate program. Additionally, the County may wish to consider budgeting for ongoing outreach and education going into the future. The outreach budget should include 5 FTE (includes time answering phone calls on the program, monitoring social media sites like Facebook™, and conducting in-person outreach), bill inserts, annual mailing on recycling / diversion, staffing booths at special events, outreach material development / printing (stickers, flyers, etc.), press releases, and public recognition / competitions for generators.

Figure 4: Outline of PAYT Implementation Steps

Phase One

Implementation Steps – 0 - 6 months	Work with elected officials and administration to gather buy-in Order trucks Conduct set out survey to estimate cart size distribution Order carts Begin rate analysis and cart size estimates
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¹⁷ EI recommends every-other-week recyclables collection in 96-gallon carts because 1) it helps to reduce to collection costs of recyclables and 96-gallons typically provide enough space for household recyclables under every-other-week collection schemes and 2) it will allow to County to add every-other-week green waste collection on alternating weeks for minimal additional costs.

	Establish PAYT ordinance
Implementation Steps – 6 - 12 months (if Ok'd by County Council, citizens)	Revise billing system Public education and outreach Refine rate analysis / cart estimates Conduct web/mail survey for final cart sizes Insert requested cart sizes into billing system
Implementation Steps – 12 - 24 months	Receive carts and trucks Continue education and outreach Hire staff related to customer service Switch out 64 / 96 gallon carts Fully automate refuse collection and begin PAYT Monitor / refine / track

Phase 2

Implementation Steps – 24 -48 months	Revise ordinance / adjust rates Order trucks Re-survey customers on cart size Order carts Initiate education and outreach on Phase 2 – curbside recycling and greenwaste Review, revise routing for new programs Hire staff related to customer service MRF in operation Switch out 32 / 64 / 96 gallon carts and deliver diversion carts Monitor / refine / track
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Phase 3

Implementation Steps – 48 -72 months	Assess Phase Ii program performance Continue education and outreach Revise ordinance and adjust rates to maximize diversion incentives and move towards program self-sufficiency
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6. PAYT and Illegal Dumping

Invariably, one of the first questions municipalities ask about pay-as-you-throw is its impact on the incidence of increased illegal dumping including materials dumped in open spaces or parks and residential MSW materials illegally dumped in commercial trash containers.

Overall, PAYT does *not* lead to increased illegal dumping in any of these places. A series of surveys and interviews with hundreds of communities conducted over the past two decades by Econservation staff have shown that the vast majority of communities that adopt PAYT do not report increased incidences of illegal dumping. Communities report that illegal dumping is a “perceived” barrier and not an actual barrier. Although many communities report that they thought illegal dumping would increase with PAYT only a small portion actually do see increases. Virtually all of the communities that report an increase of illegal dumping after implementing PAYT also report that illegal dumping returns to pre-PAYT levels within one to three months. The bottom line is that if your community had illegal dumping before implementing PAYT, PAYT will not solve the issue. On the other side, if your community does not have issues with illegal dumping adopting a PAYT program will not cause illegal dumping to start. Illegal dumping happens with or without the presence of a PAYT program.

Overall, PAYT does *not* lead to increased illegal dumping.

2010 National Community Survey

Communities with PAYT programs in place were asked to rank illegal dumping before and after implementing PAYT on an A to F scale (where an A means that there is no incidence of illegal dumping and F means it is a huge problem). After implementation, none of the communities with PAYT reported that illegal dumping was a *huge problem* and those that reported it was a D decreased from 21% to 14% after implementing PAYT.

Results of 2010 Community Survey

Ranking	Before PAYT	After PAYT
A- No problem at all	0%	0%
B- Very slight issue	21%	43%
C- Medium problem	7%	7%
D- Large issue	21%	14%
F- Huge Problem	7%	0%
Don't know / wasn't there	43%	28%

PAYT and Trash Carts

An issue closely related to illegal dumping is the perceived concern that residents will put their trash in their neighbors' cans as a way to save money. EI called a number of communities that had recently adopted PAYT (within the last 24 months) to ask the program managers, haulers, and /

or staff if they were observing increased incidence of neighbors using each other's carts. The interviewees reported the following major findings:

- 1) **Complaints are few and far between.** One city of 20,000 residents reported that over the last 12 months they have had one household complain about people putting trash in their cart illegally. The household was located next to a bike path and a major intersection and the City suggested to the resident to keep her cart next to her house and away from the path unless it was trash day. Another smaller community (5K households) reported that they had a few complaints over the last year but they were all from the same two households. The other communities interviewed reported similar findings.
- 2) **It is an easy fix.** To prevent the potential issue from occurring residents should be encouraged to keep their trash carts out of the street / off the curb and only wheel them out to the curb on the morning of their scheduled collection day.
- 3) **If it is happening, it is unreported and not an issue.** One regional hauler reported that they thought that neighbors could be putting their trash in each other's cart but that they very rarely received any complaints about it and that it was not an issue. This is due to the fact that if it is occurring, residents are putting their trash in a cart that is not all the way full and no one (the hauler, the household) ever knows about it. In this situation the behavior does not cause any negative impacts for the resident or the hauler.

7. Summary of Public Issues and Concerns

Pay-As-You-Throw and Variable Rates

Does Pay As You Throw (PAYT) cost more for the city, haulers, and households?

⇒ *City costs:* Two large statewide surveys (WI, IA) showed that PAYT led to no increase in costs (or town workloads) in 2/3 of communities implementing PAYT.

Hauling costs: PAYT itself can be implemented in ways that lead to virtually no cost increase (bag programs without special cans or billing, keeping the same collection system, etc).¹⁸ If the hauling system does not currently provide recycling service there will be some costs associated with new carts and setting up collection routes. These are typically passed through to the households in the rates. Recycling is cheaper than trash, but not free, as trucks must still stop by the house, collect materials, and deliver them to a recycling center.

Household costs: PAYT works by charging residents for the volume of trash they dispose and encouraging recycling. Under a PAYT program some households will pay more (those throwing away a lot of trash and not recycling), others will not see significant changes in their rates, and other

¹⁸ Potential cost increases occur if towns or haulers need to purchase new containers (this is no extra cost if they are already buying new cans to go "automated" – they just buy different sizes); however, if they already purchased big cans, a cost can result from purchasing new, smaller cans. This can be mitigated by offering an every-other-week service at the lower cost, and keeping the large cans (buying smaller ones through attrition, perhaps) or switching the big cans to recycling or yard waste containers.

households (avid recyclers, small households, elderly households, etc.) will pay less.

Is making people pay for more trash unfair to large families or large generators?

⇒ PAYT works under the basic environmental law principal of *polluter pays*. The premise is that the person or entity responsible for the pollution, in this case trash (and its related impacts on landfills, water, air, etc.), is the one responsible for paying the costs. Unlike programs where everyone pays to benefit all regardless of personal use or responsibility, polluter pays requires each person to be responsible for their own pollution. Under unlimited trash disposal, a small generator (i.e. one bag disposer) subsidizes services for a large generator (a household with 5 or 6 bags). Under PAYT, each household only pays for what they throw away. This is a more equitable system than unlimited trash disposal. PAYT has been adopted by over 7,100 communities nationwide¹⁹.

Does Pay-as-you-throw (PAYT) lead to more illegal dumping?

⇒ Overall, PAYT does not lead to increased illegal dumping. Hundreds of communities with PAYT have been asked about the impact on illegal dumping. About 20% say there is an issue that lasts about 3 months, and that enforcement helps²⁰. Research on illegally dumped waste in PAYT communities shows the majority is not household in origin (and thus, not due to PAYT) and the most common household items dumped are bulky items (appliances, sofas, etc.). PAYT programs should have convenient methods for citizens to get rid of bulky items (tags, fees, appointments, coupons for one free dump, etc.) to avoid illegal dumping issues.

¹⁹ Skumatz, Freeman. *Pay-As-You-Throw in the US: 2006 Update and Analysis*. Published by US EPA Office of Solid Waste, 2007.

²⁰ *Pay-As-You-Throw and Illegal Dumping*. Econservation Institute Fact Sheet 2009.
http://www.paytnow.org/PAYT_FactSheet_IllegalDumping.pdf

8. Composting, Recycling, and Trash Cart Stickers / Decals

By using the same carts with decals delineating the accepted stream the County can reduce the costs of the switch to variable size containers. The examples below are from Boulder County, Colorado.



9. Full Cost Analysis

Kaua'i County staff developed an estimate of the full cost of the current solid waste services in the County. The costs were used to estimate the portion of the total costs covered by the current RRCA and what portion of the costs would be covered by the RRCA in the future. The current rates cover only a portion of the full costs. The Phase 3 rates although estimated to cover a much larger portion of the full system costs, will still only cover a portion of the costs. Figures 8 and 9 display the Kaua'i County estimate of the full costs and Figure 10 compares the current and future RRCA rates to the costs.

Figure 8: Kauai Estimate of Annual Current Cost of Service

Alls costs shown in \$1,000's ("K")²¹

	Wages	OT	Fringe	Misc	Ops	Vehicle lease	Fuel & Maint.	Admin	Indirect (900)	CIP	Total
Admin	\$340K	\$100K	\$400K	\$35K	\$50K			\$(1025)K			
LF	\$870K	\$255K	\$1,020K	\$85K	\$2,710K			\$400K	\$350K	\$3,400K	\$9,090K
TS	\$615K	\$120K	\$660K	\$215K		\$280K	\$185K	\$90K	\$80K		\$1,545K
Coll	\$1,105K	\$210K	\$1,180K	\$135K		\$460K	\$130K	\$245K	\$215K		\$3,680K
Recycling	\$140K		\$125K	\$10K	\$660K			\$70K	\$65K		\$1,070K
Green				\$50K	\$1,200K		\$25K	\$100K	\$90K		\$1,445K
Divert	\$40K		\$35K	\$45K	\$1,115K			\$100K	\$90K		\$1,405K
Total											\$18,235K

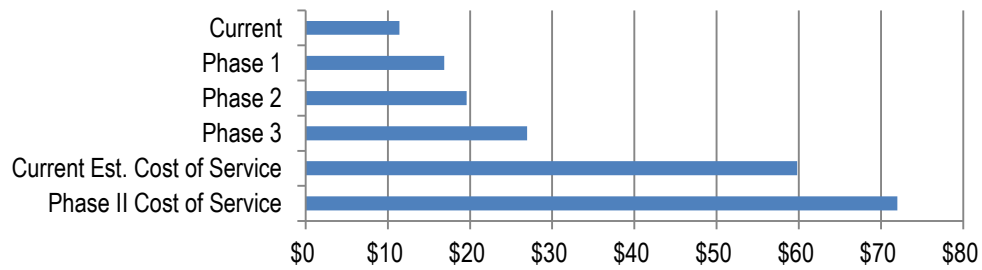
Figure 9: Kauai Estimate of Annual Current Cost of Service²² per Household

	Cost per HH per Month
Landfill	\$18.40
Transfer	\$7.00
Collection	\$16.60
Recycling and Greenwaste	\$11.30
Diversion Programs	\$6.50
Total	\$59.80
<i>Current rates for collection</i>	<i>\$12.00</i>

Figure 8: Comparison of Current and Future RRCA Rates to Cost of Service

²¹ Estimates developed by John Harder, July 2012

²² Estimates developed by John Harder, July 2012



VARIABLE RATES / PAYT FOR TRASH COLLECTION IN MAUI COUNTY

Feasibility / Implementation Plan

Lisa A. Skumatz, Ph.D. and Juli Freeman
The Econservation Institute
September 21, 2012
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© EI 2012.



1

AGENDA

- Basics of PAYT
 - Concept
 - Benefits
 - Issues / Concerns
- Overview of Proposed Implementation Plan
 - Design
 - Implementation
 - Customer survey results
- Proposed Rates / Structure
- Considerations for Maui
- Discussion / Q&A
- Survey discussion
 - In existing survey
 - Discussion of topics needed for evaluation survey

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ABOUT THE GRANT / PROJECT AND EI

- EPA Region 9 Solid Waste Management Assistance Grant Solicitation #EPA-R9-WST7-09-002, Econservation Institute (EI) is funded to provide no cost consulting to communities
- Detailed assistance to design, develop, implement PAYT
- 3 city/county partners in Region 9
- Non-profit dedicated to sharing information on diversion, recycling, and sustainability
- Based outside of Boulder, Colorado
- Founded by Lisa Skumatz, Ph.D
- Small staff of economists, analysts, and researchers

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THE BASICS OF PAY AS YOU THROW (PAYT)

Pay more for more trash service –
pay less for less... “fee for service”

Measured by bags or cans
Equity and Incentive

“Recycle&\$ave”

4

PAYT RESULTS IN...



- Almost doubles recycling
- Reduces residential trash by 17%
- Significantly reduces greenhouse gas and increases job creation

PAYT is preferred, once implemented, by more than 90% of the residents where it is in place...

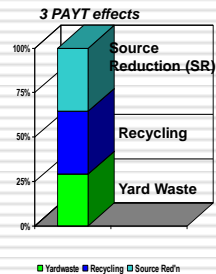
→ This is Pay As You Throw (PAYT)...

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PAYT - BEST OPTION TO CONTROL (OVER)-USAGE

- Biggest Impact AND Most Cost Effective:
 - Statistical studies show it is the BEST of more than 2 dozen options for increasing diversion
- One of top 3 strategies in increasing residential diversion.
 - Goals/Measurement
 - Funding
 - PAYT



Source for graphs and figures: Skumatz Economic Research Associates, ©
Source for top 3 drivers, Skumatz & Freeman / SERA, "Colorado Roadmap Report, 2008.

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PAYT - COST-EFFECTIVE



- 1/3 of the reduction in landfilling comes at NO Cost (Source Reduction)
- PAYT needs NO separate funding system – paid by users (more equitably)
- No increase in costs (or workload) for 2/3 communities (short / long run)
- No new trucks down the street other than already proposed programs

Source for graphs and figures: Skumatz Economic Research Associates ©

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PAYT ACCEPTANCE

- Preferred by households as More Equitable

Communities – after PAYT	89%-95%
PARADE™	2/3 in favor

- Strengths / weaknesses

Key Advantages	Disadvantages
Rewards all diversion activities Behavior Change Reminder Choice Runs like a Utility – Provides equity NEEDS NO SEPARATE FUNDING!	Concerns about illegal dumping, change... More complex rate study, outreach Costs & savings - "Net" depends on local conditions

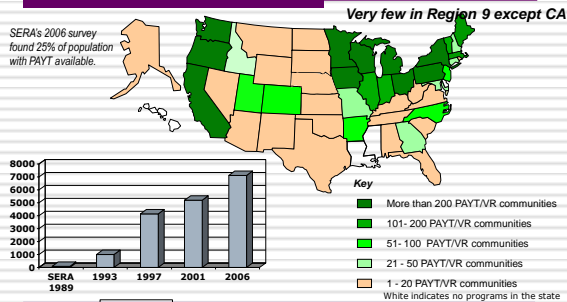
Source: SERA ©2008; Iowa State Survey by Frable.

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PAY-AS-YOU-THROW (PAYT)/ VARIABLE RATES COMMUNITIES

SERA's 2006 survey found almost **7,100** PAYT/VR communities and only 3 states without programs



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BMP FOR MOST SUCCESSFUL PAYT PROGRAM

- ☐ Works with Drop-off recycling
- ☐ Recycling / Greenwaste
 - Costs are embedded in base fee
- ☐ Incentive:
 - Small container option (32 gallon can)
 - Price incentive (80%)
 - Ease of access to data to evaluate performance / participation
- ☐ Do-able at city, county, state level
 - Several states mandate PAYT



Sample Ordinances & case studies on web site www.paytwest.org,
Paynow.org, payinfo.org map from © SERA all rights reserved

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POTENTIAL CONCERNS ABOUT PAYT

- ☐ Equity - Large families / poor families
 - Current system is unfair for small families, seniors on fixed income, avid recyclers subsidize large disposers
 - Behavior affects bill now; options for any household to reduce bill- control!
- ☐ Cost and Workload
 - State surveys find 2/3 have NO increase under PAYT
 - Fielding customer calls (6 weeks, 10-20% of customers)
- ☐ Confusion, resistance to change - wait 6 months!
 - 89-95% prefer
 - Keep rates SIMPLE

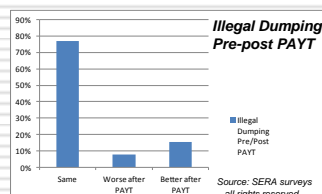
Source: SERA surveys
- all rights reserved

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POTENTIAL CONCERN - ILLEGAL DUMPING

- ☐ Most illegally-dumped materials are bulky items, not typical residential trash
- ☐ Surveys of over 1000 communities - Bigger fear than reality
- ☐ Some increase in 10-30% of the communities; solved after 3 months. Some communities showed improvements!



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TYPES OF NAYSAYER ISSUES TO ADDRESS

- ☐ Too costly
- ☐ Doesn't work
- ☐ Current system works fine
- ☐ Large families / poor families
- ☐ Recycling goes to China (or the landfill)



See "Q&A / Naysayer" materials on website www.paytnow.org

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IMPLEMENTATION / DESIGN

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IMPLEMENTATION / DESIGN – EXISTING & PLAN

- ☐ Current, 25,000 hhs; 36% diversion currently, 5.5% recycling rate, \$18/hh/mo, billed 2x/yr
 - "Three Can Plan" - Curbside organics (96g), mixed recycling (96g), weekly trash; 5 year implementation plan; piloted; enhanced education; Phased approach
- ☐ Trash - current
 - Automated trucks, 96 gallon carts, 2x/week for 21,000 hhs / Manual collection, up to 6 32-gallon carts for 4,000 hhs, 1x/week
- ☐ Recycling & Organics - current
 - 7 recy drop-off centers collecting 2,600 TPY; D/O YW
 - Curbside Recy available for a fee (2 private firms); unknown participation (EOW, \$25-27/mo)

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PROPOSED PAYT IMPLEMENTATION PLAN

- ☐ What / why / who
 - Weekly PAYT system enhancement to 3 can plan for all households to stimulate program use / diversion, equity, reduce over-use
 - 75% of customers support PAYT concept for Maui
- ☐ How
 - Containerization & collection
 - ☐ Weekly automated, adding the 4,000
 - ☐ 32, 64, 96-gallon county-owned trash carts added; 64 default; distribution by County staff
 - ☐ Exchanges with fee after 3-6 months / downsize free
 - ☐ EOW YW & recycling in 96-gallon carts; automated

(Survey: Only 11% oppose PAYT)

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PROPOSED PAYT IMPLEMENTATION PLAN

□ Billing & costs

- Costs: carts; FTE augmentation for implementation; rerouting; training; enhanced outreach; net tip fees... Some costs not due to PAYT. Costs incorporated into new rates (user pay).
- Rates / billing: recurring fee of 3 values

□ Impacts

- Estimate 40-50% more recycling than vanilla 3-can plan; ~17% decrease in residential trash volumes

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FACTORS INFLUENCING RATES

1. Current cost of service
2. Net cost changes from PAYT
3. Net cost changes from other programs
4. Number of cans / subscriptions
5. Rate design options
 - Size of differential (80%); tradeoffs
 - Embedded fees for other programs



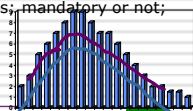
Source: Skumatz, ECI research

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PROPOSED PAYT IMPLEMENTATION PLAN

□ Rates / development / drivers

- Cost changes (net) added to current costs (\$18)
- Behavior changes (trash can sizes subscribed)
 - 2 effects – diversion, stomping
 - Estimations / set out surveys
 - 30/60/90 → 27-31% / 36-41% / 1-18%
- Rate structure
 - 80%; base fee alternatives; mandatory or not; scenarios



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PROPOSED PAYT IMPLEMENTATION PLAN

Trash Can Size	Percent cans (Low div/ Hi)	80% (low %)	80% (high %)	\$10 base fee (low %)	\$10 base fee (hi%)
32 gal	27%/31%	\$13.25	\$15.00	\$17.25	\$18.50
64 gal	36%/41%	\$23.75	\$27.00	\$24.75	\$27.00
96 gal	19%/27%	\$34.25	\$39.00	\$32.00	\$35.25
128 gal	18% / 1%	\$45.00	\$51.00	\$39.25	\$43.75

Different designs to meet average \$26.70 bill
Cost increment & subscriptions estimated...

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PROPOSED PAYT IMPLEMENTATION PLAN

- Special points / discussion:
 - Ordinance
 - Overflow and bulky – prefer pre-paid stickers ; and/or bulky option on-call; or transfer station; well-advertised
 - Old 96-gallon trash carts
 - Carts can be leased or purchased / bond / interfund**; bill in advance); county-owned
 - Assembly / delivery / maintenance / switches / storage
 - Reserve / storage inventory (for 30/60/90 about 4-6%/2-3%; 1%+recy / YW)
 - Billing frequency / method pros & cons
 - Base fee / differentials (80%?)
 - Illegal dumping, other negatives
 - Universal refuse collection in future?

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IMPLEMENTATION TIMELINE

Implementation 1 – 6 Months

- Work with County Council & within DEM on PAYT and bringing forward
- Discussions with Solid Waste, DEM, Mayor / City council staff
- Discussion options, pilot
- Refine PAYT implementation plan based on feedback
- Review billing system and plan on adjustments
- Set out survey to refine cart & billing estimates
- Work with electeds on buy-in
- Public outreach / town hall meetings
- Survey to refine costs, programs, rates, cans...
- Order equipment; ordinances

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IMPLEMENTATION TIMELINE

Implementation 6 – 12 Months

- Container assembly
- Finalize billing data entry & reprogramming
- Container delivery
- Change rates / bills
- Continued education
- Begin PAYT program
- Cart switch-outs (3 months)
- Phone bank for customer questions (before & after implementation ~3-6 mo)
- Monitor / refine / track

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CONSIDERATIONS FOR MAUI – POLICIES & FISCAL ISSUES

- Overall fiscal picture – “in context”
 - Disposal options
 - Price, lifetime, put or pay, financing
 - Recycling costs
 - Facilities – current, potential, siting / permitting (AD?)
 - Differences between materials – focus?
 - On-island options / considerations
 - Realistic business development, options

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QUESTIONS /DISCUSSION:

- ☐ Implementation Issues
- ☐ Proposed rates
- ☐ Financial Issues



MAUI SURVEY RESULTS

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SURVEY RESULTS



- Went 'live' November 21, 2011
- 1,067 responses started, 81.8% completion rate, 873 completes
- General survey, not random sample
- If it was statistical 95% +/- 3.3%
- With Maui's population would need only 378 to be 95% +/- 5%

Maui County Rubbish and Recycling

1. Introduction

Maui County, with assistance from the US EPA, is currently exploring ways to improve rubbish and recycling services for our residential customers. best programs possible we are conducting this survey on current disposal and recycling behaviors and opinions.

Please take a few moments to complete the survey and tell the County what you think about rubbish and recycling. As a thank you for your time an completes the survey into a drawing for one KINDLE E READER. More information on the drawing can be seen at the end of the survey.Limit ONE

Thank you again for your input. Your time and effort are much appreciated!

1. Where did you hear about this survey?

- ☐ I read about it in the "Talking Trash" newsletter that comes with my refuse bill
- ☐ Coconut Wireless (friend)
- ☐ County Website
- ☐ At the recycling booth at an event or fair
- ☐ Other (please specify)

SURVEY TOPICS

- ☐ **Trash Service and Behavior:** Trash generation and set-out, Drop-off, collections
- ☐ **Recycling Service and Behavior:** Curbside, Drop-off, HI-5, Amount recycled/diverted, Materials recycled
- ☐ **Yard/Green Waste:** Material types and amounts generated, Current disposal/composting habits
- ☐ **Satisfaction, Barriers:** Current program satisfaction (curbside trash, drop-off, HI-5, etc.), Challenges, barriers to more recycling
- ☐ **Three can plan preferences and opinions**
- ☐ **Variable rates / PAYT**
- ☐ **Brief demographic information**
- ☐ **Open ended questions/other**

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Very few people have curbside...

But recycling is important...

30. How important are the following items to you? (where 1 is unimportant and 5 is very important)

Two-thirds like a variable rate.

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BRIEF RESULTS (PAYT)

OPEN ENDED RESPONSES (PAYT)

- *Scores of open-ended responses in report*
- *For PAYT, they fall into a few categories...*

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NEED MORE INFO..

- *"I would need to see more details"*
- *"Need to know more and consider all aspects"*
- *"If your waste fluctuates, and your can is too small, what would you do?, so most would chose the largest can. "*
- *"Would depend on the cost"*
- *"As long as it's easy to SWAP CONTAINERS, if I find I need more or less, I support a variable rate program."*
- *"How do you know until you try??? How do you change?"*
- *"However my support is also dependent upon the proposed fees"*
- *"What happens if the size is not estimated correctly and needs to be changed?"*

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CONCERNED ABOUT DUMPING..

- *"I think some people will dump their garbage in fields if to costly"*
- *"(I) am concerned variable rate might encourage some to dump "off-road" rather than pay if they've a lot of rubbish"*
- *"People will throw their trash in the gulches and waysides."*
- *"As long neighbors don't put their trash in other people's can to save money!"*
- *"It sounds great in theory, but may have problems with people putting trash in each others garbage."*

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HOUSEHOLD SIZES, INCOME..

- *"Larger families should not be penalized" (Anti)*
- *"Each household is different, therefore, they should be charged accordingly!(Anti)"*
- *"My only concern is for the low-income family's who can't afford to pay for the larger trashcan, but really need to. (Low income)"*
- *"My household is only 2, others have 20, should be more fair in the prices for each. "(Pro)"*
- *"Those with larger households create more refuse should pay more. ." (Pro)"*
- *"I personally support it because I don't have that much waste, however I am afraid big families with a lot more waste will not. (A little bit of both)"*

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LIKE IT...



- "I love this idea and think it would support more community awareness and buy-in with recycling."
- "It makes sense. You don't charge flat rates for Water!"
- "THIS IS LONG OVERDUE... THIS is why I refuse to pay for trash collection; I fill a 13 gallon container once a month, IF that!!!!"
- "Make more trash, pay more. Hurt earth more, pay more. Lazy more, pay more."
- "What a great idea, lets do it. If you care about the aina you save money too."

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DON'T LIKE..



- "All large size, one rate.. better underfill than overfill"
- "To complicated I like a flat fee. A machine picks it up not people so size or weight shouldn't matter."
- "Why should we pay at all. Isn't that what GET should be paying for?"
- "Too complicated and provides less not more service"
- "This is too convoluted and massively nitpicking administratively"

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A FEW OTHER RESULTS

- **Strong support for 3-Can Plan:** 85% would like to see it implemented ASAP
- **But they don't want to pay for it:** 38% would be willing to pay more, 33% not willing to, 31% not sure
- **Satisfaction for current trash collection high-** 70% are extremely or very satisfied with refuse collection
- **Paper, Plastic Packaging, To-go containers, Food scraps, and yard waste** are the main materials remaining in the trash

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QUESTIONS / DISCUSSION



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CURRENT SURVEY TOPICS / FOCUS

- Current refuse, recycling, organics
 - Who provides service
 - Use (frequency / full) of trash / recy by service type; what they do with organics
 - Satisfaction for all services
 - Importance tradeoffs for objectives – general & at household attitude level
 - Expected behaviors w/3-can plan; WTP; cart size
 - Recycling barriers
 - Materials remaining in disposal; needs
 - Education gaps / needs

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NEXT STAGE QUESTIONS FOR SURVEY

- Similar, with some new, deleted
 - Focus on 1st survey – potential, behaviors, usage
- Evaluation / refinement survey topics of interest also includes:
 - Don't need who provides
 - Need what doing now / what do after (include focus on BYC; hi 5, redemption)
 - Cart selections / how much disposed / what need
 - WTP
 - Remaining in trash can
 - Other services
 - Goals / tradeoffs for system
 - Other

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OTHER QUESTIONS / TOPICS?

- Next steps

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VARIABLE RATES FOR TRASH COLLECTION IN MAUI COUNTY

-DRAFT REPORT-

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July 2012

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1: Executive Summary

Under the EPA Region 9 Solid Waste Management Assistance Grant Solicitation #EPA-R9-WST7-09-002, *Econservation Institute (EI)*¹ was funded to provide no cost consulting to Maui County to assist in the study, design, and possible implementation of a pay-as-you-throw (PAYT) or variable rates program for residential solid waste. PAYT charges residents for solid waste services based on how much trash they dispose of, the less they throw away, the less they pay; the more they dispose, the more they pay. There are a variety of ways to meter the disposal including bags, tags or carts. In Maui County the program would be cart based. Residents would subscribe to a 32, 64, or 96-gallon cart and are charged based on the size of the refuse cart. The major findings of the PAYT grant project are:

Feasibility: PAYT is feasible for Maui County and has the potential to reduce the materials disposed in the landfill by approximately 16 – 17%

Acceptance: The majority of Maui County residents reported that they would support a PAYT program

Complementary Program: The PAYT program would bolster the effectiveness of the planned Three-Can Plan system and significantly increase the materials recycled and composted

Program Design

An outline highlighting the PAYT program design is included in Figure 1.1.

Figure 1.1: PAYT Program Design

PAYT Rate Incentives Details	Description
What	Rates for smaller refuse carts are lower, and are subsidized by larger service levels in order to provide significant-enough differentials to act as an incentive to reduce refuse disposal. Service levels included are 32, 64, and 96-gallons carts with the proposed default size of 64-gallons. Recommended price differential for carts is 80%. The PAYT program is designed to complement the proposed Maui County 3-Can Plan and the switch to a 3-Can system is the ideal time to add PAYT. Residents are charged based on the size of the refuse cart subscription level, recycling and organics collection (the 3-Can Plan) services are embedded in the refuse rates and are 'unlimited'. Overflow refuse (materials not fitting in the can) are collected for an added fee or can be brought to the landfill. Under the proposed PAYT program refuse is collected weekly.
Why	Modify rates so residents pay different rates for different amounts of refuse service, providing a recycling, composting, and source reduction incentive. The rates are more equitable under PAYT compared to a flat rate system as residents pay for what they throw away, similar to other utilities. The program would significantly reduce the amount of trash Maui County residents send to the landfill each year.
Who	Covered residences meeting road/access requirements collected by County staff.
Equipment	Different-sized (or multiple) containers are needed; carts can be leased (a lease/service fee) purchased by county (or HHs) or other options. The rate scenarios include the cost of cart purchase / maintenance.
Staff Effort / Admin	EI estimates that the County may need to contract an additional 0.5 - 0.75 FTEs to assist in the initial program implementation.
Cost	The costs / financing of carts are covered by rates, minimal cost for rerouting / training for collection. Rates/ billing programming required to replace current values - EI estimates that it may cost the County in the range of \$50K in staff time to complete the reprogramming and data entry. If the PAYT outreach / education is combined with the already budgeted 3-Can Plan outreach the additional costs are minimal, if not, the outreach/ education could be in the range of \$50K- \$100K .
How Paid	All costs are recovered through residential trash bills – it is a user pay program. There is a large incentive for the

¹ Econservation Institute is a 501c3 non-profit based in Superior Colorado dedicated to sharing information and real world data on sustainable issues including recycling. EI has a small staff of economists, analysts, and researchers dedicated to its mission.

PAYT Rate Incentives Details	Description
	community to recycle more. PAYT will significantly decrease the amount of trash to the LF, potentially resulting in cost savings for the County and a prolonged landfill lifetime.
Potential Impacts	Perhaps 40-50% more recycling than planned 3 Can Plan with flat rates and a 16 -17% percentage point decrease in the amount of refuse sent to the LF.

Public Acceptance

EI worked with the County to conduct a residential web survey and a total of 1,067 surveys were collected. The survey found that there is strong support among Maui County residents for a variable rate or pay-as-you-throw program. Nearly three-quarters of respondents (74%) reported that they would support a pay-as-you-throw program with the majority (55%) reporting they would *strongly support* PAYT. Only 11% of the respondents reported they would oppose a PAYT program.

Rate Setting and Cart Distributions

Setting rates to incentivize customer behaviors while covering costs and maintaining revenues is one of the most important elements of a successful PAYT program. The rates charged to customers must cover the costs to get to the door (the highest cost for the County), the incremental cost of additional trash (a much lower cost to the County), and the embedded cost of the recycling and yard waste program (the Three-Can Plan, including funding the carts). Each of the rate scenarios analyzed and presented is designed to raise exactly the same amount of revenue from the average household - \$26.70 / household / month. This figure incorporates the cost of the new recycling and yard waste collection services under the Three Can plan, plus a monthly amount designed to help purchase the new containers for use by households, added to the current rate of \$18 / household / month². Two rate **structure** scenarios presented in Figures 1.2 and 1.3 for two different cart distribution scenarios- a conservative and an aggressive scenario.

Rate Structure A: This scenario includes an 80% price differential for each 32-gallon unit of service (64 gallons are 80% more than 32 gallons), and that rate differential (in dollar terms) represents the difference for each additional 32 gallons to include the service levels available including 32, 64, 96, and 128 (a 96 gallon cart and a 32 gallon cart for high generators). The rates are displayed for two cart distribution (customer subscription) scenarios.

Rate Structure B: This other structure option embeds a \$10³ fee in the property tax (or a “generator” or “environmental” fee), which assures that base amount is paid by each property holder. This represents a share of the cost of “getting the truck to the door”. Then, the additional cost for providing service is distributed as multiples of the service level. In this case, *beyond the \$10 base fee*, twice the service is charged at twice the increment. This increment then repeats for each additional service level. The figures in the table represent the total cost for each service level, *including* the generator fee.

Scenario 1 vs. Scenario 2: It is impossible to estimate exactly how much trash households will put out, given the new PAYT, recycling, and composting options. Therefore, within each rate

² If Maui county has more refined estimates of the new monthly rates for households under the three can plan the rate scenarios can be re-ran. The monthly revenue requirement was based on: 1) EI data on the average cost to run a curbside recycling program 2) the average cost to operate a curbside yard waste collection program and 3) a 60-month amortization for the new cart purchases.

structure, we provide a range for the potential set out, or can service level subscriptions. Scenario 1 (the same for both tables) uses less aggressive assumptions about the amount of trash that customers will recycle and “stomp”. Scenario 2 assumes there will be greater recycling and organics diversion behavior (based on experience in other locations) and there will be fewer households remaining on higher service levels. The average gallons subscribed under Scenario 1 is 76 gallons, and 64 gallons under Scenario 2.

Figure 1.2: Rate Structure A: No Base Fee (Note: all rates are rounded to the nearest \$.25)

CAN SIZE / SERVICE LEVEL		Rate diff'l==>	80%	Scenario 1 – Conservative	80%	Scenario 2 - Aggressive
		Goal AVERAGE BILL level=>	\$26.70	% of HH	\$26.70	% of HH
32	gallons		\$13.25	27%	\$15.00	31%
64	gallons		\$23.75	36%	\$27.00	41%
96	gallons		\$34.25	19%	\$39.00	27%
128	gallons		\$45.00	18%	\$51.00	1%

Figure 1.3: Rate Structure B: \$10.00 Base Fee (Note: all rates are rounded to the nearest \$.25)

CAN SIZE / SERVICE LEVEL		Rate diff'l==>	100%	Scenario 1 - Conservative	100%	Scenario 2 - Aggressive
		Base / program fee level/hh=>	\$10.00		\$10.00	
		Goal AVERAGE BILL level=>	\$26.70	% of HH	\$26.70	% of HH
32	gallons		\$17.25	27%	\$18.50	31%
64	gallons		\$24.75	36%	\$27.00	41%
96	gallons		\$32.00	19%	\$35.25	27%
128	gallons		\$39.25	18%	\$43.75	1%

2: Introduction

Under the EPA Region 9 Solid Waste Management Assistance Grant Solicitation #EPA-R9-WST7-09-002, *Econservation Institute (EI)*⁴ was funded to provide no cost consulting to communities in EPA Region 9. The consulting assistance was designed to encourage communities to adopt variable rate pricing or Pay-As-You-Throw (PAYT) for solid waste. Under the awarded grant only a few communities were selected for in-depth PAYT consultation and Maui County, HI was one of the communities.

Why Consider Pay-as-you-throw?

Pay-as-you-throw (PAYT; also called variable rates, volume-based rates, and other names) provides a different way to bill for garbage service. Instead of paying a fixed bill for unlimited collection, these systems require households to pay more if they put out more garbage and less if they set out less garbage – usually measured either by the can or bag of garbage. Paying by volume (like you pay for electricity, water, groceries, etc.) provides households with an incentive to recycle more and reduce disposal and creates a more equitable way for households to pay for trash services. Under PAYT each household is only responsible for paying for what they dispose of, low generators, good recyclers, small households, and others no longer need to help cover the costs of disposal for households that throw away large amounts of trash on a regular basis

It is critical for communities to have realistic expectations about what will happen if they implement PAYT. Data from more than 1,000 communities around the country was used to identify the impacts of PAYT above and beyond any other recycling or yard waste program differences, demographics, and other factors. The research showed the following impacts on residential solid waste:⁵

Disposal decreases by 16%-17%

Increases in recycling of 5-6 percentage points or 5-6% of residential waste generation (usually about a 50% increase in current recycling)⁶

Increases in yard waste diversion of about 4-5 percentage points

Source reduction of about 6% of generation⁷

Years of research indicates that adding a PAYT program is the single most effective change a community can make to increase recycling. According to published research, PAYT increases recycling more than adding a new material, changing collection frequency, or many other potential program design or collection changes.

Estimated Maui County Impacts:

⁴ Econservation Institute is a 501c3 non-profit based in Superior Colorado dedicated to sharing information and real world data on sustainable issues including recycling. EI has a small staff of economists, analysts, and researchers dedicated to its mission.

⁵ Skumatz, Lisa A., Ph.D., "Beyond case studies: Quantitative effects of recycling and variable rates programs", *Resource Recycling* 9/1996; and Skumatz, Lisa A., Ph.D., "Achieving 50% diversion: Program elements, analysis, and policy implications", *Resource Recycling*, 8/2000.

⁶ Analyzing Iowa communities, Frable, 1994, found an increase of 30% to 100% with an average of 50% increase in recycling tonnages.

⁷ Skumatz, Lisa A., Ph.D., (2000) "Measuring Source Reduction: PAYT / Variable Rates as an Example", Skumatz Economic Research Associates Technical Report, prepared for multiple clients, included on USEPA website; and Skumatz, Lisa A., Ph.D., "Source Reduction can be Measured", *Resource Recycling*, 8/2000.

Overall, if PAYT was fully implemented county-wide we would expect Maui County to see a reduction from the most recently reported residential refuse disposal rate of 52,400 tons to 44,000 tons, a reduction of about 8,400 tons of refuse to the landfill. Recycling tonnage would increase by about 3,000 tons, and yard waste programs would see an additional 2,500 tons. About 3,000 tons would be avoided through waste prevention, based on the study's estimates.

3. County of Maui Pay-As-You-Throw Implementation Plan

The implementation plan contained within this report was designed by EI staff with input from County staff and residents to best meet the unique needs and issues in the county.

3.1 Background Information and Current Situation

Based on interviews and a review of existing data, the following background information is useful in PAYT planning:

Population: 142,196

Households (HHs): 64,679⁸

Serviced HHs: County provides Solid Waste services to 25,000 HHs

*Total Tons Generated All Sectors*⁹: 345,000 (does not include 21,000 tons of sludge/bio-solids)

Total Tons Diverted All Sectors: 124,000

Total Tons Disposed All Sectors: 221,000

*Total Tons Residential Refuse Collected by County*¹⁰: 52,400

Total diversion rate: 36%

*Diversion from traditional recycling*¹¹: 5.5%

Trash Collection:

The county collects trash from approximately 25,000 residential households

Trash is collected by automated trucks for 21,000 households in 96 gallon carts, twice a week

Trash is collected manually for 4,000 households in up to 6 32-gallon cans once a week

Carts are owned and provided by the County for automated collection households

Manual collection households supply their own containers

Recycling:

There are 7 drop-off recycling centers, six of them are contracted by a private company.

The County owns the containers at all drop-off sites

The 7 drop-offs collect around 2,600 tons of recyclables per year

Curbside recycling is available for households for a fee and is provided by two private hauling companies

Unknown at this time how many households sign-up for the curbside service but thought to be a very low percentage due to high cost¹²

⁸ 2009 US Census Bureau Data: Total 66,679 One unit detached: 36,528 One unit attached: 1,975 2-4 units: 6,713, Owner occupied: 27,000 Renter occupied: 20,495

⁹ All reported tons generated, diverted, and recycled are for 2006 as reported in the 2009 Greshman, Brickner, & Bratton Integrated Solid Waste Management Plan for Maui County

¹⁰ Tons collected in 2006 by County from 24,000 residents electing for County service and meeting the road/access requirements. There was an average of 2.2 tons per household per week or 84 lbs per household per week collected in 2006.

¹¹ Includes approximately 19,000 tons of conventional recyclables (paper, cardboard, containers) collected at drop-offs and at the curb for businesses and residents in 2006 (GBB 2009 ISWMP Report)

The County currently does not operate a curbside recycling program but is planning on implementing a curbside program (see pilot recycling program)

Other Services:

Organics collection is currently not available at the curb for households, however it is planned for the future

There is a yard waste drop-off available for residential use

Fees:

Residential collection services are \$18/month and are billed twice a year by the County Solid Waste Division

Curbside recycling service (private sector only) costs \$25-\$27/month for every-other-week collection

Education:

The County has several outreach and education efforts already underway including a detailed web site for recycling and diversion, an online resource recovery guide, recycling hotline, informational tables at special events, and others.

Planned Pilot Program:

The County is planning to roll out a 3-can system with curbside organics, mixed recycling, and trash in carts collected by county staff/trucks

The program is designed to be implemented in 5 years with a pilot program starting this summer/fall 2012 in pilot areas, Maui Meadows and central Kihei.

Education, outreach, measurement, and analysis are key components of the planned pilot

3.1. PAYT System Design

With major changes to the overall trash system planned in Maui, there is an excellent opportunity for implementing a PAYT. A brief description of what the future pay-as-you-throw system might look like in the County of Maui is included below:

Containerization and Collection

Collection will continue to be automated for 21,000 HHs. The remaining 4,000 household will eventually be switched to automated collection

Trash collection will be in 32, 64, and 96 gallon carts for all HHs. The recommended default size for all households is 64-gallon.

Trash will be collected weekly

If households want a 96-gallon cart (s) they must request it and pay higher rates.

Households may also downsize their service level and request 32-gallon carts for a lower rate

Cart Purchasing and Fees

The introduction of a PAYT program with different cart sizes will require the purchase of a variety of sizes of containers. If the community already owns and has distributed 96-gallon carts, then only a

¹² This is supported by the web survey in which only 2% of respondents reported they had curbside recycling.

share of the containers will need to be funded and replaced. Communities handle the purchase of carts (all or some) one of several ways.

Bill in advance for service. This provides some money in advance to help pay for implementation (although not much in advance) – and it also helps address the “bad debt” issue. Service can be stopped if payment is stopped, but the payment for the service delivered has already been paid. This strategy does complicate rebate computations when households change service level, or move.

Interfund loans. Borrowing from a department with cash, paid back over time through the part of the rate fee covering cost of containers, has worked in a number of communities. The payback rate can be set by the department (\$3 per month per household for about 5 years, covers all three carts (refuse, recycling, organics); the containers last 10-15 years in the field, but the city can arrange its own repayment schedule). After repayment is complete the City may elect to use the funds for reducing rates, funding additional recycling or other options, etc.

Bonds, Grants, or Outside Loans: These are other options for funding the purchase of containers and can come from a variety of sources.

If pre-billing and/or an interfund loan can be arranged, we believe that will be the best option for Maui.

Cart Exchanges

The most common approach to cart exchanges is one free switch within the first 3-6 months, and \$15-20 per switch thereafter. This assures households get “on the right size”, and allowing it in a limited time helps figure out which sizes are needed and allows the community to move carts around first, and re-order second.

It is important to note that a cost later on can create a barrier to households “downsizing” their carts, sending a mixed signal to generators. Under PAYT the goal is to have households maximize their recycling / diversion and minimize their trash disposal. We recommend the following: a free switch in the first 3-6 months, free downsizing exchanges (you shouldn’t need a maximum per year, but could limit to one), and a fee to exchange “up” in size (a bit higher than “cost of service to help subsidize the cost of downsizes).

Maui County will need to order a reserve of carts of each size (as opposed to reserves of only one size) under the PAYT program. The reserve carts are used for exchanges, repairs, and maintenance. Based on the proposed rates and cart distributions the County should consider ordering the following percentage of reserve carts:

Figure 2.1: Cart Reserves¹³

Cart Size	Reserves (Percentage)
32- gallons	4-6%
64- gallons	2%-3%
96- gallons	1%

Overflows and Bulk Items

EI recommends using a tag or bag program for overflow trash. Under this scenario residents are required to purchase a tag or sticker to put on trash that does not fit in the trash cart. The fee for the trash tag/bag/sticker is typically in the \$1 to \$4 range. The tag / bag program is to

¹³ Note that the assumed cart distributions will impact both the number of carts *and* the number reserves ordered.

accommodate household's high generation weeks (holidays, parties, visitors, etc.) as conveniently as possible and still encourage residents to sign-up for a lower level of trash service. The County does not want to encourage residents to choose the 96-gallon subscription level to handle overflow trash for only two or three weeks a year when the 64-gallon cart would meet their needs 50 weeks out of the year.

An alternative option is to not collect overflow trash at the curb and require residents to hold it until the following week or bring it to a transfer station / landfill.

To prevent illegal dumping of bulk items it is recommended that the County consider an on-call fee based curbside service for bulk item collection. Residents are required to call the Solid Waste department and arrange for curbside collection of their bulky items (couches, white goods, etc.) for an additional fee. The fee covers the cost of curbside collection.

Rates and Billing

Continue billing by County Solid Waste Division. If the County chooses the PAYT option the County may choose to bill quarterly. Under PAYT there will be a recurring bill with the rate depending on subscription level. (same dollar rate recurring monthly without change for each household – unless / until they change service level)

The costs of recycling and organics are not a line-item but are instead fully embedded in the trash rate for *all* households

Rates recommended include an 80% rate differential, that is a 32-gallon cart costs \$X, and a 64-gallon cart costs $\$X + (80\% \times X)$ (see rate calculations for details).

EI suggests only doing one rate change, if the County changes rates for the pilot area as planned, it should include PAYT rates, or wait to change rates until the county is ready to implement PAYT. This will help to reduce confusion about rates among residents and help to reduce the administrative costs associated with a rate change.

Recycling

The recycling system as currently planned under the pilot program will work well with PAYT rates.

Recycling carts should be 96-gallon to accommodate the planned every-other-week collection schedule

Organics and Other Services

The organics system as currently planned under the pilot program will work well with PAYT rates.

Organics carts should be 96-gallon to accommodate the planned every-other-week collection schedule.

The costs of the organics service (like the recycling service) should be fully embedded in the trash rates.

Combining the switch to PAYT with additional services can be an effective way to build public support. Thus, while some residents may see higher bills under the new rate structure, all residents are also getting expanded and additional services under the new program. A few examples include:

- *Gainesville, FL*- The PAYT program includes free curbside bulk waste pick for HHs and a white goods and e-waste 'free' pick-up

- *Longmont, CO*- PAYT includes the following ‘free’ services: Large Item Stop-N-Drop, two Free Landfill Drop Days, a Household Chemical Drop Day , Curbside Leaf Collection, Halloween Pumpkin Composting and Christmas Tree Recycling.
- *Plantation, FL*- PAYT includes ‘free’ bulk curbside pick up for all residents
- *San Jose, CA*- PAYT rates include free curbside collection of oil and oil filters, a no cost HHW drop-off, and a holiday tree program
- *Loveland, CO*- PAYT includes extensive ‘free’ drop-off facility for hard to recycle materials, yard waste, and other materials

Billing Alternatives

The 2009 ISWMP describes two alternatives to utility or service fees for funding including *Generator Assessments* and *Improved Lot Assessments* in which a property owner is assessed a fee on their property taxes to pay for all or a portion of their solid waste and recycling service. Including solid waste and recycling services on property taxes is a common funding mechanism in the US. Including the *entire* cost of solid waste services on property taxes is not compatible with PAYT. Without a recurring bill showing the savings associated with lower service levels residents are not made aware of the economic incentives/disincentives associated with PAYT.

An alternative option that does work with PAYT is to include a *portion* of the solid waste services bill in the property taxes and a portion in the utility bill. Under this scenario all households have a set fee for services included in their property taxes and the utility bill varies depending on the level of service. Modified examples of this type of billing can be seen in Butler County, PA, Orange County, NC, Hennepin County, MN, and Snellville, GA and others. An option for this billing scenario is included in the rate computations for Maui County. The option provided is \$10 in the property tax; this dollar amount can be modified and the rates recalculated.

Figure 3: PAYT Basic Implementation Steps

PAYT Rate Incentives Details	Description
What	Rates for smaller refuse carts are lower, and are subsidized by larger service levels in order to provide significant-enough differentials to act as an incentive to reduce refuse disposal. Service levels included are 32, 64, and 96-gallons carts with the proposed default size of 64-gallons. Recommended price differential for carts is 80%. The PAYT program is designed to compliment the proposed Maui County 3-Can Plan and the switch to a 3-Can system is the ideal time to add PAYT. Residents are charged based on the size of the refuse cart subscription level, recycling and organics collection (the 3-Can Plan) services are embedded in the refuse rates and are ‘unlimited’. Overflow refuse (materials not fitting in the can) are collected for an added fee or can be brought to the landfill. Under the proposed PAYT program trash is collected weekly.
Why	Modify rates so residents pay different rates for different amounts of refuse service, providing a recycling, composting, and source reduction incentive. The rates are more equitable under PAYT compared to a flat rate system as residents pay for what they throw away, similar to other utilities. The program would significantly reduce the amount of trash Maui County residents send to the landfill each year.
Who	Covered residences meeting road/access requirements collected by County staff.
Equipment	Different-sized (or multiple) containers are needed; carts can be leased (a lease/service fee) purchased by county (or HHs) or other options. The rate scenarios include the cost of cart purchase and maintenance and potential cart distributions are included in the rate section of the report.
Staff Effort / Admin	Billing is modified to provide repetitive billing for different cart levels and to include the costs of collection, organics, and recycling in the bill (an option to include a portion of the solid waste

PAYT Rate Incentives Details	Description
	service charges on property taxes is provided in the rates section of the study). Current line itemed billing system has the potential to work well with a PAYT program. It is recommended that the County increase the billing frequency from bi-annual to at least quarterly. EI estimates that the County may need to contract an additional 0.5 - 0.75 FTEs to assist in the initial program implementation.
Cost	Financing for containers costs approximately \$3/hh/mo; minimal cost if the county chooses to lease or finance <i>and</i> the costs of carts are covered by rates, minimal cost for rerouting / training for collection. Rates/ billing programming required to replace current values - EI estimates that it may cost the County in the range of \$50K in staff time (including temporary staff training and data entry) to complete the reprogramming and data entry. If the PAYT outreach / education is combined with the already budgeted 3-Can Plan outreach the additional costs are be minimal. If the PAYT program is implemented in isolation the outreach costs could be significant depending upon the planned level of effort (in the range of \$50K - \$100K).
How Paid?	All costs are recovered through residential trash bills – it is a user pay program. There is a large incentive for the community to recycle more. PAYT will significantly decrease the amount of trash to the LF, potentially resulting in cost savings for the County and a prolonged landfill lifetime.
Potential Impacts	Perhaps 40-50% more recycling than planned 3 Can Plan with flat rates and a 16 -17% percentage point decrease in the amount of refuse sent to the LF.
Other Considerations	<p>The following items are covered in the implementation plan and the report:</p> <p><u>Three Can Plan:</u> PAYT and a 3 stream system (refuse, recycling, organics) are commonly found in the same community throughout North America. The PAYT program will boost the impact of the 3-Can system. The switch to the 3 stream system represents an ideal opportunity to implement PAYT rates (carts are already being delivered / ordered, outreach is planned, households will see a rate change, variable rates will improve the 3 stream program's efficiency).</p> <p><u>Bulky Items:</u> Residents can set out bulky items for curbside collection through an on-call fee based service.</p> <p><u>Overflow Trash:</u> Two options for overflow trash are included 1) a tag / bag program in which all overflow items must have a pre-paid tag to be collected or 2) overflow trash is not collected and must be self hauled to the landfill</p> <p><u>Illegal Dumping:</u> Illegal dumping is a perceived concern of PAYT- EI research shows that PAYT generally does not increase illegal dumping.</p>
Implementation Steps – 1-6 months	<ul style="list-style-type: none"> • Work with 'champion' on County Council for PAYT and within DEM to educate the County about PAYT and help bring the option forward • Discussions with solid waste staff, DEM staff , mayor's staff, city council • Discuss options pilot program – possibly in conjunction with the 3-Can Plan pilot area • Refine the PAYT implementation plan based on County feedback • Review current billing system and plan on adjustments • Set-out survey to refine cart and billing estimations
Implementation Steps- <i>Political</i>	<ul style="list-style-type: none"> • Work with elected officials, county staff, to gather buy-in • Public outreach/education including town-hall style meetings
Implementation Steps – 6 - 9 months (if Ok'd by county council, citizens)	<ul style="list-style-type: none"> • Complete rate / cart estimations • Review routing; train staff • Continue education on program / container selection by residents • Order containers • Train temporary staff for billing data entry • Begin reprogramming billing
Implementation Steps – 9 - 12 months	<ul style="list-style-type: none"> • Container assembly • Finalize billing data entry and reprogramming

PAYT Rate Incentives Details	Description
	<ul style="list-style-type: none"> · Container delivery · Change rates / bills · Continued Education · Begin PAYT program · Cart switch outs (first three months of program operation) · Phone bank to answer HH questions (first 6 months) · Monitor / refine / track

Beyond Pay-As-You-Throw

Universal refuse collection

Universal refuse collection requires that all eligible households enroll and pay for curbside waste services. According to the Maui County refuse supervisor, approximately 20% of the homes on current refuse routes do not subscribe to refuse pick up service. A requirement that all eligible residences contract and pay for solid waste services is common throughout the United States and is typically enacted through an ordinance or code. The ordinance should include a clear enforcement mechanism which provides the regulatory authority (in this case Maui County) with the ability to assess fines or other penalties. A few of the advantages and considerations involved with Universal Refuse Collection are displayed in the figure below:

Advantages	Considerations
<p>Can generate additional revenues for the county (by collecting payment from the 20% not paying for service)</p> <p>Often included in a PAYT programs throughout the US</p> <p>If all households are paying for service the department can increase their economies of scale and potentially reduce the per household cost of service</p> <p>Does not require additional staff</p> <p>Can lead to increased diversion (if coupled with embedded recycling / organics / PAYT)</p>	<p>Second homeowners and owners/renters of residences that are often unoccupied may be resistant to this program</p> <p>An clear enforcement mechanism is needed</p> <p>Payments for service can be linked with other utilities (i.e. water) and service can be discontinued for lack of payment</p> <p>Some residents tend not to support any mandates</p>

4. PAYT Rate Computations

Setting rates to incentivize customer behaviors while covering costs and maintaining revenues is a one of the most important aspects of a PAYT program. The rates charged to customers must, among others items, cover the costs to get to the door (the highest cost for the County), the incremental cost of additional trash (a much lower cost to the County), and the embedded cost of the recycling and yard waste program (the Three-Can Plan, including funding the carts).

Under PAYT the challenge is to set the base fee and the incremental cost of additional trash to balance two objectives. While incremental amounts of trash do not cost the County significantly more to collect, the new rates must be designed as an economic signal to the rate payer.¹⁴ The base rate will vary depending on the County's particular costs, but an incremental price increase for additional units of trash of 80% is recommended. This value – 80% -- is based on statistical studies¹⁵ that balance two objectives: **1)** providing a strong recycling incentive, and this value was found to provide almost the same recycling incentive to households as rates that double for double the service (100% increment); and **2)** backing off from very aggressive rates to recognize the fact that the largest cost in providing trash or recycling service is getting the truck to the door – arguing for flatter rates. This differential tries to provide incentives, but also help decrease the risk of not covering fixed costs of the operations.

Revenue Requirements:

Each of the rate scenarios is designed to raise exactly the same amount of revenue from the average household - **\$26.70 / household / month**. This figure is computed to incorporate the new recycling and yard waste collection services under the Three Can plan, plus a monthly amount designed to help purchase the new containers for use by households, in addition to the current rate of \$18 / household / month¹⁶.

Cart Distributions:

The subscription outcomes (what size cart a household will sign-up for) are a critical determinant in the rate computations. Where Maui households land in their subscription need (and what the new rates will be) will depend on decisions related to the pricing, impacts from the new recycling program and the impacts from the new yard waste program. The cart distribution estimates are based on the results of the residential web-survey and the historical data from the County on households serviced and tons collected. Two scenarios are presented:

Scenario 1 - Conservative: Includes the curbside yard waste and recycling impact, the impact of variable pricing / PAYT on trash disposal and diversion, and a conservative impact of recycling and organics collection and a conservative estimate of can 'stuffing'¹⁷.

¹⁴ Or else no behavior change is motivated and the system might as well have flat rates – no impact is achieved.

¹⁵ See Skumatz, Lisa A., "PAYT Frequently Asked Questions" on www.paytinfo.org or numerous articles in *Resource Recycling*. These analyses were based on data from hundreds of PAYT communities across the US.

¹⁶ If Maui county has more refined estimates of the new monthly rates for households under the three can plan the rate scenarios can be re-ran. The monthly revenue requirement was based on: 1) EI data on the average cost to run a curbside recycling program 2) the average cost to operate a curbside yard waste collection program and 3) a 60-month amortization for the new cart purchases.

¹⁷ Under PAYT residential generators will compact trash in order to make it fit the subscribed cart level. This effect (sometimes referred to as the "Seattle Stomp" in the literature) will further shift subscription levels downward. Residents that generate 75 gallons of trash on average may tend to subscribe to a 64-gallon cart and compact their materials to fit into the smaller container.

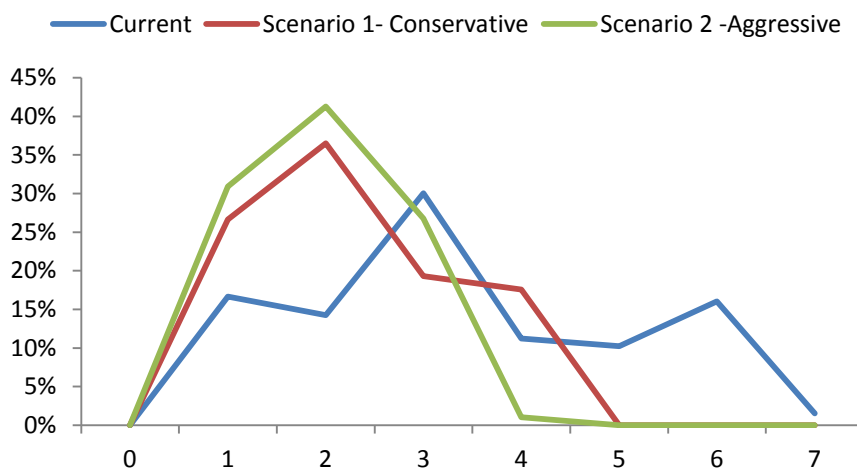
Scenario 2- Aggressive: Same as scenario 1 with a more aggressive recycling and organics impact and a greater level of cart ‘stuffing’ by households.

The different columns within each scenario represent different possible outcomes for how much service the City households need. Rate distributions are displayed based on subscription levels. Figure 4.1 displays the distributions under each scenario and Figure 4.1 displays the distributions graphically, note how the residents shift from the larger subscription levels to the lower subscription levels in the two scenarios. This shift plays an integral role in the rate scenarios, the more households on lower subscription levels /rates, the higher the per household monthly rate.

Figure 4.1: Estimated Cart Distributions

Subscriptions	Scenario 1	Scenario 2
<i>Units</i>	<i>Pct of HHs</i>	<i>Pct of HHs</i>
1 (32 gallons)	27%	31%
2 (64-gallons)	36%	41%
3 (96-gallons)	19%	27%
4 (128- gallons)	18%	1%

Figure 4.2: Estimated Cart Distributions



4.1: Rate Scenarios

Finally, there are two rate structure scenarios presented below.

Rate Structure A: This scenario presents the rates described above – 80% extra for double the service (64 gallons are 80% more than 32 gallons), and that rate differential (in dollar terms) represents the difference for each additional 32 gallons to include the service levels available including 32, 64, 96, and 128 (a 96 gallon cart and a 32 gallon cart for high generators). The rates are displayed for both of the cart distribution scenarios.

Rate Structure B: This other structure option embeds a \$10¹⁸ fee in the property tax (or a “generator” or “environmental” fee), which assures that base amount is paid by each property holder. This represents a share of the cost of “getting the truck to the door”. Then, the additional cost for providing service is distributed as multiples of the service level. In this case, *beyond the \$10 base fee*, twice the service is charged at twice the increment. This increment then repeats for each additional service level. The figures in the table represent the total cost for each service level, including the generator fee.

Figure 4.3: Rate Structure A: No Base Fee (Note: all rates are rounded to the nearest \$.25)

		Rate diff'l==>	Scenario 1 – 80% Conservative		Scenario 2 – 80% Aggressive	
CAN SIZE / SERVICE LEVEL	Goal AVERAGE BILL level=>		\$26.70	% of HH	\$26.70	% of HH
32	gallons		\$13.25	27%	\$15.00	31%
64	gallons		\$23.75	36%	\$27.00	41%
96	gallons		\$34.25	19%	\$39.00	27%
128	gallons		\$45.00	18%	\$51.00	1%
Avg 30-g Can Equivs Gals/hh (calc)			2.4 72.9		2.0 63.3	

Figure 4.4: Rate Structure B: \$10.00 Base Fee (Note: all rates are rounded to the nearest \$.25)

		Rate diff'l==>	100% Scenario 1 - Conservative		100% Scenario 2 - Aggressive	
CAN SIZE / SERVICE LEVEL	Base / program fee level/hh=>		\$10.00		\$10.00	
CAN SIZE / SERVICE LEVEL	Goal AVERAGE BILL level=>		\$26.70	% of HH	\$26.70	% of HH
32	gallons		\$17.25	27%	\$18.50	31%
64	gallons		\$24.75	36%	\$27.00	41%
96	gallons		\$32.00	19%	\$35.25	27%
128	gallons		\$39.25	18%	\$43.75	1%
Avg 30-g Can Equivs Gals/hh (calc)			2.28 72.9		2.00 64.0	

Figure 4.5 displays the self-reported (from the survey) estimates of which size cart residents thought they subscribe to under a PAYT program. The responses from the survey were skewed toward the 32-gallon choice compared to the modeled cart distributions and are closer to Scenario 2- the aggressive model.

Figure 4.4: Rate Structure C: Self-Reported Cart Sizes from Survey (Note: all rates are rounded to the nearest \$.25)

		Rate diff'l==>	80% Scenario 3 – Survey	
CAN SIZE / SERVICE LEVEL	Goal AVERAGE BILL level=>		\$26.70	% of HH
32	gallons		\$15.50	44%
64	gallons		\$28.00	33%
96	gallons		\$40.25	22%
128	gallons		\$52.75	4%

Avg 30-g Can Equivs	1.90
Gals/hh (calc)	60.7

5. Residential Survey

As a way to better understand refuse and recycling behaviors and gain insight regarding the opinions, barriers, and support / opposition to various programs in Maui County, EI worked with the County to conduct a residential web survey. The survey was advertised broadly to the community and residents were directed to a web site to complete the survey. A total of 1,067 surveys were started and 81.8% (873) of the surveys were fully completed. This number of responses would generally equate to a 95% confidence interval of +/-3.3%.¹⁹. A summary of the survey results, the full results, and the verbatim open-ended answers follow.

5.1: Summary

Variable Rates for Trash Collection

There is strong support among Maui County residents for a variable rate or pay-as-you-throw program: The majority of residents (66%) reported that they would prefer a variable rate structure over a flat fee for refuse collection. Nearly three-quarters of respondents (74%) reported that they would support a pay-as-you-throw program with the majority (55%) reporting they would *strongly support* PAYT. Only 11% of the respondents reported they would *oppose* a PAYT program.

Refuse and Recycling Service

Almost all residents have curbside refuse service, barely any have curbside recycling: The vast majority of respondents reported that they have their refuse collected at the curb; only 3% reported that they self-haul all their refuse. Conversely, only 2% of respondents reported that they have their recyclables collected at the curb.

Residents are extremely satisfied with refuse collection and less satisfied with the recycling drop-offs: The majority of respondents (72%) reported they are *extremely* or *very satisfied* with the refuse collection. Less than half (45%) of the respondents were *extremely* or *very satisfied* with the recycling drop-off centers.

¹⁹ It is important to note that the survey was not sent to a random sample but instead advertised broadly to the entire community – thus although we can report this confidence interval for the broadly advertised survey with a very high n value– the survey would not be expected to be statistically representative of the entire county population. However, the high response rate can provide strong data. To check representativeness, we compared results of the survey to census data for Maui County. However, Key occupant demographics align fairly well. The survey finds 22% under 18, and the census reports 23% in the County. The persons per household in the survey are 3.0, vs. 2.9 in census. Survey respondents are more likely over 65 than census (16%+ vs. 13%). However, survey respondents are more likely home owners (74% survey/ 59% census), and not multifamily residents (8% vs. 39%). Due to the way the survey was advertised it is assumed that the residents who had strong feelings about trash or recycling services in the county (or those that were enticed by the drawing for a prize) are those that were most likely to complete it. Thus, although we would expect, with the reported confidence intervals, for a similarly advertised survey to return the same results 95 out of 100 times, we cannot report with the same confidence intervals what the results would be for a survey that is assigned to a randomly selected sample from the population (the randomly selected sample might have more households that didn't see the survey outreach, households who don't care enough about trash services to do a survey, those who don't have easy access to a computer, etc.).

Drop-box recycling and HI5 redemption centers are popular programs and should be continued:

Three-quarters of respondents reported that they recycle materials at the drop-box recycling areas and nearly three-fifths (59%) reported that they bring materials to HI-5 centers. Over half of the respondents reported that they visit the drop-box recycling centers at least once a month (13% said they never visit and 3% had never heard of the Drop-Box centers).

Additional recycling programs should focus on fibers and plastic: Fiber based materials (paper / junk mail, OCC, and magazines) along with plastic packaging and plastic containers) were reported as the recyclable materials that make up the largest portion of resident's waste stream and should be targeted in future programs. Aluminum and glass were less likely to be reported as remaining in the waste stream.

Organics Service

Back-yard composting is very popular in Maui County: Slightly over two-fifths (41%) of the respondents reported that they are composting organic materials in their yards (over half reported they send their food scraps down in-sink garbage disposals).

Despite the high proportion of residents composting at home, organic materials make up a large portion of the disposed waste stream and should be targeted to increase diversion: Wood waste, yard waste, and food scraps were reported by around 40% of residents as the materials making up the largest portion of their waste stream.

Despite the large portion of organic materials in the waste stream, curbside organics collection and composting were not reported to be very important program considerations: When asked to rank the importance of various programs and solid waste system attributes on a 1 to 5 scale (1 very unimportant, 5 very important, 3 neutral) the weighted average score for "...a professional compost facility" was only 2.5 and the score for "Convenience of curbside pick-up of yard trimmings" was only 2.6 (conversely recycling received scores of 3.5 to 4 on the same scale).

Education and Outreach

If no changes are made to the solid waste system, future outreach should target three main topics: Based on the survey responses outreach should focus on the importance/ value of diverting organics from the landfill (organics diversion was not ranked as very important), what happens to the recyclables after they are collected (nearly one-fifth of respondents reported that not being sure that materials actually get recycled was a major barrier) and how to recycle fiber materials (paper, junk mail, OCC were some of the major materials in the residential waste streams.)

Existing outreach on where to recycle has been successful and future outreach should focus on motivating residents to recycle more by promoting two major benefits of diversion: reducing materials to the landfill and saving natural resources: The vast majority of residents reported that recycling is important because it saves space in the landfill and it conserves natural resources. Future outreach should capitalize on these motivations to encourage more diversion. Only 1% of respondents thought that recycling was not important and likewise, only 1% reported it "is a waste of time to recycle" and "I don't want to recycle". Only 6% of respondents reported that not knowing where to recycle was a barrier, indicating that education on where to recycle has been effective.

The Three Can Plan

The Three-Can Plan is strongly supported by Maui residents and is predicted to increase diversion: The vast majority of respondents (85%) reported that they would like to see the Three-Can plan implemented 'as soon as possible' and 74% believed that they would recycle more under the proposed program. Only 4% of respondents reported that they would 'never' like to see the Three-Can plan implemented.

The Three Can plan will remove the major barriers to recycling in Maui County: Two largest barriers to recycling were reported to be the inconvenience of the Drop-Box centers (57%) and the cost of curbside service (34%). The Three Can plan as designed will remove these barriers by providing convenient comprehensive curbside recycling embedded in the trash rates.

Despite strong support for the Three-Can plan program itself, residents are mixed on whether they are willing to pay more for the expanded services: Just under two-fifths (38%) of respondents reported that they would be willing to pay more for the Three-Can plan, one third said they were not willing to pay more, and 31% reported they were not sure if they would or not. Those that were willing to pay more were asked how much more and the average response was a substantial \$10.50 / month. It is also worth noting that when asked to rank the importance of many factors on a 1 to 5 scale (1 very unimportant, 5 very important, 3 neutral) the 'Ability to recycle many materials' and the 'Ability to recycle at the curb' were ranked as more important by residents than 'Minimizing trash bills / cost'.

5.2: Full Survey Results

1. Where did you hear about this survey?

Answer Options	Response Percent	Response Count
I read about it in the "Talking Trash" newsletter that comes with my refuse bill	46.2%	330
Coconut Wireless (friend)	28.0%	200
County Website	21.4%	153
At the recycling booth at an event or fair	4.5%	32
Other (please specify)		360
answered question		715

2. Who collects your rubbish at the curb?

Answer Options	Response Percent	Response Count
County Refuse Workers, I subscribe for county refuse service	83.5%	800
A private hauler, I live in a gated community	3.2%	31
No one, I self haul my rubbish to the landfill	3.3%	32
No one, I take my rubbish to work or public dumpsters	2.0%	19
I live in a condo and a waste hauler picks up the rubbish	7.9%	76
Other (please specify)		28
answered question		958

3. How much rubbish does your household produce every week?

Answer Options	Response Percent	Response Count
1 can = 32 gallon	37.5%	342
2 cans = 64 gallons	22.1%	201
3 cans or one automated container = 96 gallons	26.1%	238
4 cans	2.4%	22
5 cans	1.2%	11
6 cans or 2 automated 96 gallon containers	10.6%	97
Other (please specify)		115
<i>answered question</i>		911

4. What type of containers do you use for the rubbish you set out at the curb?

Answer Options	Response Percent	Response Count
96 gallon wheeled cart provided by the county	69.4%	659
In 32 gallon cans that I provide	16.8%	160
I use the dumpsters at my condo, apartment, work, or public dumpsters	9.7%	92
We self haul our rubbish	4.1%	39
Other (please specify)		27
<i>answered question</i>		950

Only respondents with 96-gallon containers provided by the County were asked the following two questions:

5. On average, how full is your automated cart when you set it out for collection?

Percent Full (on average)							
Answer Options	Barely any trash (0-10%)	About a quarter full (25%)	Around half full (50%)	About three-quarters full (75%)	Full (100%)	Overflowing (More than 100%)	Response Count
First day of pick-up	7%	15%	25%	22%	28%	3%	658
Second day of pick-up	15%	20%	26%	19%	18%	2%	587

Average Weighted average showing average percent full across all respondents)

	Percent Full (Weighted Avg.)
First day of pick-up	64%
Second day of pick-up ²⁰	40%

6. How often do you set out your automated cart at the curb?

²⁰ The weighted average includes respondents who reported they did not set out trash twice a week for collection.

Answer Options	Response Percent	Response Count
Twice a week (every pick-up)	68.2%	451
Every week (every other pick-up)	26.0%	172
Every other week	3.5%	23
Once a month	1.2%	8
Every other month	0.0%	0
Rarely	0.2%	1
Never	0.9%	6
answered question		661

Only respondents with 32-gallon containers that they provide were asked the following two questions:

7. How many 32-gallon trash cans do you normally set out weekly?

Answer Options	Response Percent	Response Count
One	44.1%	98
Two	21.2%	47
Three	11.3%	25
Four	5.4%	12
Five	1.4%	3
Six	0.9%	2

8. On average, how full is each 32 gallon trash can?

Answer Options	N/A	Barely any trash (0-10%)	About a quarter full (25%)	Around half full (50%)	About three-quarters full (75%)	Full (100%)	Overflowing (More than 100%)	Response Count
Container One	28	5%	7%	13%	19%	51%	6%	237
Container Two	29	3%	5%	5%	23%	57%	7%	129
Container Three	31	4%	4%	12%	35%	35%	10%	80
Container Four	31	8%	8%	8%	25%	38%	13%	55
Container Five	31	7%	7%	21%	36%	21%	7%	44
Container Six	31	7%	21%	14%	29%	21%	7%	44
answered question								243

All respondents were asked the remainder of the survey questions:

9. Does your household recycle? (Please select all that apply)

Answer Options	Response Percent	Response Count
No, we do not recycle	4.4%	40
Yes, we recycle, cardboard, newspaper, plastic and glass at a County Dropbox Recycling Center	74.6%	677
Yes, we recycle HI5 containers	58.8%	534
Yes, I take my recyclables to work	2.0%	18
Yes, we pay for recycling collection at the curb	2.4%	22
Yes, we give our HI5 materials to someone / group to raise money	10.5%	95

Other, please specify	68
<i>answered question</i>	908

10. What do you do with your corrugated cardboard?

Answer Options	Response Percent	Response Count
Put in rubbish cart	28.3%	248
I recycle my cardboard	74.3%	651
Other (please specify)		39
<i>answered question</i>		876

12. If you currently have curbside recycling collection, who picks it up?

Answer Options	Response Percent	Response Count
A private company that I pay directly	2.6%	21
A private company that my homeowners or condominium association pays for	3.7%	30
I don't have recycling collection at my house	93.9%	754
About how much do you pay for this service, per month?		16
<i>answered question</i>		803

13. How often do you take recyclables (non HI-5) to the County Recycling Drop-Box Centers?

Answer Options	Response Percent	Response Count
About once a week or more	6.3%	56
A few times a month	20.1%	180
Once a month	29.6%	265
Every other month	13.6%	122
A few times a year	13.5%	121
Once a year	2.7%	24
Never	13.2%	118
I have never heard of the Recycling Dropbox Center	3.1%	28
<i>answered question</i>		895

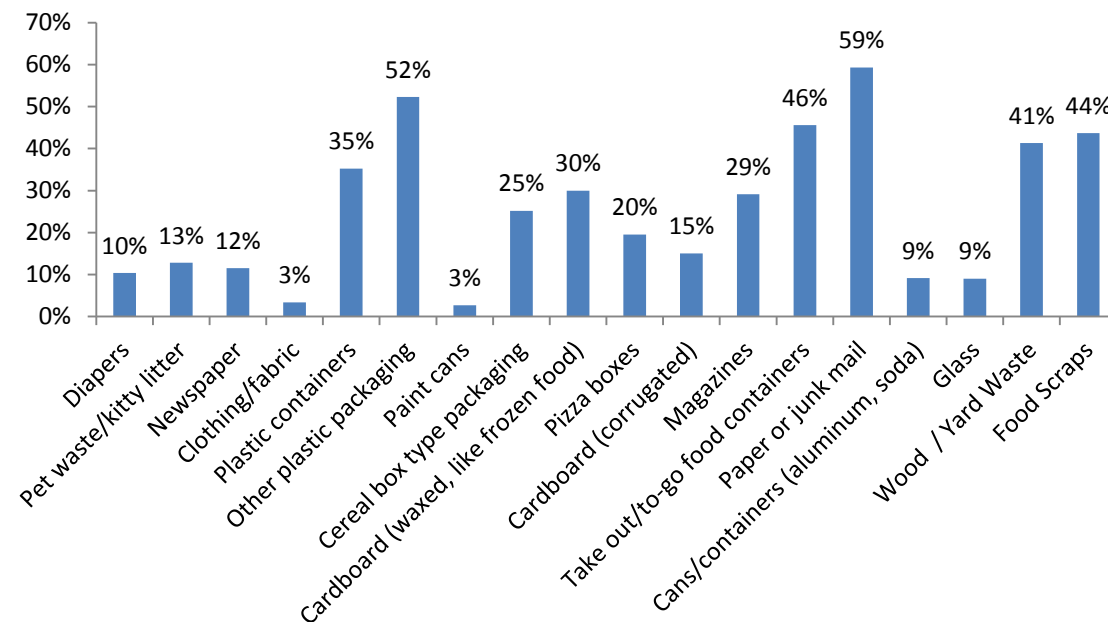
14. How often do you redeem your HI5 containers?

Answer Options	Response Percent	Response Count
About once a week or more	2.4%	22
A few times a month	11.4%	103
Once a month	32.5%	294
Several times a year	27.9%	253
Once a year	1.5%	14
I give them away so I don't know	12.1%	110
Never	12.1%	110
<i>answered question</i>		906

15. I redeem HI5 containers that I get from the following sources (Check all that apply)...

Answer Options	Response Percent	Response Count
My home	93.7%	696
My work	21.9%	163
My neighbors or family members	10.8%	80
Public recycling receptacles	4.7%	35
Public trash cans or dumpsters	2.7%	20
Other (please specify)		50
<i>answered question</i>		743

16. Which of the following materials still take up lots of space in your garbage after you recycle and / or compost?



17. Recycling is important because (check all that apply)..

Answer Options	Response Percent	Response Count
I don't believe recycling is important	1.2%	11
It conserves natural resources	87.8%	809
It saves landfill space	93.9%	865
It cuts down on carbon emissions/greenhouse gasses	74.3%	684
It can save the county money on landfilling costs	78.1%	719
Other (please specify)		105
<i>answered question</i>		921

18. What do you believe makes it hard for you or your household to recycle on Maui? (Please select all that apply)

Answer Options	Response Percent	Response Count
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It is too expensive to sign-up for private curbside recycling service	34.3%	294
Nothing, I do not want to recycle	1.5%	13
I often forget to recycle	7.2%	62
It takes up too much space	25.0%	214
I am not sure where I can recycle	6.2%	53
It is inconvenient to bring materials to the Drop-Off Center	57.3%	491
I am not sure the materials really get recycled anyway	18.8%	161
It is a waste of time to recycle	1.3%	11
Nothing, it is easy to recycle	29.8%	255
It is too messy	14.0%	120
Our family does not generate any recyclables	0.1%	1
I am not sure what I can recycle	15.8%	135
Recycling does not make sense in our community	1.1%	9
Other (please specify)		195
answered question		857

19. When you have grass clippings, leaves, garden or tree trimmings what do you do with the waste materials?

Answer Options	Put in garbage can	Leave on grass	Bring to drop-off center	Landscaper removes	Compost in back yard	No materials to speak of	Response Count
Grass clippings	27%	31%	4%	12%	28%	9%	890
Leaves	40%	8%	5%	12%	33%	10%	887
Garden trimmings	45%	3%	8%	11%	32%	9%	891
Tree trimmings	41%	2%	16%	16%	23%	8%	881
answered question							908

20. Does your household do any home composting?

Answer Options	Response Percent	Response Count
Yes	41.3%	378
No	58.8%	539
If yes, do you vermicompost?		217
answered question		916

21. Do you use the garbage disposal for kitchen scraps?

Answer Options	Response Percent	Response Count
Yes	54.5%	501
No	28.1%	258
We do not have a garbage disposal	17.4%	160
answered question		919

22. What percentage of your food scraps do you estimate you put down the in-sink garbage disposal?

Answer Options	Response Percent	Response Count
100%- All of them	3.4%	17
75%- Most of them	28.9%	145
50%- About half	21.7%	109
25%- Only a small portion	35.7%	179
0% - Very little	10.4%	52
<i>answered question</i>		502

23. Under the "3 Can Plan" which includes curbside recycling, do you believe your household would...

Answer Options	Response Percent	Response Count
Recycle more than now	73.7%	662
Recycle the same as now	24.3%	218
Recycle less than now	0.4%	4
We won't recycle	0.9%	8
Not sure	2.9%	26
<i>answered question</i>		898

24. What describes your household the best? Under the '3 Can Plan' I will put my HI5 containers...

Answer Options	Response Percent	Response Count
I would put my HI-5 containers in with all the other recyclables at the curb	51.4%	430
I will continue to redeem my HI5 containers and get 5¢	48.6%	407
Other (please specify)		62
<i>answered question</i>		837

25. The '3-Can Plan' includes curbside recycling and curbside compost collection with your rubbish collection. Would you be willing to pay more to get this service in the future?

Answer Options	Response Percent	Response Count
Yes	37.7%	337
No	33.5%	300
Don't know	30.9%	277
<i>answered question</i>		895

26. If yes, how much more, per month, would you be willing to pay for this service?

Average	\$10.50
Median	\$10.00
Max	\$50.00
Min	\$0

27. I would like to see the 3 Can Plan implemented county-wide...

Answer Options	Response Percent	Response Count
As soon as possible	84.6%	751
3 years	2.3%	20
6 years	0.5%	4
Never, I do not like the plan	3.6%	32
Not sure	9.7%	86
Comments?		212
<i>answered question</i>		888

28. As part of the new "3 Can Plan," if the County let you choose the size of your rubbish cart, what size RUBBISH CART do you predict would meet your household needs on an average week? Remember, you will also be given two other 96 gallon carts, one for recyclables and one for compost.

Answer Options	Response Percent	Response Count
1 mini can/week (less than 1 bag trash)	8.6%	75
1 32 gal can/week (1-2 large trash bags)	35.7%	311
1 64 gal can/week (2-4 large trash bags)	32.6%	284
1 96 gal can/week (4-6 large trash bags)	21.5%	187
More than 1 96-gal/week (over 6 large trash bags)	3.9%	34
Other (please specify)		52
<i>answered question</i>		871

29. How satisfied are you with the following services?

Answer Options	Extremel y satisfie d	Very satisfie d	Somewha t satisfied	Neither satisfie d nor dissatisfie d	Very dissatisfie d	Extremely dissatisfie d	Don't know	Response Count
County refuse collection service	36%	36%	14%	6%	1%	1%	6%	857
Recycling drop-off centers	15%	30%	30%	12%	4%	2%	6%	858
HI5 Redemption centers	16%	29%	26%	12%	5%	2%	11%	853
Scrap metal facilities	6%	9%	13%	17%	4%	3%	48%	838
Appliance pick-up program	6%	9%	12%	16%	8%	4%	45%	844
Appliance drop-off program	5%	7%	10%	17%	5%	2%	55%	836
Abandoned vehicle removal program	7%	10%	13%	16%	7%	4%	44%	842
County composting facility (at the landfill)	10%	17%	12%	15%	3%	1%	41%	834
Electronic recycling	8%	14%	15%	15%	6%	3%	40%	847
Alohashares.org (donate reusable goods)	8%	11%	7%	14%	1%	1%	59%	833
County Landfill Service	15%	24%	16%	16%	1%	1%	28%	837
Refuse Billing and	18%	25%	16%	18%	3%	2%	19%	835

Payment Process								
Ease of locating refuse and recycling info on the county website (www.mauicounty.gov)	14%	25%	17%	16%	4%	2%	23%	844
<i>answered question</i>								873

30. How important are the following items to you? (where 1 is unimportant and 5 is very important)

Answer Options	1	2	3	4	5	Response Count	Weighted Avg.
High quality of service in trash collection	1%	2%	12%	28%	57%	863	2.9
Ability to recycle at the curb	4%	3%	9%	16%	69%	869	3.5
Ability to recycle many materials	2%	1%	4%	14%	80%	873	4.0
Take actions to preserve the environment	1%	1%	4%	11%	84%	874	4.2
Minimizing trash bills/cost	2%	3%	15%	21%	59%	865	3.0
Ability to control my trash costs	2%	3%	14%	24%	58%	860	2.9
Convenience of curbside pick-up of yard trimmings	13%	7%	15%	17%	49%	854	2.6
Curbside pick-up of appliances or large bulky items	4%	7%	19%	23%	46%	860	2.4
Ability to make sure my yard trimming and organics get composted at a professional compost facility.	10%	6%	16%	20%	47%	861	2.5
<i>answered question</i>							877

31. There are two common ways to pay for rubbish collection. Which system do you prefer?

Answer Options	Response Percent	Response Count
Flat fee where each household pays the same rate regardless of how much they dispose.	34.0%	291
Variable rate where each household is charged based only on how much rubbish they dispose.	66.0%	565
<i>answered question</i>		856

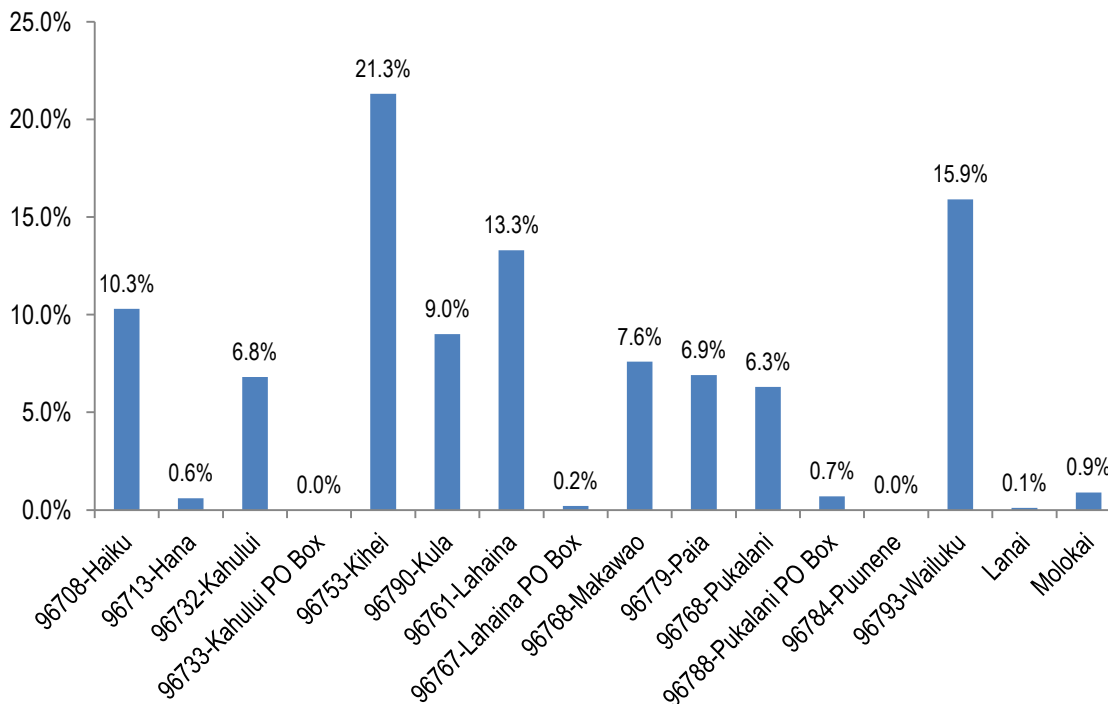
32. If the county were to offer a variable rate program for refuse collection (where households are charged more or less based on what size trash cart they use) would you support or oppose this type of program? Under this program, all households are provided with curbside recycling and yard waste collection as a way to reduce trash disposal costs.

Answer Options	Response Percent	Response Count
Strongly support	55.3%	476
Somewhat support	18.6%	160
Neutral	14.2%	122
Somewhat oppose	4.8%	41
Strongly oppose	5.6%	48
Not sure	2.4%	21
Comments?		175
<i>answered question</i>		860

33. If the County offered a large bulky item pick-up service (for example a sofa), what is the chance that you would use for the service if it cost....

Answer Options	Definitely (100%)	Most likely would (60%-99%)	Might or might not (40%-59%)	Probably would not (1%-39%)	Definitely would not (0%)	N/A I would never use the service	Response Count
\$1- \$5 per pick-up	78%	7%	5%	2%	1%	8%	779
\$5 - \$7 per pick up	59%	20%	7%	3%	2%	9%	738
\$8 - \$10 per pick-up	47%	17%	18%	5%	4%	10%	757
\$10 - \$12 per pick-up	34%	18%	17%	13%	7%	11%	752
More than \$12 per pick-up	17%	14%	26%	16%	14%	14%	748
answered question							857

34. What part of the County do you live in?



35. Which of the following housing types best describes your home?

Answer Options	Response Percent	Response Count
Single family detached house	61.7%	518
Single family with an ohana	30.0%	252
Condo with 2-4 units	2.0%	17
Condo with 5 or more units	6.2%	52
Other (please describe)		37
answered question		839

36. Do you or members of your house own or do you rent?

Answer Options	Response Percent	Response Count
Own	74.4%	620
Rent/lease	25.6%	213
<i>answered question</i>		833

37. How long have you lived in Maui County

Answer Options	Response Percent	Response Count
Less than 1 year	3.5%	30
1 to 2 years	5.0%	43
3 to 5 years	11.6%	100
6 to 8 years	9.4%	81
8 to 12 years	12.9%	111
Over 12 years	57.6%	496
<i>answered question</i>		861

38. Including yourself, how many people normally live in the household on a full time basis? (exclude children away at college or military, include all members of the household whether they are related to you or not)

Answer Options						
18 years of older	1	2	3	4	5	Response Count
Number of people	13%	55%	17%	9%	6%	834
6 to 17 years olds						
Number of people	57%	31%	10%	1%	1%	237
5 or younger						
Number of people	65%	30%	2%	1%	1%	135
<i>answered question</i>						845

39. How old is the head of household?

Answer Options	Response Percent	Response Count
Under 25	0.7%	6
25 to 34	10.6%	91
35 to 44	19.3%	166
45 to 54	24.1%	208
55 to 59	13.9%	120
60 to 64	14.5%	125
65 years or older	16.5%	142
Don't know	0.5%	4
<i>answered question</i>		862

Appendix 1: PAYT and Illegal Dumping

Illegal dumping is one of the first worries when communities consider going to PAYT and was one of the major perceived barriers mentioned in the survey responses. However, in reality, dumping does not appear to be a serious problem, based on research in PAYT communities. Illegal dumping exists in virtually every community, including Maui County, now -- the question is whether illegal dumping will increase significantly in response to a new PAYT system.²¹ One complicating issue is that very few communities have quantitative information on how big a problem illegal dumping is *before* they put in new rates – making it tough to compare changes. However, because illegal dumping is almost always a fear, and because people will be looking for dumping, illegal dumping will be noticed, whether or not it actually increases over pre-PAYT levels.

We have conducted several studies attempting to address and assess the illegal dumping issue, and the conclusions are:

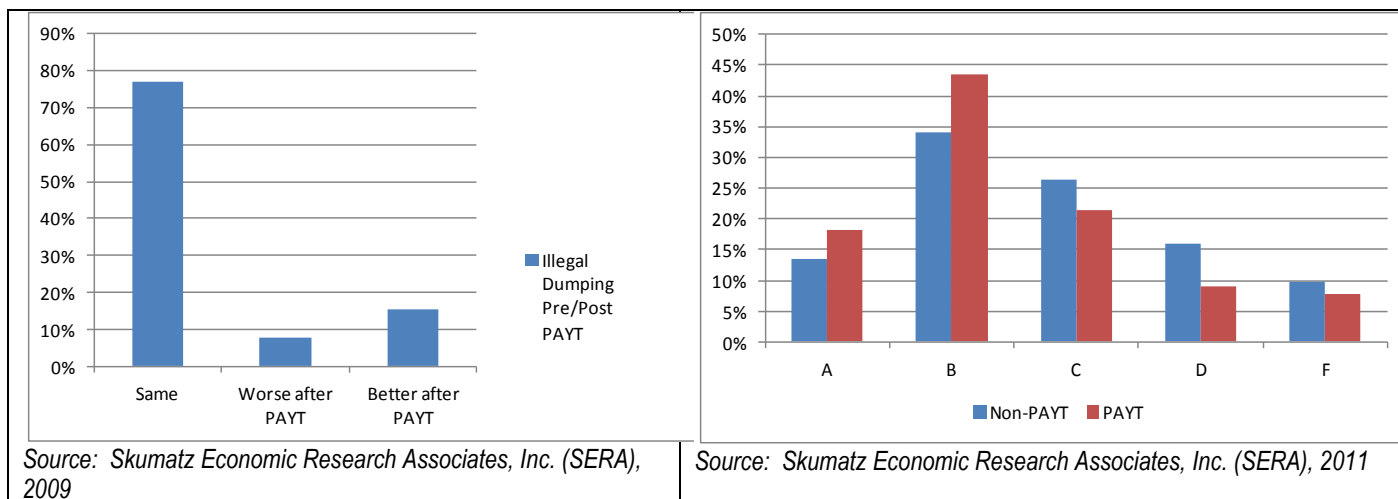
Bigger fear than reality – Recent Surveys show Fewer than 10% of communities reported Increases after PAYT: Our research showed that, although illegal dumping is the biggest fear up-front, the fear is not realistic. In several surveys, we asked PAYT communities to compare illegal dumping “pre- and post” PAYT implementation. Figures 1 and 2 below illustrate these results; the first was gathered in 2009, and the second in 2011. “A” means an A-grade, no problem; “F” means “failure / large problem”. In most cases in Figure 1, the grades were “B” or “C” levels of illegal dumping, remaining the same after PAYT. The average “score” for illegal dumping was 2.6 for PAYT and 2.3 for non-PAYT communities, about B- for both groups, and not very different.

A survey of Massachusetts communities also indicated that illegal dumping was a much greater concern to local solid waste officials during planning of program modifications than during actual implementation; on a scale of 1-5 where 5 was very important, the average importance scores from 30 communities were 3 before implementation, and “during” implementation they were 2.²²

Figure 1: Comparison of Illegal Dumping Scores Pre/Post PAYT Implementation, Percent of Cities with Response	Figure 2: Comparison of Illegal Dumping Scores in PAYT vs. Non-PAYT Communities in the US, Percent of Cities
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²¹ Threats of illegal dumping by citizens have also sometimes delayed or derailed PAYT a program. A PAYT feasibility analysis EI staff conducted in Anchorage in the 1990s found this problem in a customer survey we conducted. The program was implemented about 10 years later, under a new initiative that involved considerable outreach.

²² From Skumatz, Van Dusen, and Carton, “Illegal Dumping: Incidence, Drivers, and Strategies”, Skumatz Economic Research Associates (SERA), Superior, .CO.



Low Incidence – Significant Illegal Dumping is Reported as a problem in less than ¼ of Communities: EI staff surveyed 1,000 communities across the US with pay-as-you-throw to uncover a wide range of metrics and data, including illegal dumping changes and impacts. The survey found that about 20% of the communities that adopted PAYT identified illegal dumping as an issue after implementation but that the problem was resolved after about 3 months. Several communities suggested doing visible enforcement if the problem did persist. The other 80% of communities surveyed reported that PAYT did not lead to increased incidences of illegal dumping, and all said illegal dumping should not be considered a barrier to PAYT. A Virginia community implementing a bag program conducted a survey of residents; 60% observed no increase in litter after implementation, 25% observed only a little increase, and 15% observed a lot. As far back as the 1980s, a survey of 10 Illinois communities raised illegal dumping problems with a score of 2.4 to 2.9 on a 5-point scale (5 denoted large problems).²³ Table 1 presents the results of early surveys of illegal dumping concerns (2001 and before).

Table 1: Surveys of PAYT Communities and Illegal Dumping²⁴

Survey Base	Total Responding on Illegal Dumping	Communities with Illegal Dumping Problems after PAYT
Iowa	70	39%
Wisconsin	206	32%
Massachusetts	34	27%
Massachusetts	8	38%
National (Blume)	14	58% (half significant problems, half minor problems)
SERA National	36	31% (60% were short term problems)

Illegal Dumping is Not Generally Caused by PAYT – 75% is commercial, not residential: Not much data is available on “sorts” of illegally-dumped material, but several mid-west and west coast studies EI staff found reported that 60-80% (75% in one study) of the illegally dumped material was construction & demolition, commercial, or organic materials. However, most of the communities

²³ Skumatz, Lisa A., Ph.D., “Volume-Based Rates in Solid Waste: Seattle’s Experience”, Skumatz Economic Research Associates, Inc., Superior, CO.

²⁴ Skumatz, Van Dusen, and Carton, “Illegal Dumping: Incidence, Drivers, and Strategies”, Skumatz Economic Research Associates (SERA), Superior, .CO.

did cite appliances as a source of concern for the non-commercial materials dumped. The majority of illegally dumped material is not residential in origin – indicating residential PAYT programs are not a large source of the problem.

Bulky Items Need to be Addressed as Part of a PAYT Program: Incorporating a bulky waste collection program (by appointment, limited number of “free bulky” tags, a charge per item, or other strategies), can go a long way toward reducing the potential illegal dumping problem, and helps make sure the PAYT program works for all residents, not just the “average” resident.

Neighbors putting trash in someone else’s cart is not an issue. Some citizens and city staff have mentioned a perceived concern that residents will put their trash their neighbors cans as a way to save money. EI contacted a number of communities that had recently adopted PAYT (within the last 24 months) to ask the program managers, haulers, and / or staff if they were observing increased incidence of neighbors using each other’s carts. The interviewees reported the following major findings:

- *If it is happening, it is unreported and not an issue.* If this is occurring, residents are putting extra trash in an under-filled cart and no one (the hauler, the household) know about it, and it doesn’t generally affect collection. One regional hauler reported that they thought that neighbors could be putting their trash in each other’s cart but that they very rarely received any complaints about it and that it was not an issue. In this situation, unless it is a repeated problem, the behavior does not cause any negative impacts for the resident or the hauler or the community.
- *Complaints are few and far between.* One city of 20,000 residents reported that over the last 12 months they have had one household complain about other people putting trash in their cart illegally. The household was located next to a bike path and a major intersection and the City suggested to the resident to keep her cart next to her house and away from the path unless it was trash day. Another smaller community (5K households) reported that they had a few complaints over the last year but they were all from the same two households. The other communities interviewed reported similar findings.
- *It is an easy fix.* To prevent the potential issue from occurring residents should be encouraged to keep their trash carts out of the street / off the curb and only wheel them out to the curb on the morning of their scheduled collection day.

PAYT Enforcement Strategies Vary: The illegal dumping problem can be addressed and can through a variety of enforcement strategies. Examples follow in Table 2.

Table 2: Summary of Pros / Cons of Illegal Dumping Strategies (Source: SERA; Skumatz, Van Dusen, Carton)

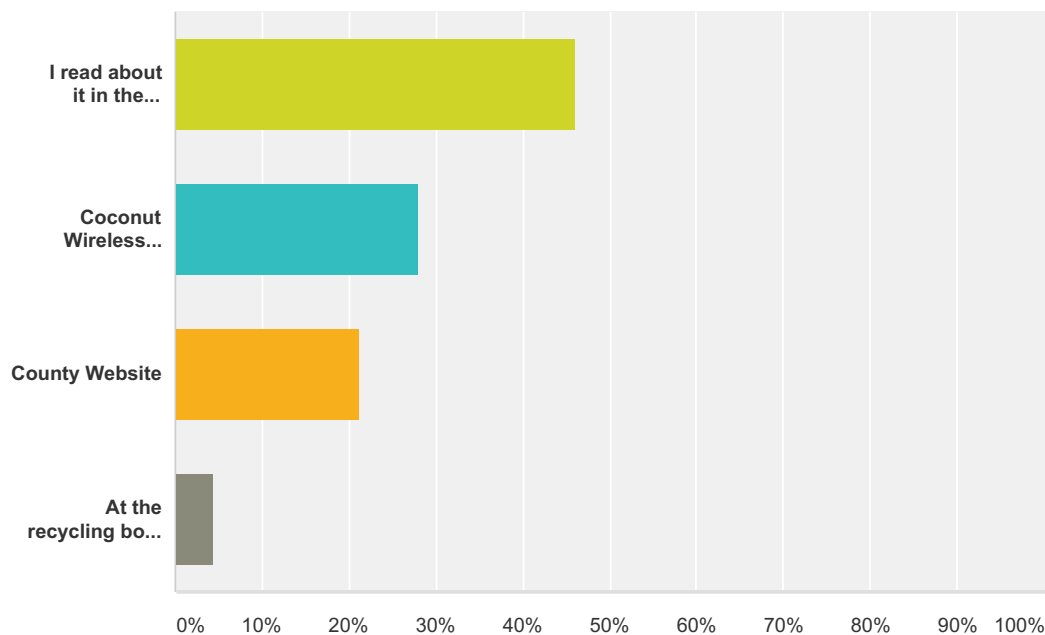
Strategy	Pros	Cons
Solid Waste Policy/Programs		
Universal collection – service “floor”	Preventative Easily administered (depending on billing system) Equitable Effective	Doesn’t target only violators, but if service floor is small (mini-can), burden is relatively small
Don’t ban without alternative	Preventative Educates consumers	Education needed Not inexpensive Unclear effectiveness
Bulky / white goods collection program	Targets difficult waste and one identified in illegal dumping stream Preventative	Expensive Reported as effective

Strategy	Pros	Cons
Education		
Signs	Often needed for laws / enforcement Inexpensive Hit target audience	No real-time hammer Less effective Can be reverse incentive
Stickers on dumpsters	Inexpensive	No real-time hammer Less effective
Community organization / neighborhood council	Workable if existing organization / structure Community pride element can exist	Hassle to set up from scratch Unclear effectiveness
Public humiliation (publishing name, visits from police)	Inexpensive	Judgment needed on appropriate degree, certainty of violation Can backfire Politically loaded Difficult to ID violators reliably
Physical barriers /Clean-ups		
Locks on dumpsters	Works well, clear signal	Sometimes leads to dumping outside / around dumpster, but works well over time
Clean-ups	Must happen anyway Reinforces community pride	Expensive No penalties for bad behavior
Enforcement		
Surveillance	Works well Only way to arrest someone	Expensive (low coverage)
Stings (target illegal haulers, pretend to be customers)	Works well Only way to arrest someone	Expensive (low coverage)
Fines / search	Targeted at offenders Provides funding source	Need proof – difficult (can't use envelope for ID in many locations unless specific law)
Bounty program	Targeted Funding source	Costs more to pay bounties Bigger net ("eyes" looking for offenders)
Ordinances		
Fines	Provides revenues Works reasonably well with small claims or other non-court system	Slow if standard court system Needs sufficient "proof"
Target landowner to pay clean-up cost	Covers costs Gets cleaned up Easy to find	Getting money can be slow Not always violator; not getting to cause of the problem
Target generator to pay clean-up costs	Covers costs Violators pay Holds generators responsible for using reputable hauler	Finding violator difficult Getting money can be slow Doesn't get to root of problem (violator)
Target dumper to pay clean-up costs	Covers costs Penalizes violator	Finding violator difficult Getting money can be slow

Summary: Invariably, one of the first questions municipalities ask about pay-as-you-throw is its impact on the incidence of increased illegal dumping. Overall, PAYT does *not* lead to increased illegal dumping. A series of surveys and interviews with hundreds of communities conducted over the past two decades by Econservation Institute staff have found that the vast majority of communities that adopt PAYT do not report increased incidences of illegal dumping. Communities report that illegal dumping is a “perceived” barrier and not an actual barrier. Although many communities report that they thought illegal dumping would increase with PAYT only a small portion actually do see increases. Virtually all of the communities that report an increase of illegal dumping after implementing PAYT also report that illegal dumping returns to pre-PAYT levels within one to three months

Q1 Where did you hear about this survey?

Answered: 715 Skipped: 352

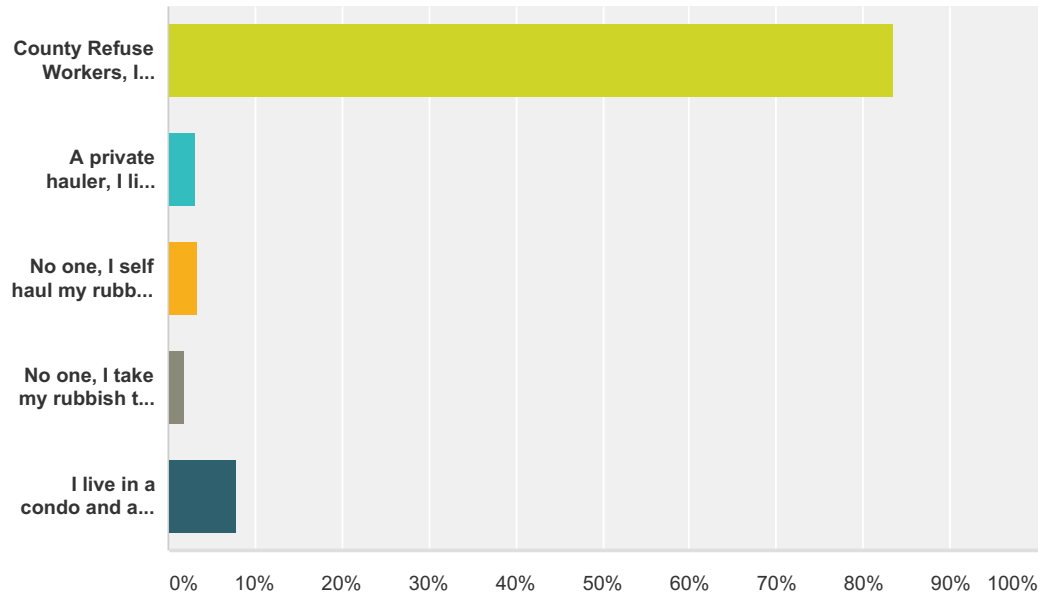


Answer Choices	Responses
I read about it in the "Talking Trash" newsletter that comes with my refuse bill	46.15% 330
Coconut Wireless (friend)	27.97% 200
County Website	21.40% 153
At the recycling booth at an event or fair	4.48% 32
Total	715

Q2 Who collects your rubbish at the curb?

Answered: 958 Skipped: 109

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

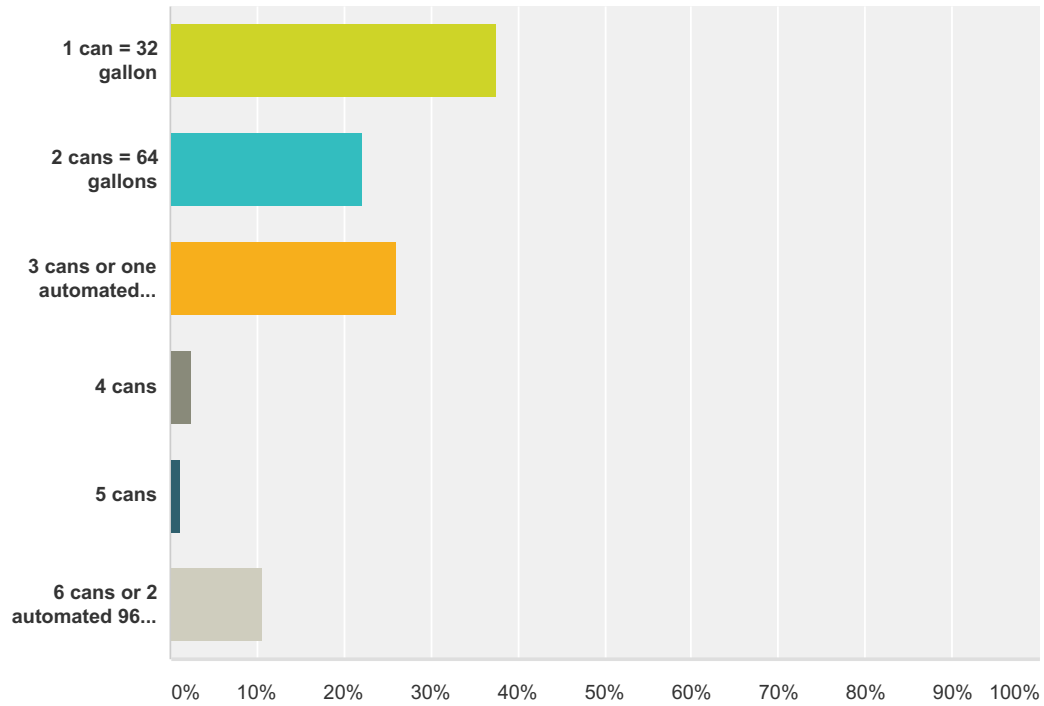


Answer Choices	Responses	
County Refuse Workers, I subscribe for county refuse service	83.51%	800
A private hauler, I live in a gated community	3.24%	31
No one, I self haul my rubbish to the landfill	3.34%	32
No one, I take my rubbish to work or public dumpsters	1.98%	19
I live in a condo and a waste hauler picks up the rubbish	7.93%	76
Total		958

Q3 How much rubbish does your household produce every week?

Answered: 911 Skipped: 156

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

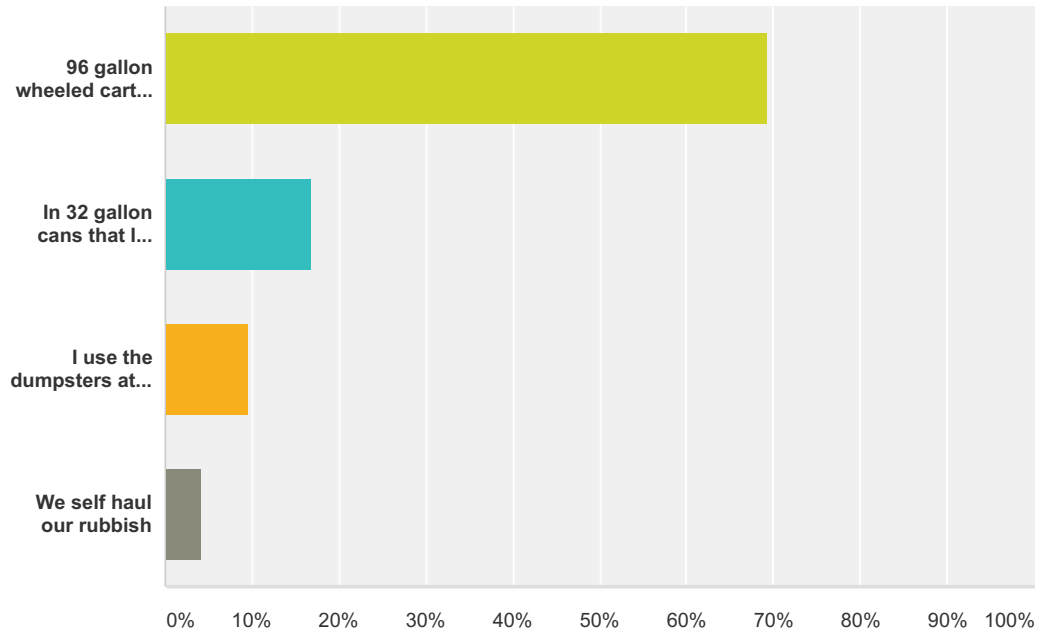


Answer Choices	Responses	
1 can = 32 gallon	37.54%	342
2 cans = 64 gallons	22.06%	201
3 cans or one automated container = 96 gallons	26.13%	238
4 cans	2.41%	22
5 cans	1.21%	11
6 cans or 2 automated 96 gallon containers	10.65%	97
Total		911

Q4 What type of containers do you use for the rubbish you set out at the curb?

Answered: 950 Skipped: 117

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

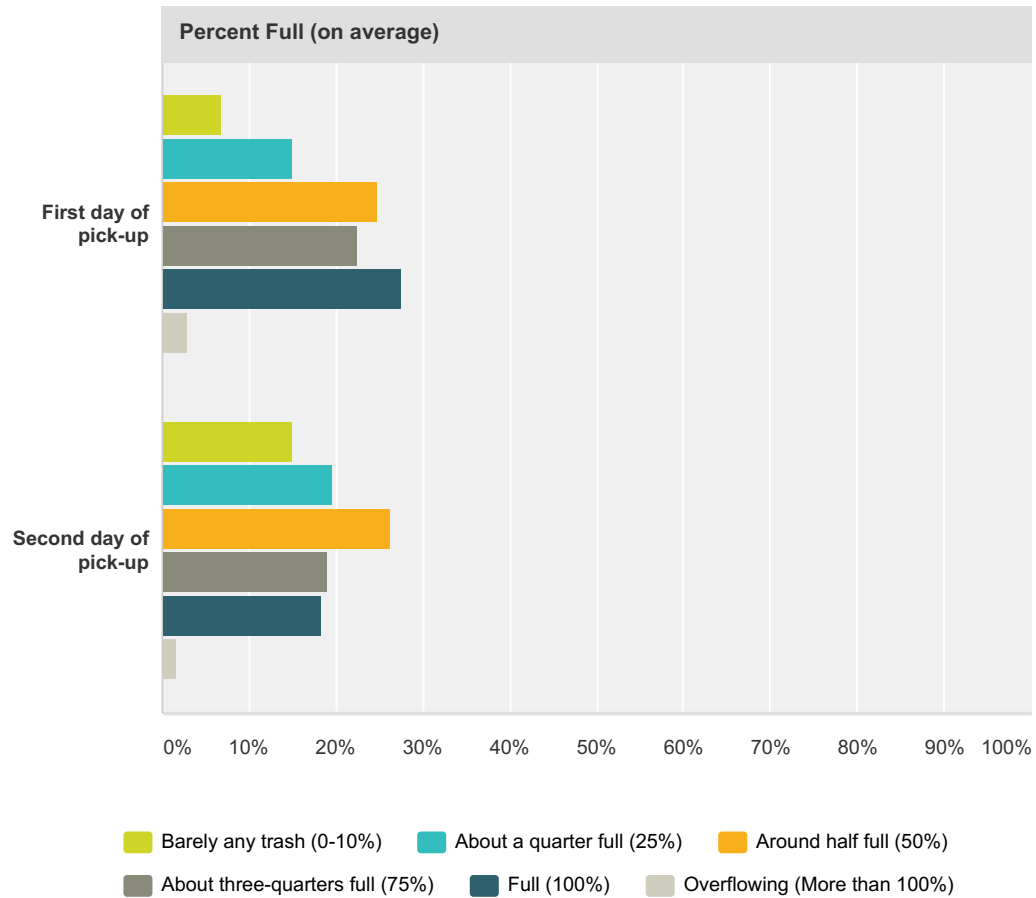


Answer Choices	Responses	
96 gallon wheeled cart provided by the county	69.37%	659
In 32 gallon cans that I provide	16.84%	160
I use the dumpsters at my condo, apartment, work, or public dumpsters	9.68%	92
We self haul our rubbish	4.11%	39
Total		950

Q5 On average, how full is your automated cart when you set it out for collection?

Answered: 660 Skipped: 407

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

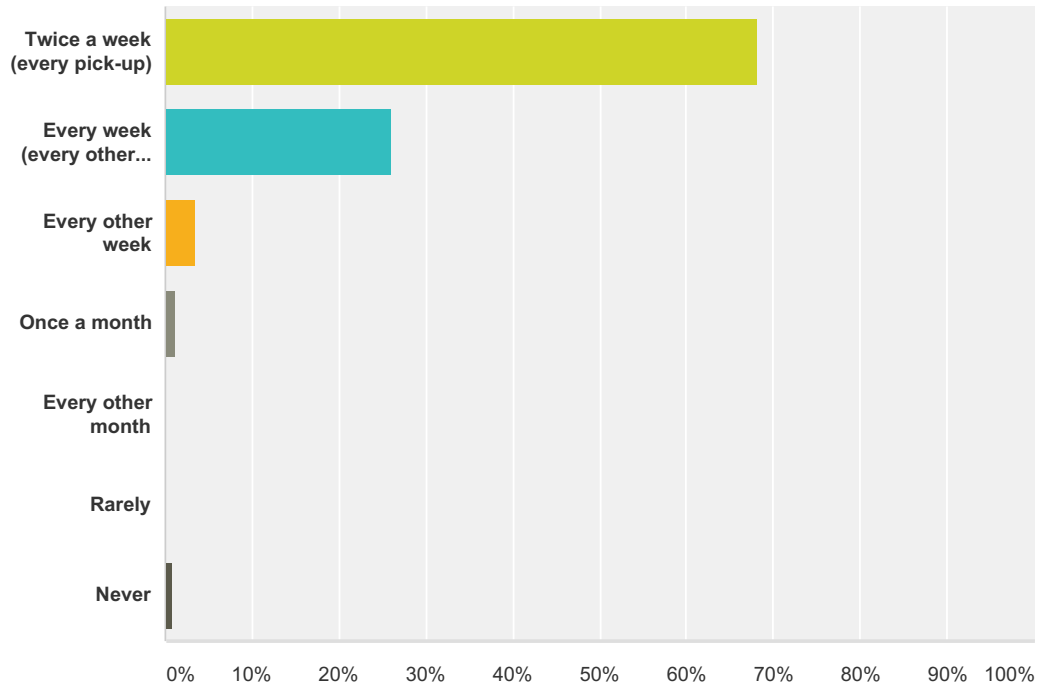


Percent Full (on average)							
	Barely any trash (0-10%)	About a quarter full (25%)	Around half full (50%)	About three-quarters full (75%)	Full (100%)	Overflowing (More than 100%)	Total
First day of pick-up	6.99% 46	15.05% 99	24.92% 164	22.49% 148	27.66% 182	2.89% 19	658
Second day of pick-up	14.99% 88	19.59% 115	26.24% 154	19.08% 112	18.40% 108	1.70% 10	587

Q6 How often do you set out your automated cart at the curb?

Answered: 661 Skipped: 406

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

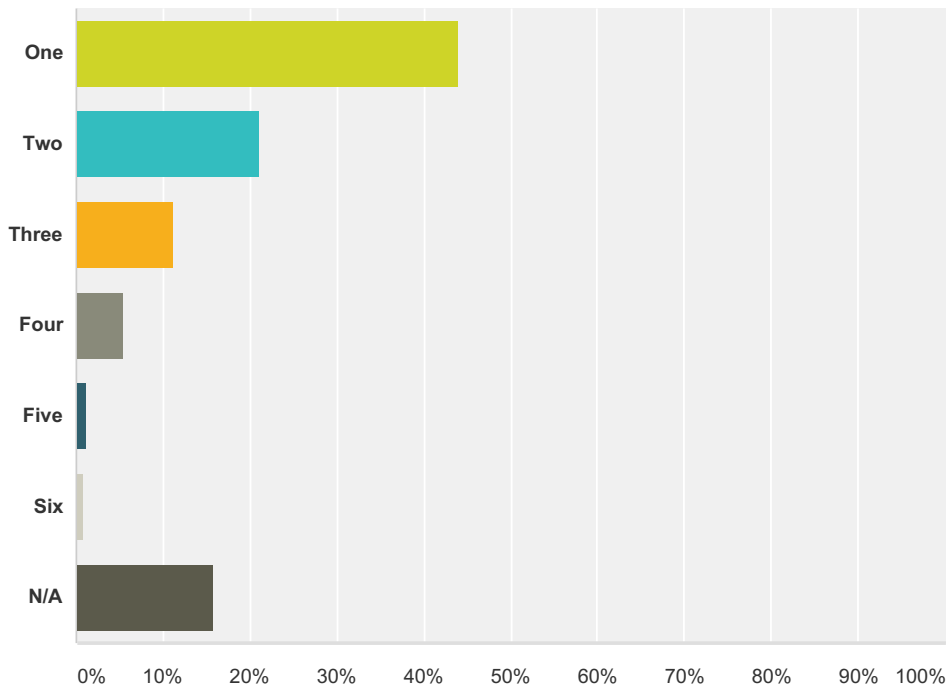


Answer Choices	Responses	
Twice a week (every pick-up)	68.23%	451
Every week (every other pick-up)	26.02%	172
Every other week	3.48%	23
Once a month	1.21%	8
Every other month	0.00%	0
Rarely	0.15%	1
Never	0.91%	6
Total		661

Q7 How many 32-gallon trash cans do you normally set out weekly?

Answered: 222 Skipped: 845

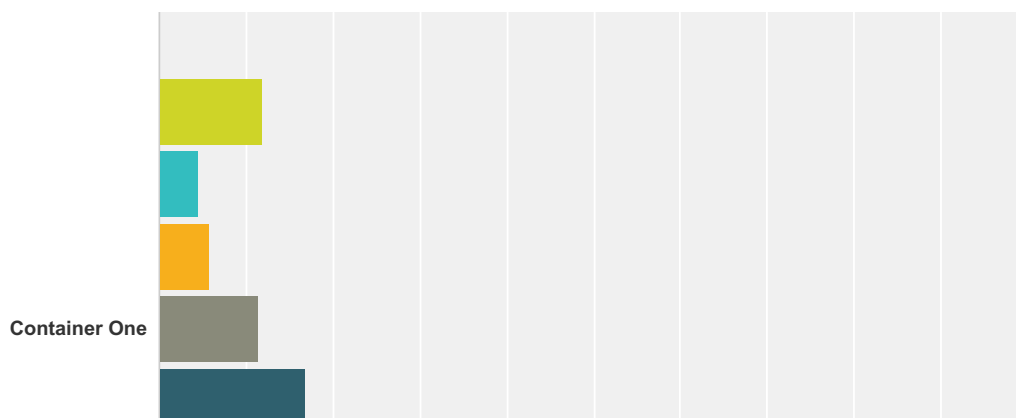
Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

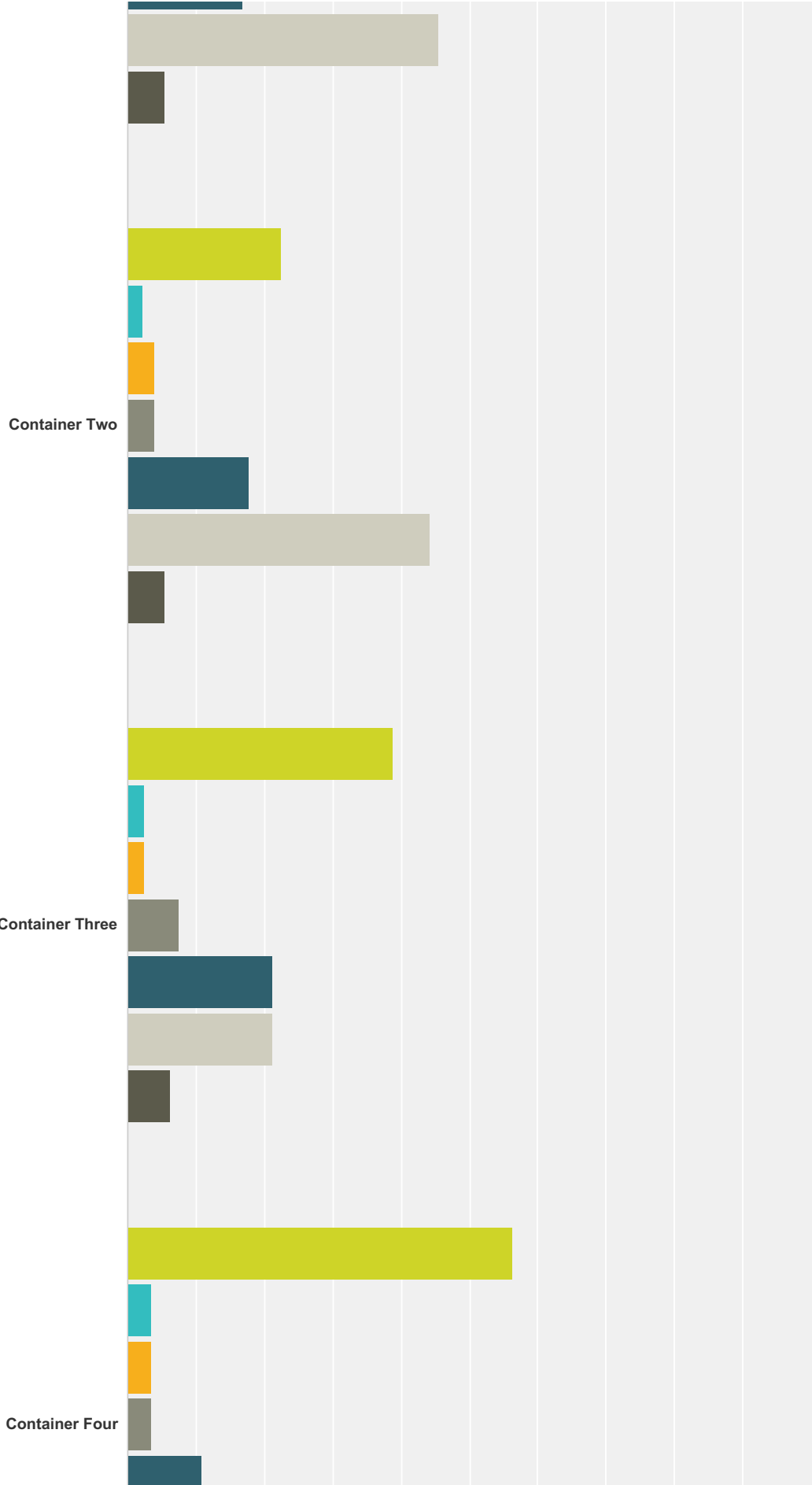


Answer Choices	Responses
One	44.14% 98
Two	21.17% 47
Three	11.26% 25
Four	5.41% 12
Five	1.35% 3
Six	0.90% 2
N/A	15.77% 35
Total	222

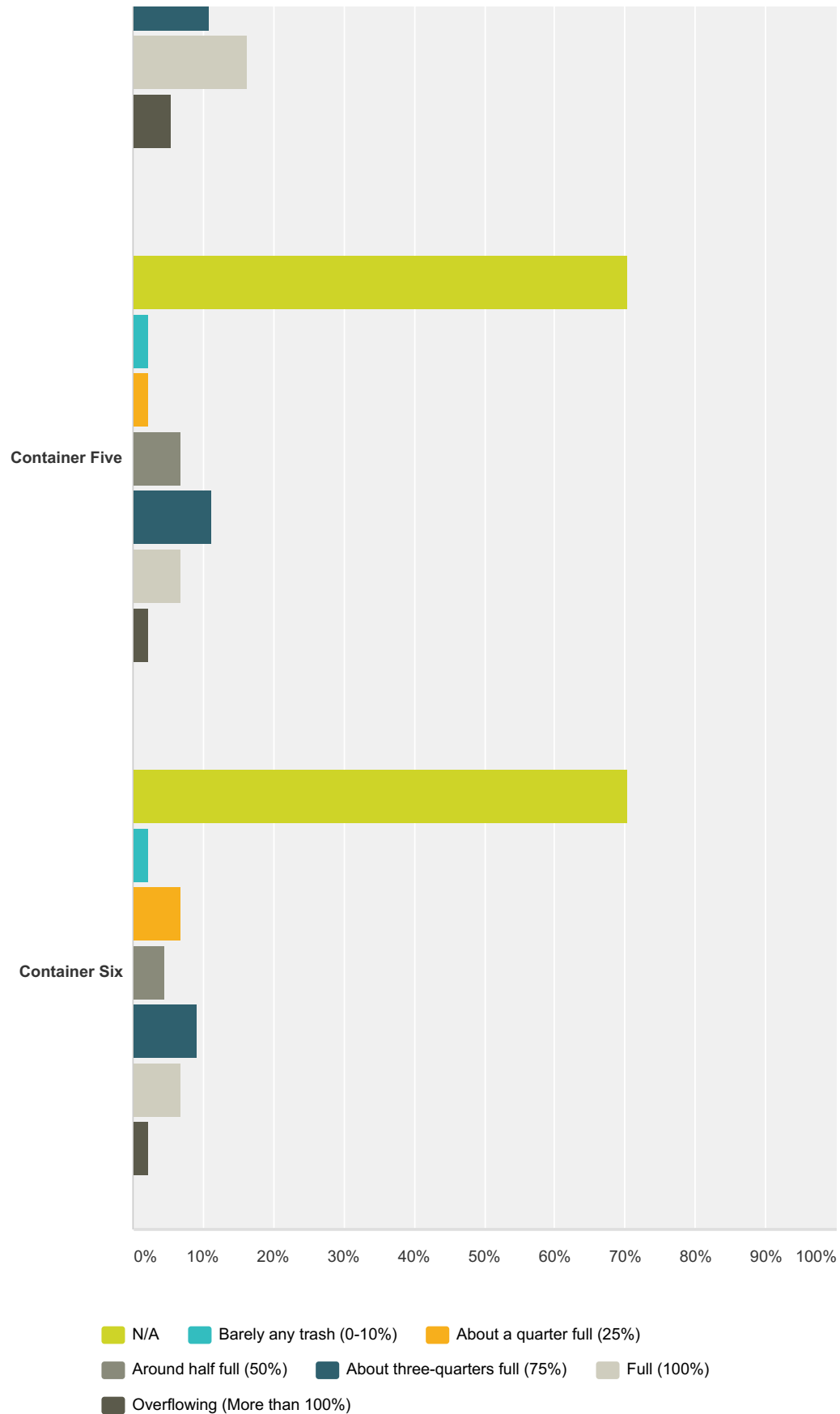
Q8 On average, how full is each 32 gallon trash can?

Answered: 243 Skipped: 824





Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

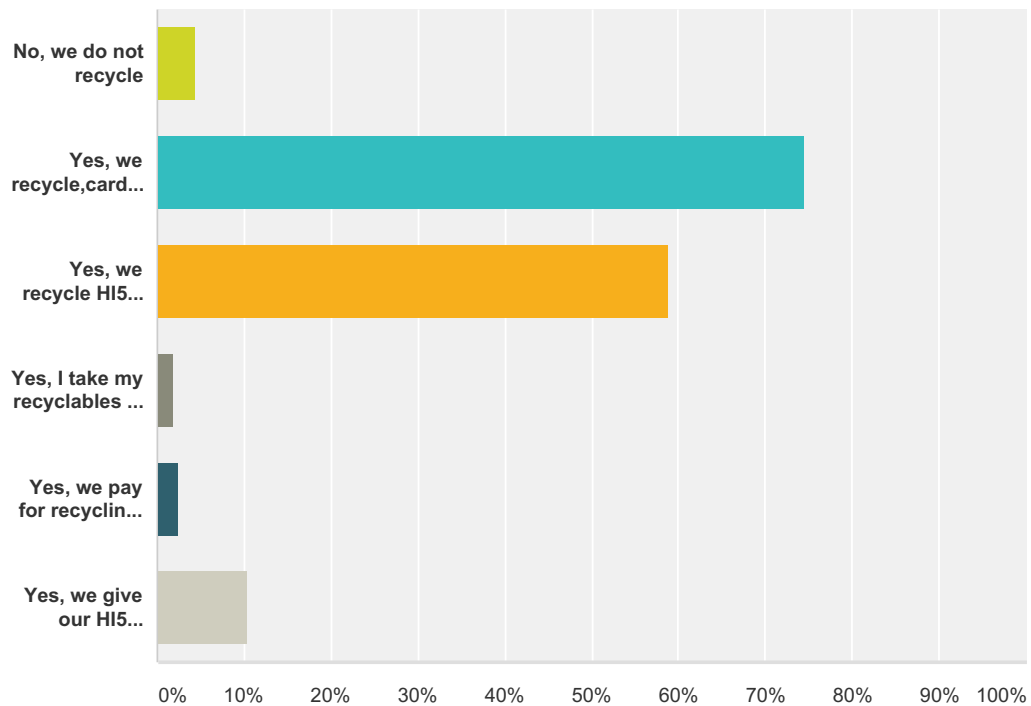


Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

	N/A	Barely any trash (0-10%)	About a quarter full (25%)	Around half full (50%)	About three-quarters full (75%)	Full (100%)	Overflowing (More than 100%)	Total Respondents
Container One	11.81% 28	4.64% 11	5.91% 14	11.39% 27	16.88% 40	45.57% 108	5.49% 13	237
Container Two	22.48% 29	2.33% 3	3.88% 5	3.88% 5	17.83% 23	44.19% 57	5.43% 7	129
Container Three	38.75% 31	2.50% 2	2.50% 2	7.50% 6	21.25% 17	21.25% 17	6.25% 5	80
Container Four	56.36% 31	3.64% 2	3.64% 2	3.64% 2	10.91% 6	16.36% 9	5.45% 3	55
Container Five	70.45% 31	2.27% 1	2.27% 1	6.82% 3	11.36% 5	6.82% 3	2.27% 1	44
Container Six	70.45% 31	2.27% 1	6.82% 3	4.55% 2	9.09% 4	6.82% 3	2.27% 1	44

Q9 Does your household recycle? (Please select all that apply)

Answered: 908 Skipped: 159



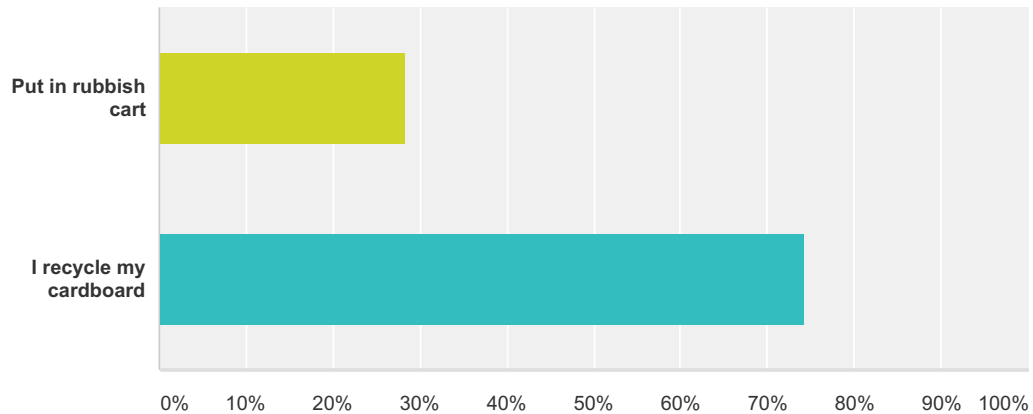
Answer Choices	Responses
No, we do not recycle	4.41% 40
Yes, we recycle,cardboard, newspaper, plastic and glass at a County Dropbox Recycling Center	74.56% 677
Yes, we recycle HI5 containers	58.81% 534
Yes, I take my recyclables to work	1.98% 18

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

Yes, we pay for recycling collection at the curb	2.42%	22
Yes, we give our HI5 materials to someone / group to raise money	10.46%	95
Total Respondents: 908		

Q10 What do you do with your corrugated cardboard?

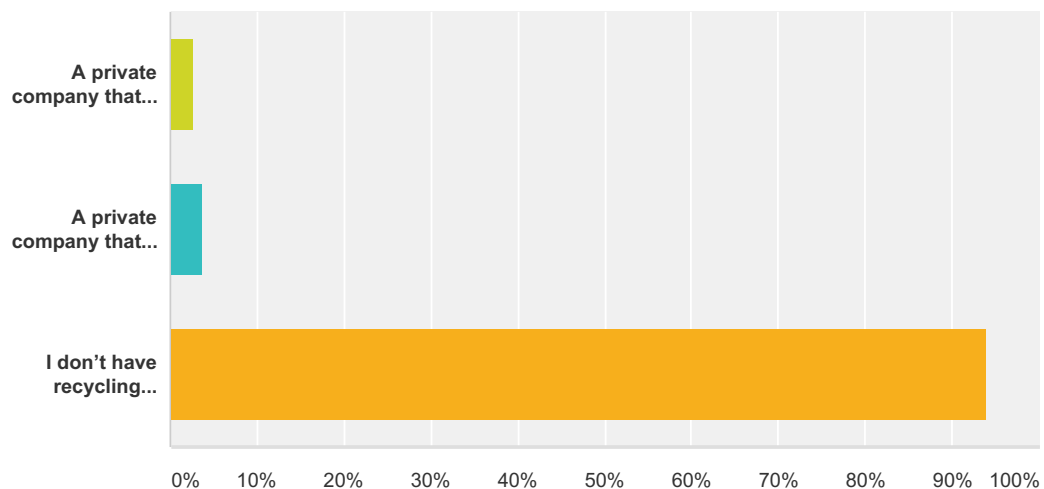
Answered: 876 Skipped: 191



Answer Choices	Responses
Put in rubbish cart	28.31% 248
I recycle my cardboard	74.32% 651
Total Respondents: 876	

Q11 If you currently have curbside recycling collection, who picks it up?

Answered: 803 Skipped: 264

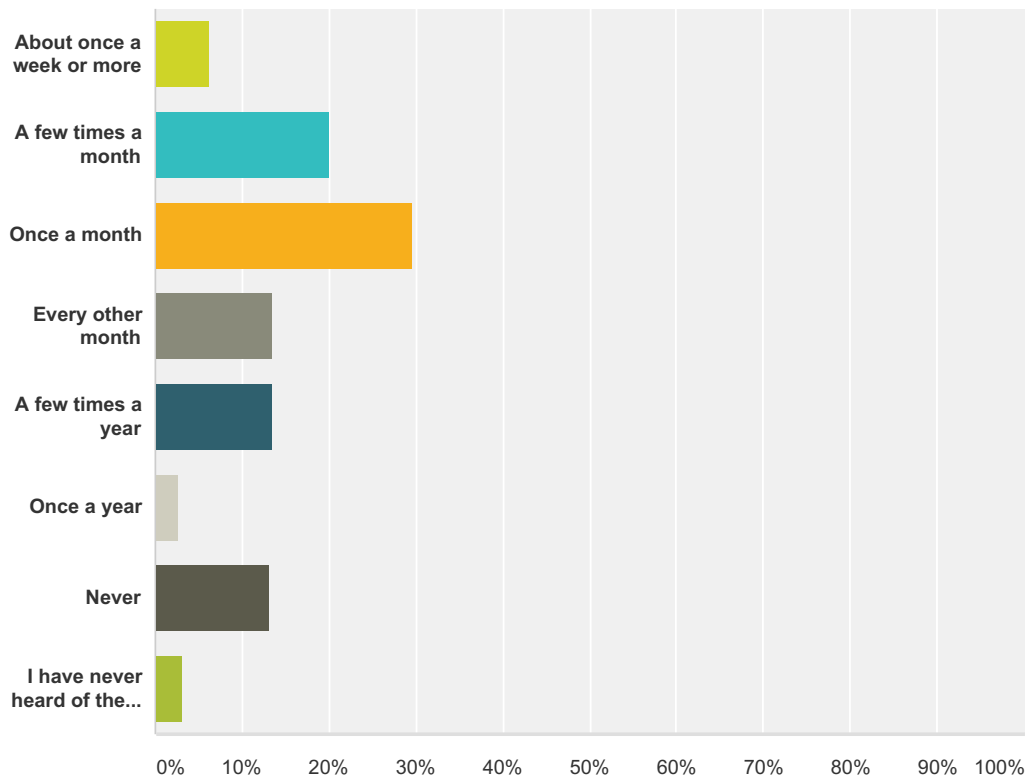


Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

Answer Choices	Responses	
A private company that I pay directly	2.62%	21
A private company that my homeowners or condominium association pays for	3.74%	30
I don't have recycling collection at my house	93.90%	754
Total Respondents: 803		

Q12 How often do you take recyclables (non HI-5) to the County Recycling Drop-Box Centers

Answered: 895 Skipped: 172



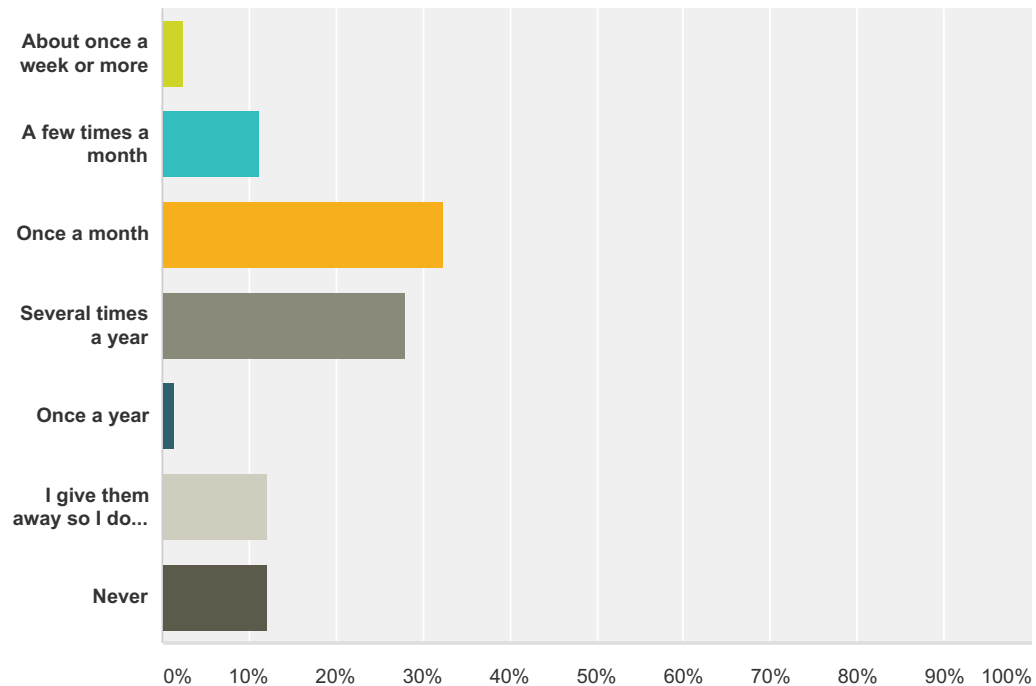
Answer Choices	Responses	
About once a week or more	6.26%	56
A few times a month	20.11%	180
Once a month	29.61%	265
Every other month	13.63%	122
A few times a year	13.52%	121
Once a year	2.68%	24
Never	13.18%	118

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

I have never heard of the Recycling Dropbox Center	3.13%	28
Total Respondents: 895		

Q13 How often do you redeem your HI5 containers?

Answered: 906 Skipped: 161

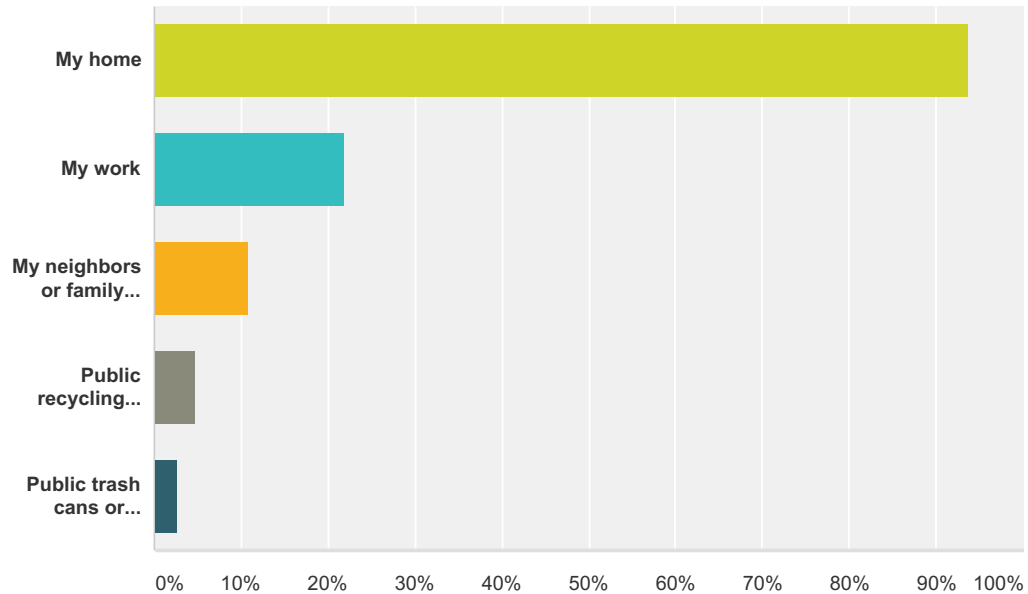


Answer Choices	Responses	
About once a week or more	2.43%	22
A few times a month	11.37%	103
Once a month	32.45%	294
Several times a year	27.92%	253
Once a year	1.55%	14
I give them away so I don't know	12.14%	110
Never	12.14%	110
Total		906

Q14 I redeem HI5 containers that I get from the following sources (Check all that apply)...

Answered: 743 Skipped: 324

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

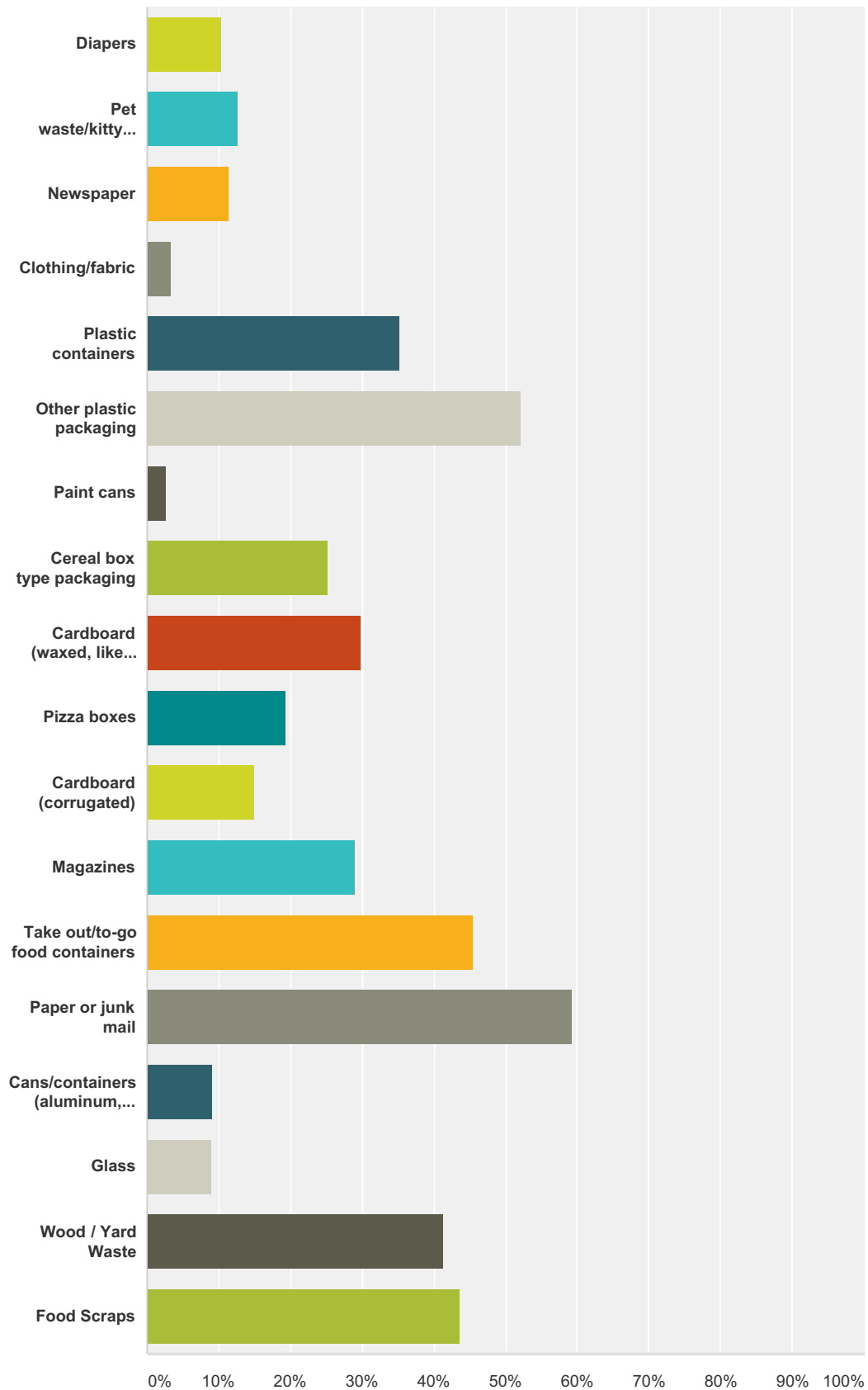


Answer Choices	Responses
My home	93.67% 696
My work	21.94% 163
My neighbors or family members	10.77% 80
Public recycling receptacles	4.71% 35
Public trash cans or dumpsters	2.69% 20
Total Respondents: 743	

Q15 Which of the following materials still take up lots of space in your garbage after you recycle and / or compost?

Answered: 888 Skipped: 179

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



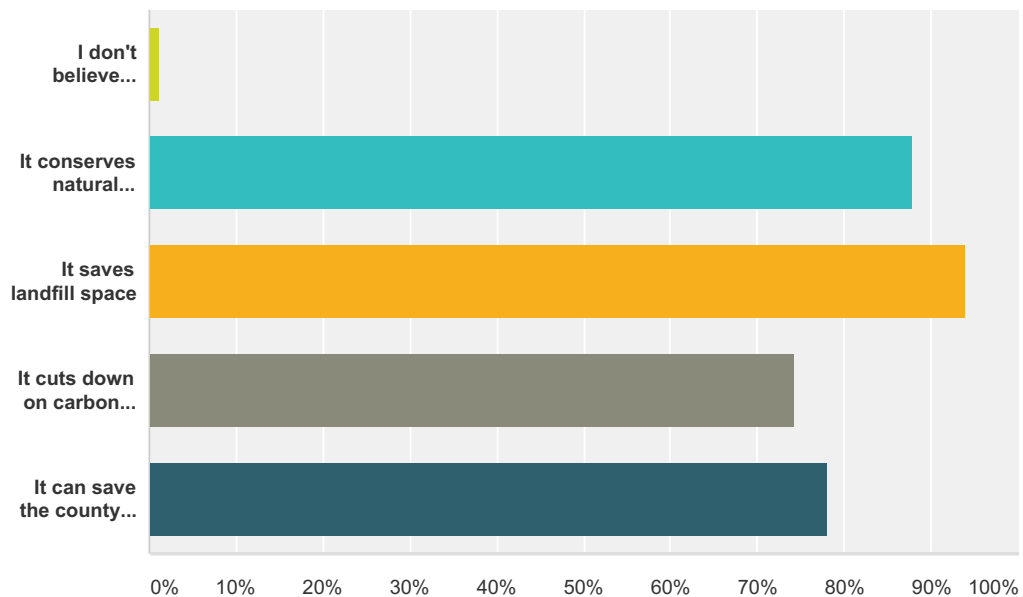
Answer Choices	Responses
Diapers	10.36% 92

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

Pet waste/kitty litter	12.84%	114
Newspaper	11.49%	102
Clothing/fabric	3.38%	30
Plastic containers	35.25%	313
Other plastic packaging	52.25%	464
Paint cans	2.70%	24
Cereal box type packaging	25.23%	224
Cardboard (waxed, like frozen food)	29.95%	266
Pizza boxes	19.48%	173
Cardboard (corrugated)	14.98%	133
Magazines	29.05%	258
Take out/to-go food containers	45.61%	405
Paper or junk mail	59.35%	527
Cans/containers (aluminum, soda)	9.23%	82
Glass	9.01%	80
Wood / Yard Waste	41.33%	367
Food Scraps	43.69%	388
Total Respondents: 888		

Q16 Recycling is important because (check all that apply)..

Answered: 921 Skipped: 146



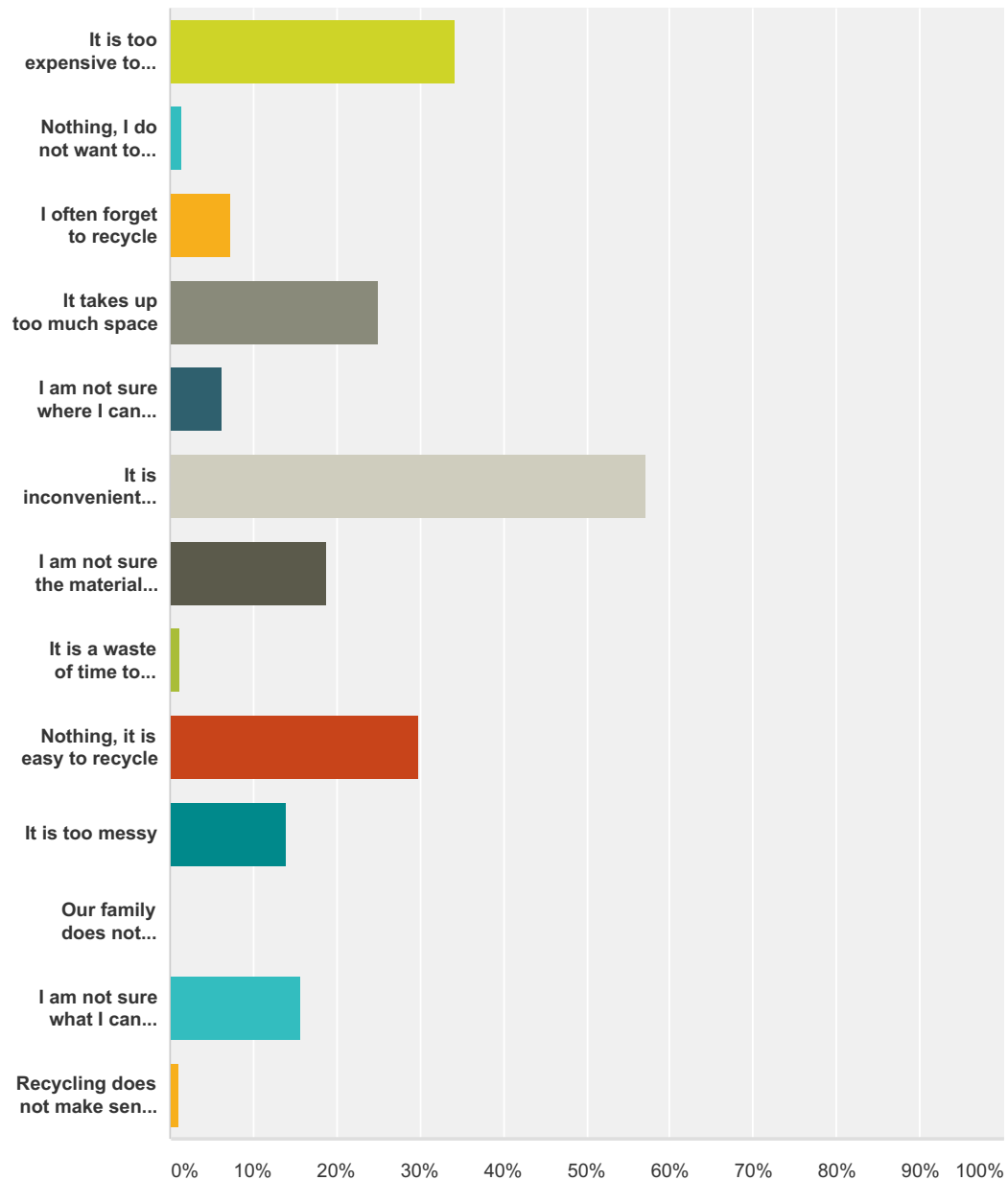
Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

Answer Choices	Responses	
I don't believe recycling is important	1.19%	11
It conserves natural resources	87.84%	809
It saves landfill space	93.92%	865
It cuts down on carbon emissions/greenhouse gasses	74.27%	684
It can save the county money on landfilling costs	78.07%	719
Total Respondents: 921		

Q17 What do you believe makes it hard for you or your household to recycle on Maui? (Please select all that apply)

Answered: 857 Skipped: 210

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



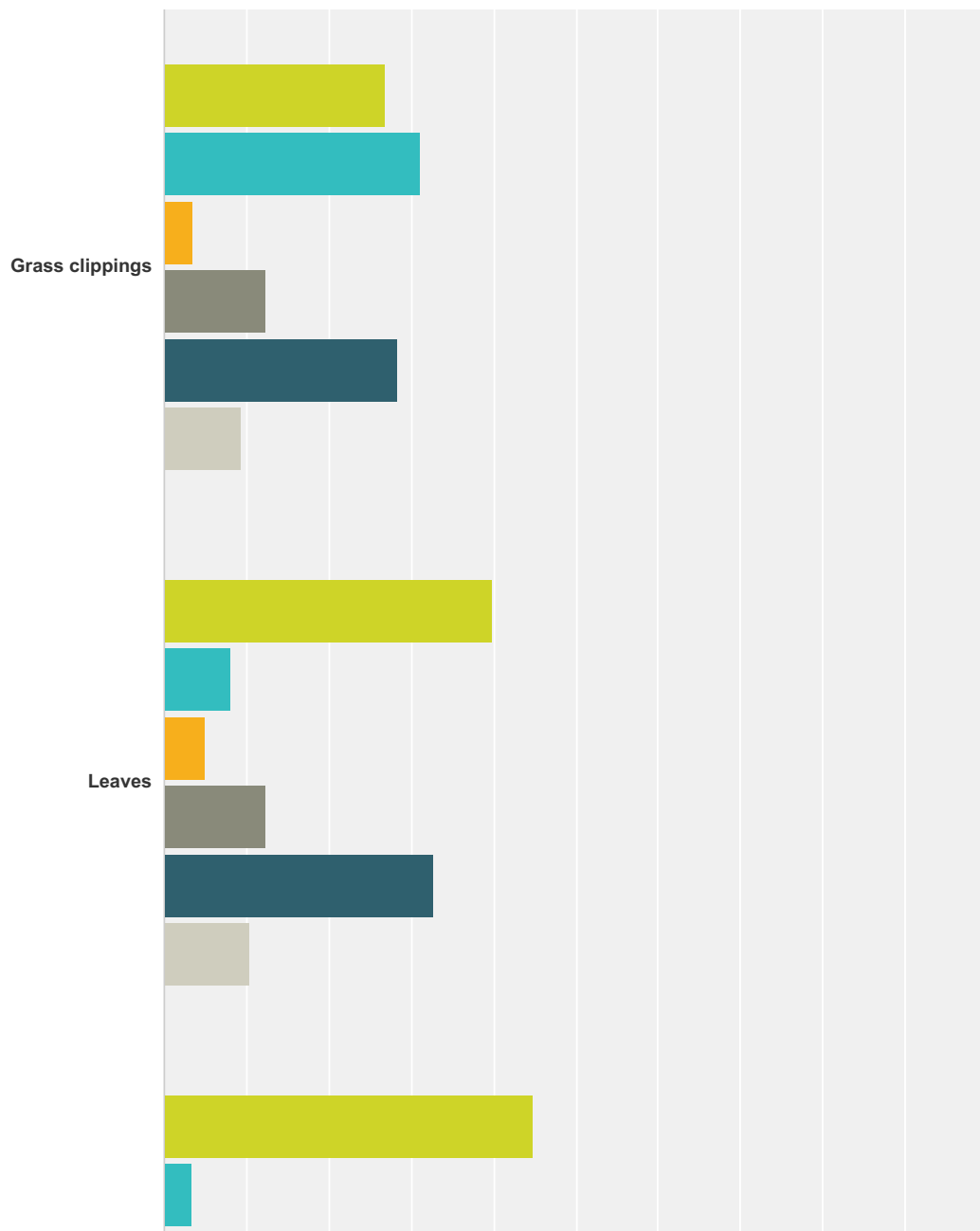
Answer Choices	Responses	
It is too expensive to sign-up for private curbside recycling service	34.31%	294
Nothing, I do not want to recycle	1.52%	13
I often forget to recycle	7.23%	62
It takes up too much space	24.97%	214
I am not sure where I can recycle	6.18%	53
It is inconvenient to bring materials to the Drop-Off Center	57.29%	491
I am not sure the materials really get recycled anyway	18.79%	161
It is a waste of time to recycle	1.28%	11

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

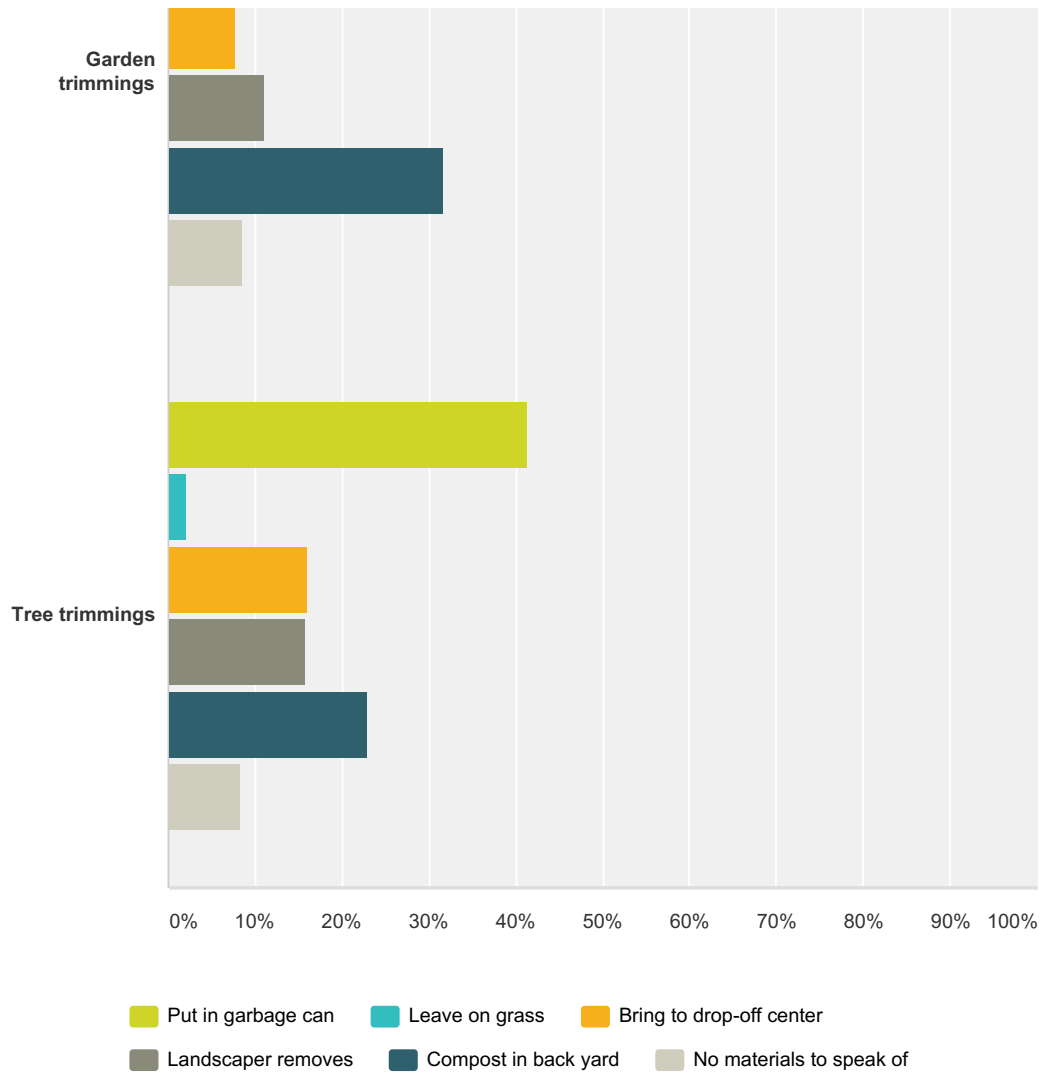
Nothing, it is easy to recycle	29.75%	255
It is too messy	14.00%	120
Our family does not generate any recyclables	0.12%	1
I am not sure what I can recycle	15.75%	135
Recycling does not make sense in our community	1.05%	9
Total Respondents: 857		

Q18 When you have grass clippings, leaves, garden or tree trimmings what do you do with the waste materials?

Answered: 908 Skipped: 159



Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

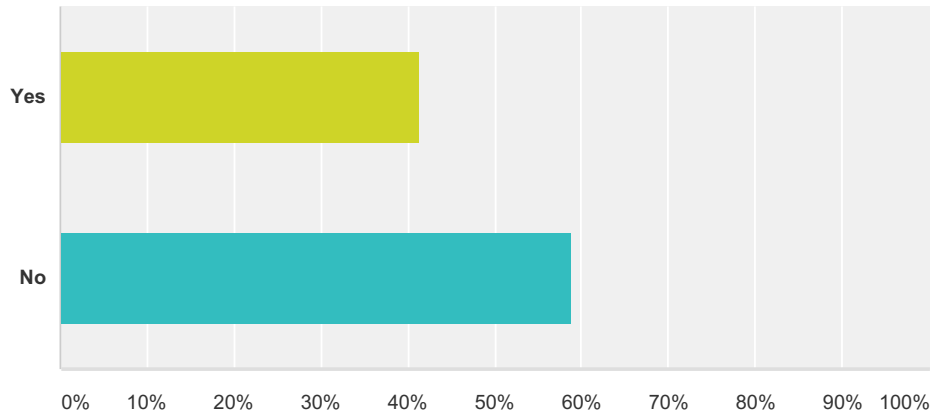


	Put in garbage can	Leave on grass	Bring to drop-off center	Landscaper removes	Compost in back yard	No materials to speak of	Total Respondents
Grass clippings	26.85% 239	31.01% 276	3.60% 32	12.36% 110	28.31% 252	9.33% 83	890
Leaves	39.80% 353	8.23% 73	4.96% 44	12.29% 109	32.81% 291	10.37% 92	887
Garden trimmings	44.78% 399	3.25% 29	7.74% 69	11.11% 99	31.65% 282	8.64% 77	891
Tree trimmings	41.32% 364	2.16% 19	16.00% 141	15.89% 140	23.04% 203	8.29% 73	881

Q19 Does your household do any home composting?

Answered: 916 Skipped: 151

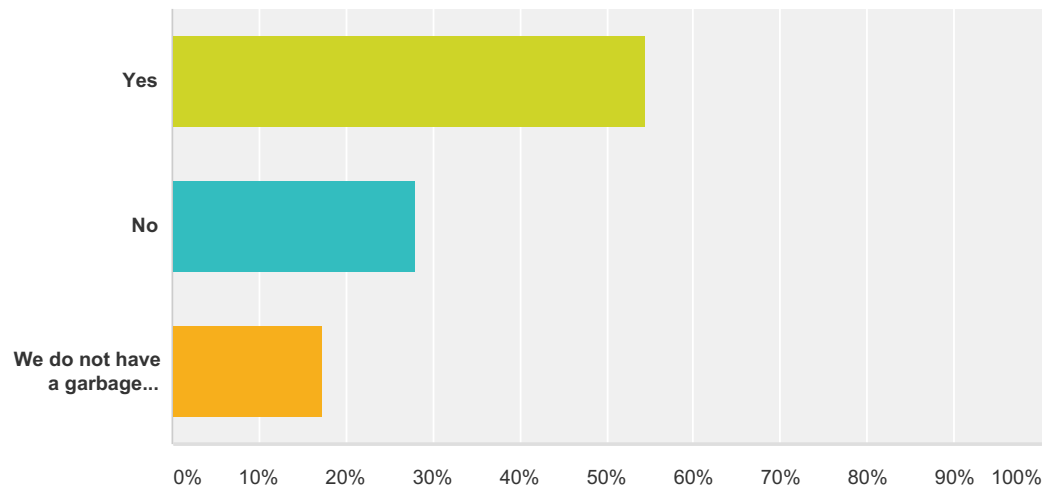
Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



Answer Choices	Responses
Yes	41.27% 378
No	58.84% 539
Total Respondents: 916	

Q20 Do you use the garbage disposal for kitchen scraps?

Answered: 919 Skipped: 148

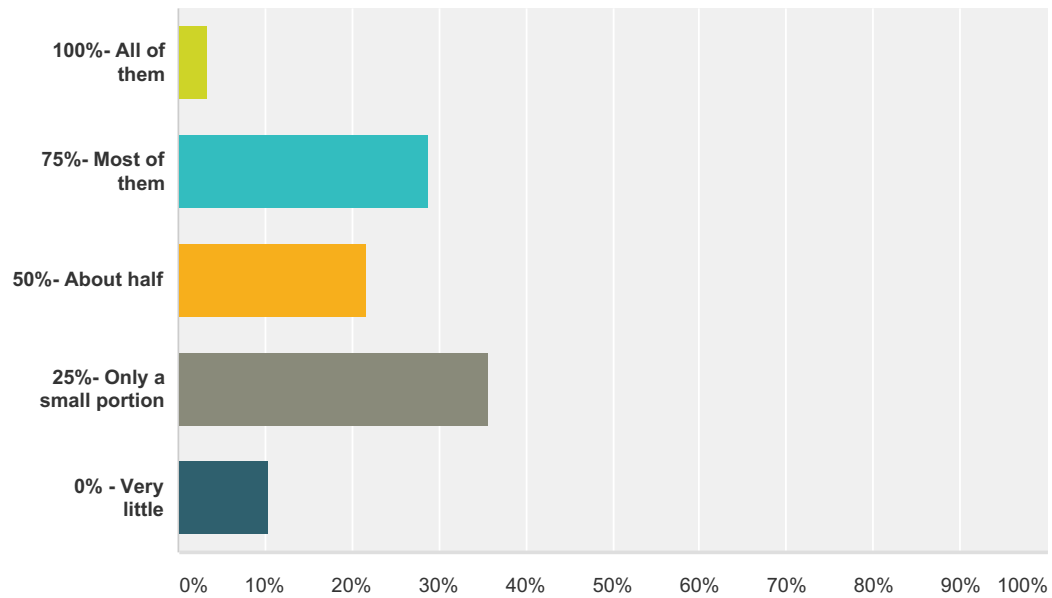


Answer Choices	Responses
Yes	54.52% 501
No	28.07% 258
We do not have a garbage disposal	17.41% 160
Total	919

Q21 What percentage of your food scraps do you estimate you put down the in-sink

garbage disposal?

Answered: 502 Skipped: 565

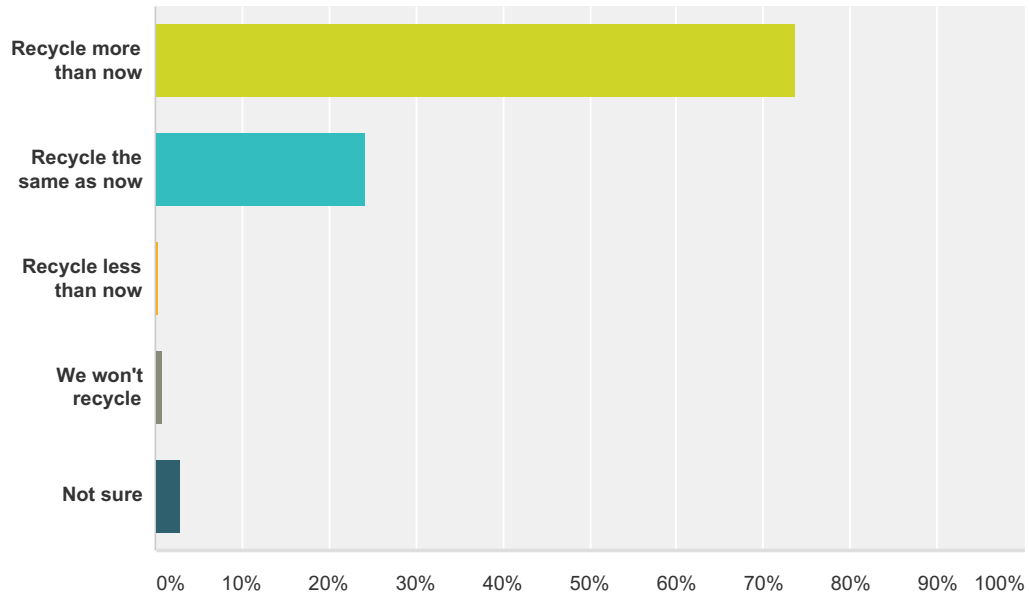


Answer Choices	Responses
100%- All of them	3.39% 17
75%- Most of them	28.88% 145
50%- About half	21.71% 109
25%- Only a small portion	35.66% 179
0% - Very little	10.36% 52
Total	502

Q22 Under the "3 Can Plan" which includes curbside recycling, do you believe your household would...

Answered: 898 Skipped: 169

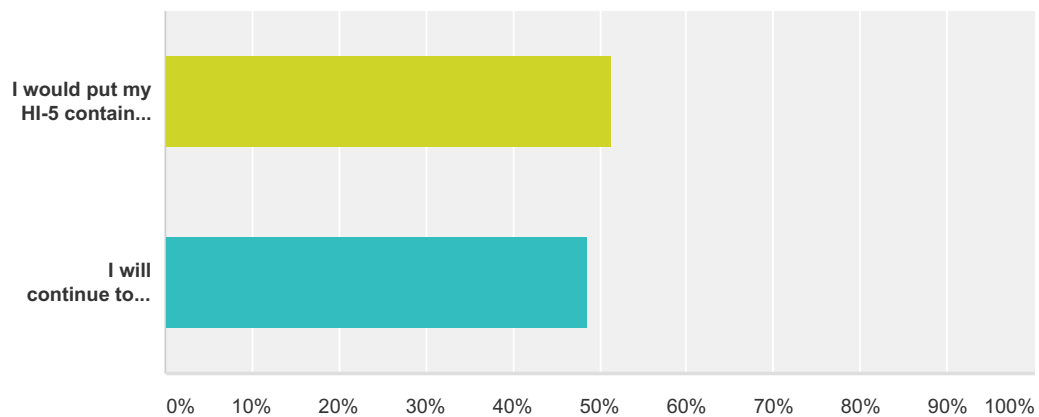
Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



Answer Choices	Responses
Recycle more than now	73.72% 662
Recycle the same as now	24.28% 218
Recycle less than now	0.45% 4
We won't recycle	0.89% 8
Not sure	2.90% 26
Total Respondents: 898	

Q23 What describes your household the best? Under the '3 Can Plan' I will put my HI5 containers...

Answered: 837 Skipped: 230



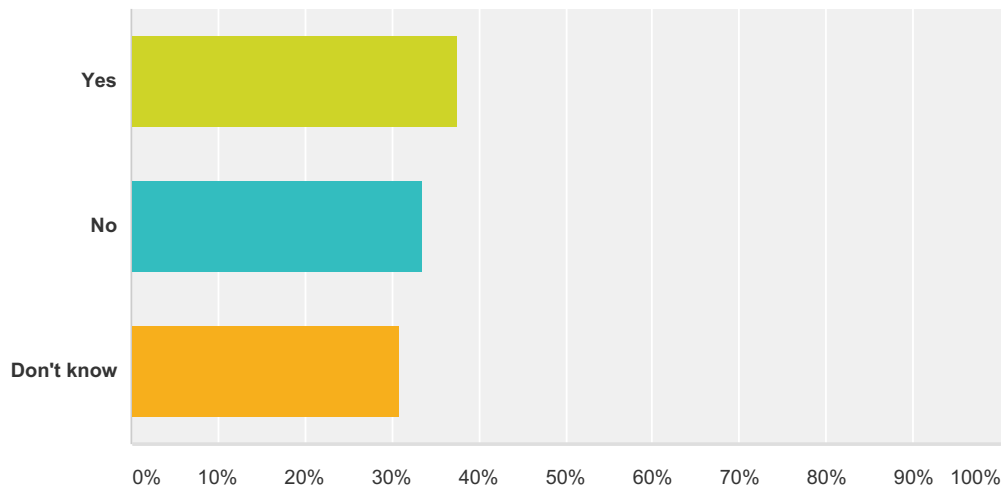
Answer Choices	Responses
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Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

I would put my HI-5 containers in with all the other recyclables at the curb	51.37%	430
I will continue to redeem my HI5 containers and get 5¢	48.63%	407
Total		837

Q24 The '3-Can Plan' includes curbside recycling and curbside compost collection with your rubbish collection. Would you be willing to pay more to get this service in the future?

Answered: 895 Skipped: 172



Answer Choices	Responses	
Yes	37.65%	337
No	33.52%	300
Don't know	30.95%	277
Total Respondents: 895		

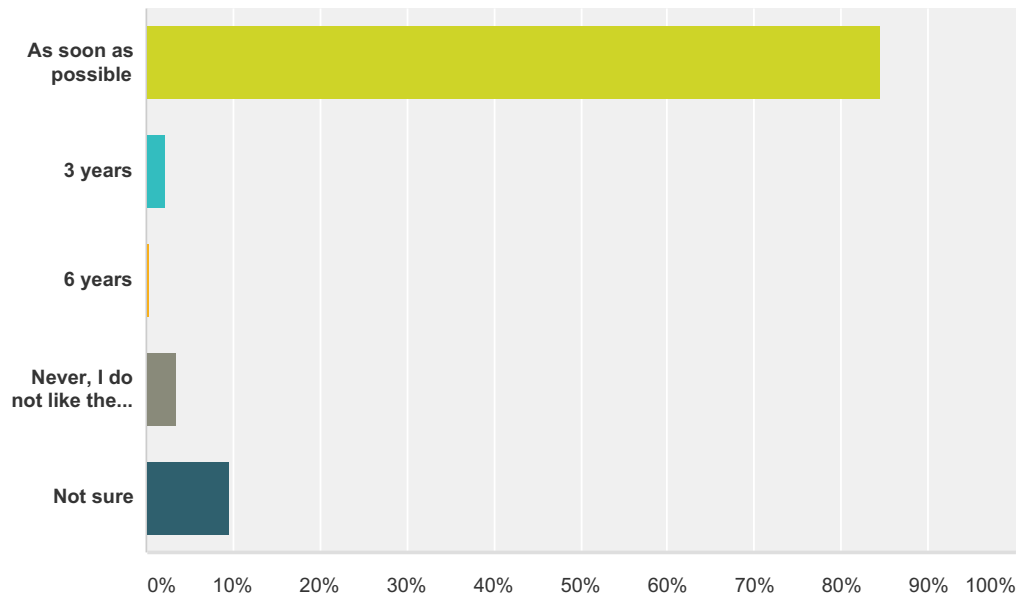
Q25 If yes, how much more, per month, would you be willing to pay for this service?

Answered: 360 Skipped: 707

Q26 I would like to see the 3 Can Plan implemented county-wide...

Answered: 888 Skipped: 179

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

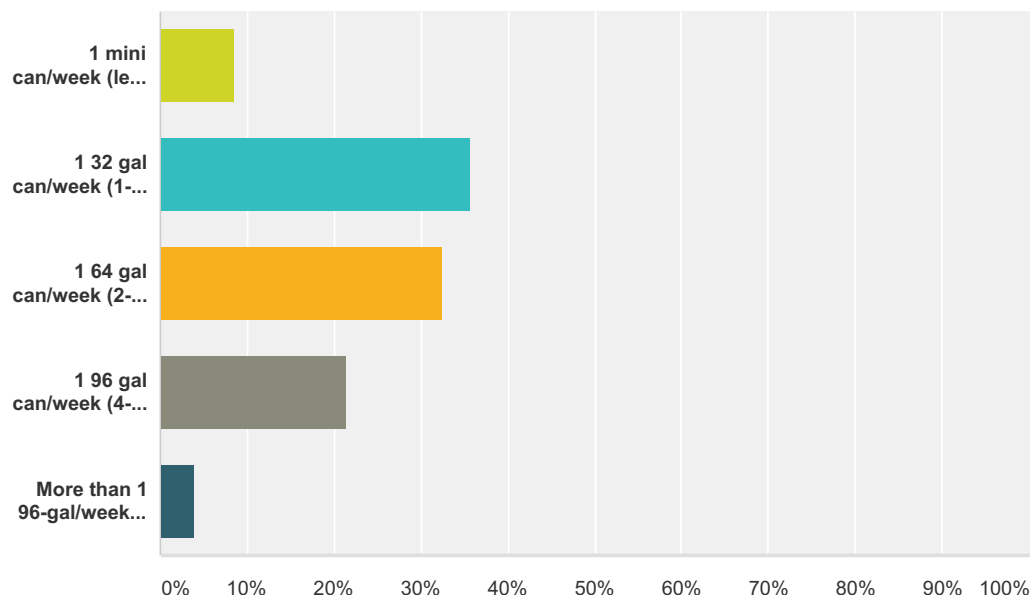


Answer Choices	Responses	
As soon as possible	84.57%	751
3 years	2.25%	20
6 years	0.45%	4
Never, I do not like the plan	3.60%	32
Not sure	9.68%	86
Total Respondents: 888		

Q27 As part of the new "3 Can Plan," if the County let you choose the size of your rubbish cart, what size RUBBISH CART do you predict would meet your household needs on an average week? Remember, you will also be given two other 96 gallon carts, one for recyclables and one for compost.

Answered: 871 Skipped: 196

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



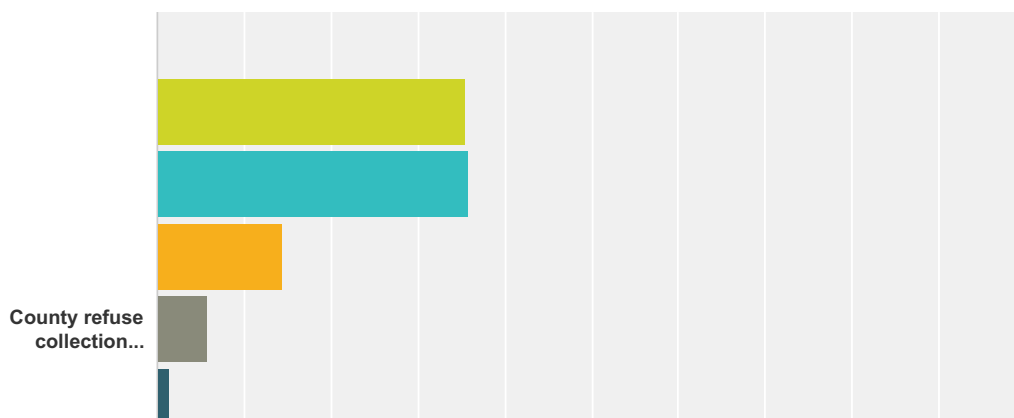
Answer Choices	Responses
1 mini can/week (less than 1 bag trash)	8.61% 75
1 32 gal can/week (1-2 large trash bags)	35.71% 311
1 64 gal can/week (2-4 large trash bags)	32.61% 284
1 96 gal can/week (4-6 large trash bags)	21.47% 187
More than 1 96-gal/week (over 6 large trash bags)	3.90% 34
Total Respondents: 871	

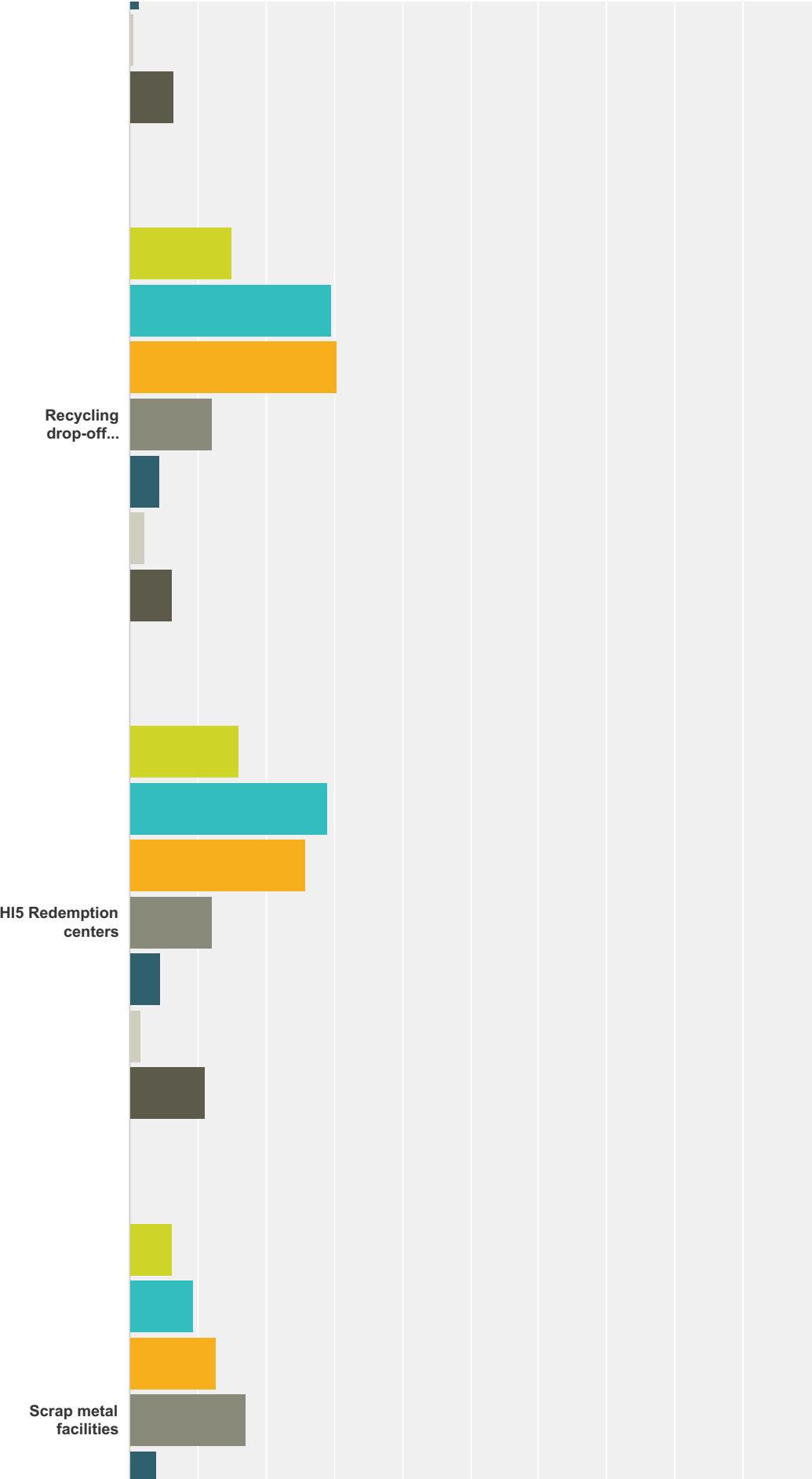
Q28 Do you have any additional comments on the 3 Can Plan?

Answered: 431 Skipped: 636

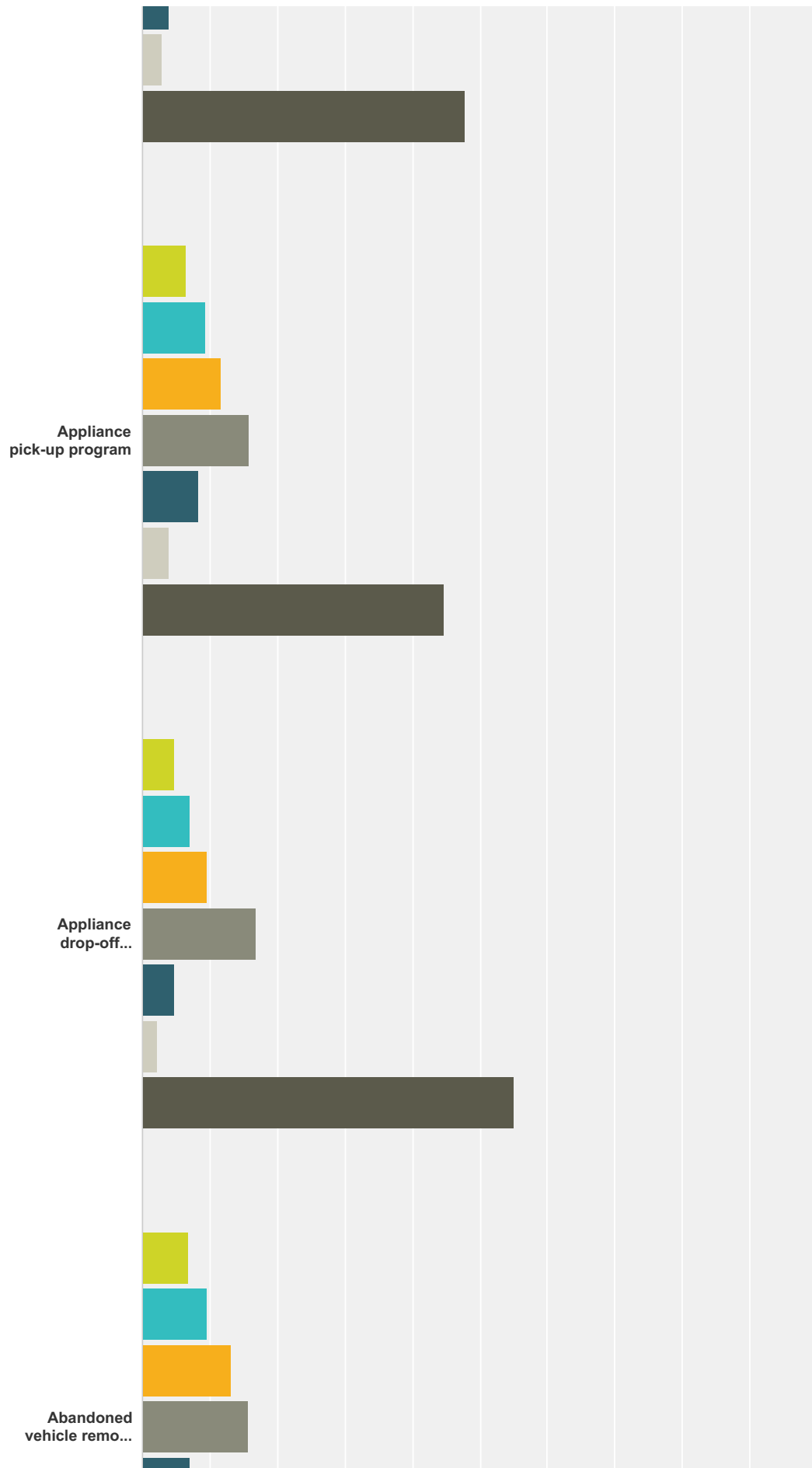
Q29 How satisfied are you with the following services?

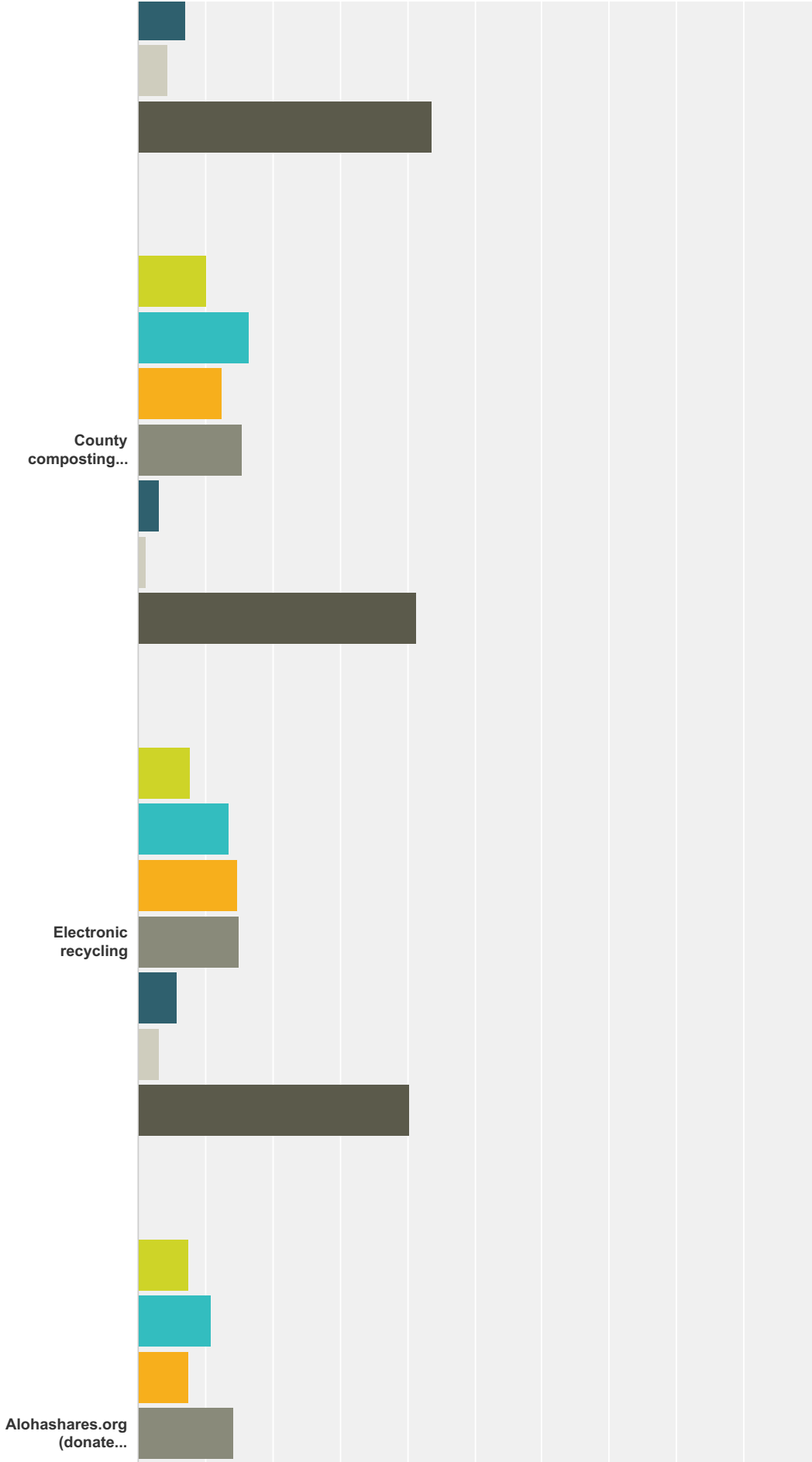
Answered: 873 Skipped: 194

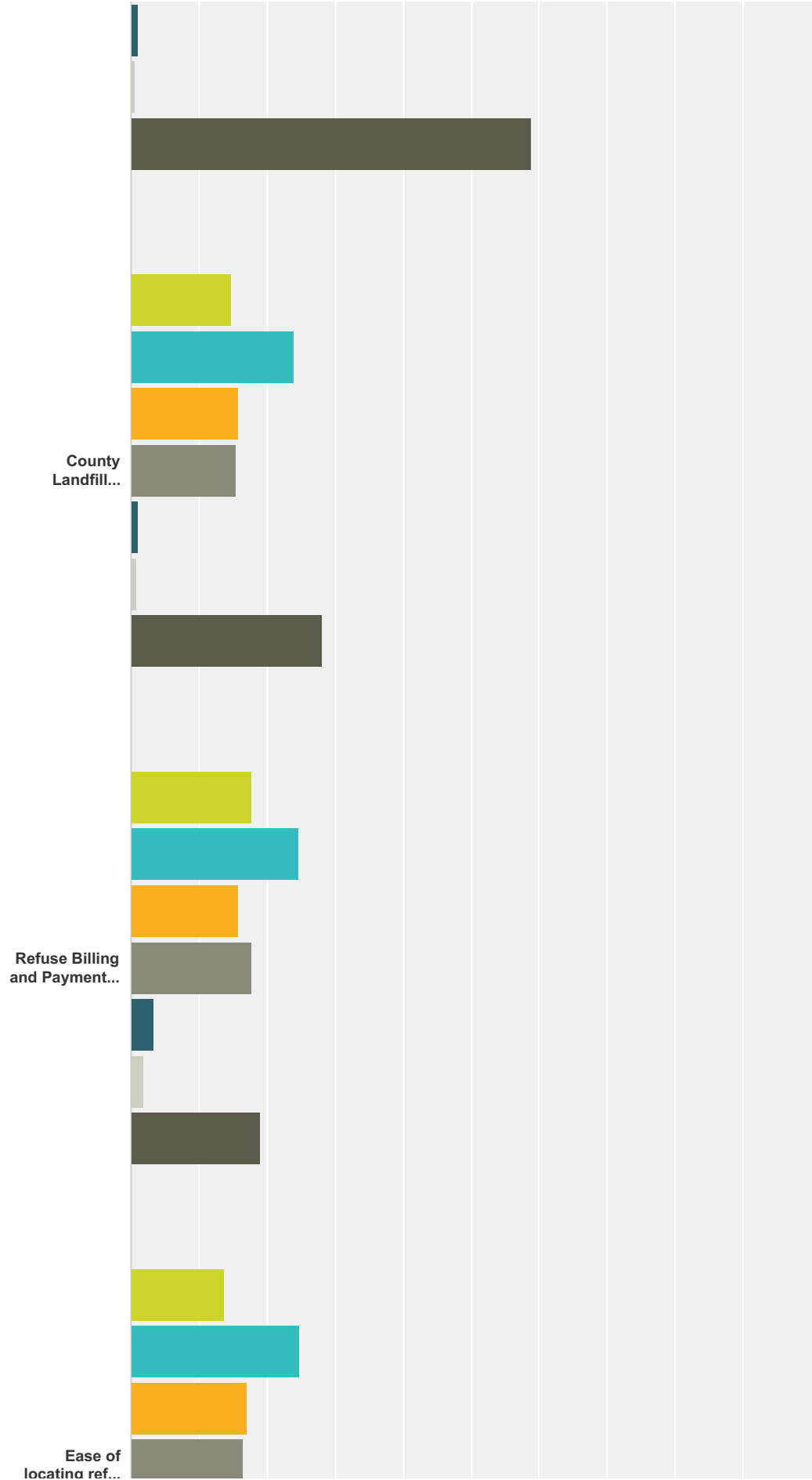




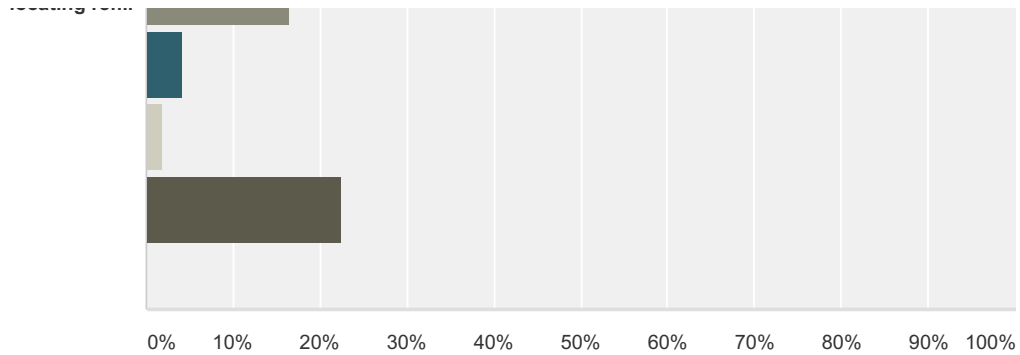
Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)







Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



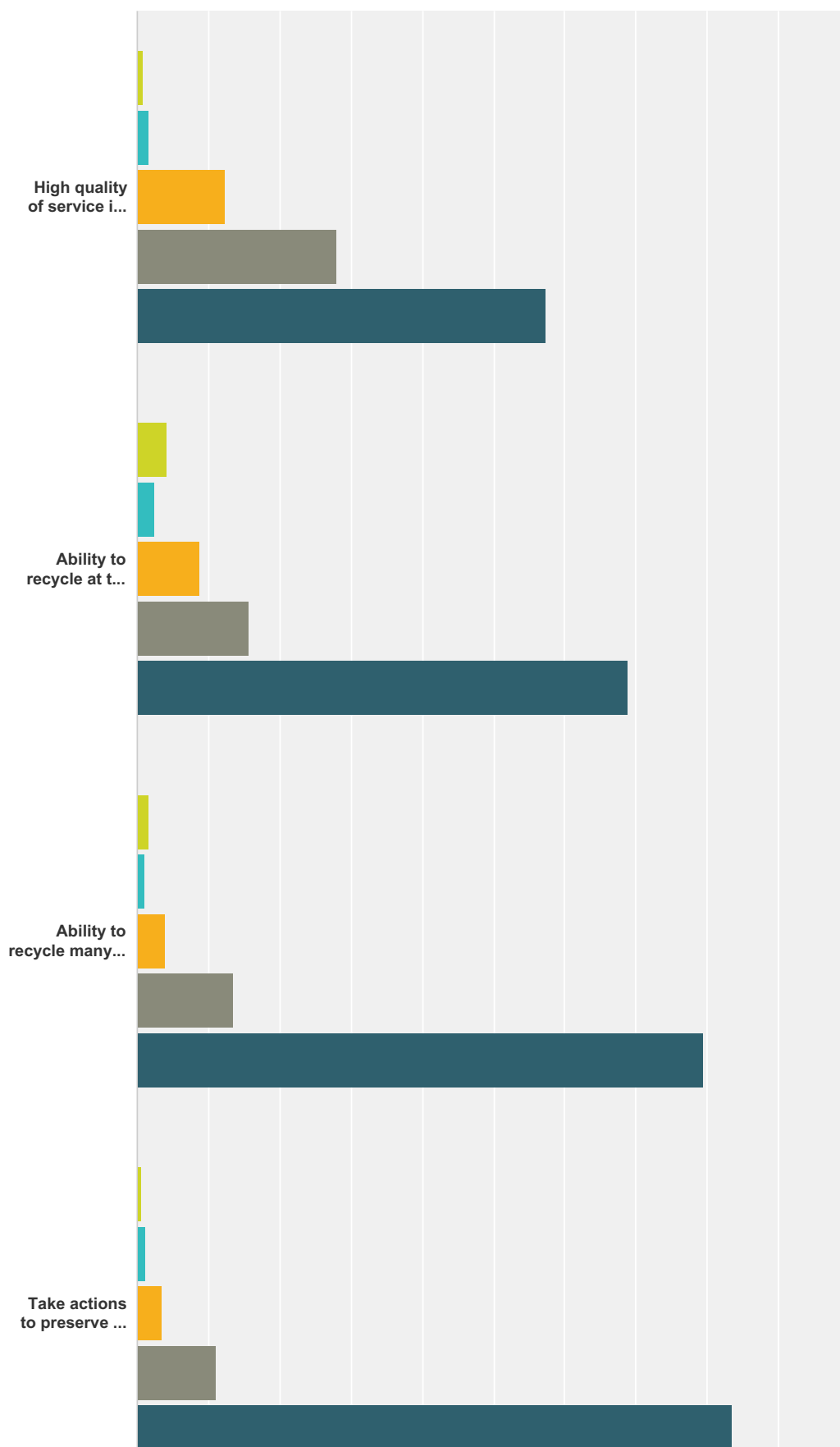
■ Extremely satisfied
 ■ Very satisfied
 ■ Somewhat satisfied
■ Neither satisfied nor dissatisfied
 ■ Very dissatisfied
 ■ Extremely dissatisfied
■ Don't know

	Extremely satisfied	Very satisfied	Somewhat satisfied	Neither satisfied nor dissatisfied	Very dissatisfied	Extremely dissatisfied	Don't know	Total Respondents
County refuse collection service	35.59% 305	35.82% 307	14.35% 123	5.83% 50	1.40% 12	0.70% 6	6.42% 55	857
Recycling drop-off centers	15.03% 129	29.72% 255	30.42% 261	12.12% 104	4.31% 37	2.21% 19	6.29% 54	858
HI5 Redemption centers	16.18% 138	28.96% 247	25.91% 221	12.19% 104	4.57% 39	1.76% 15	11.02% 94	853
Scrap metal facilities	6.32% 53	9.31% 78	12.65% 106	17.06% 143	4.06% 34	2.86% 24	47.85% 401	838
Appliance pick-up program	6.40% 54	9.48% 80	11.73% 99	15.88% 134	8.29% 70	3.91% 33	44.67% 377	844
Appliance drop-off program	4.90% 41	7.06% 59	9.57% 80	16.87% 141	4.90% 41	2.39% 20	55.02% 460	836
Abandoned vehicle removal program	6.89% 58	9.50% 80	13.06% 110	15.68% 132	7.13% 60	4.39% 37	43.59% 367	842
County composting facility (at the landfill)	10.19% 85	16.55% 138	12.47% 104	15.35% 128	3.12% 26	1.20% 10	41.37% 345	834
Electronic recycling	7.67% 65	13.58% 115	14.88% 126	14.99% 127	5.90% 50	3.07% 26	40.26% 341	847
Alohashares.org (donate reusable goods)	7.56% 63	10.92% 91	7.44% 62	14.17% 118	1.08% 9	0.60% 5	58.94% 491	833
County Landfill Service	14.81% 124	24.01% 201	15.89% 133	15.53% 130	1.08% 9	0.84% 7	28.20% 236	837
Refuse Billing and Payment Process	17.84% 149	24.55% 205	15.93% 133	17.72% 148	3.35% 28	1.80% 15	19.04% 159	835
Ease of locating refuse and recycling info on the county website (www.mauicounty.gov)	13.74% 116	24.88% 210	17.06% 144	16.47% 139	4.15% 35	1.78% 15	22.51% 190	844

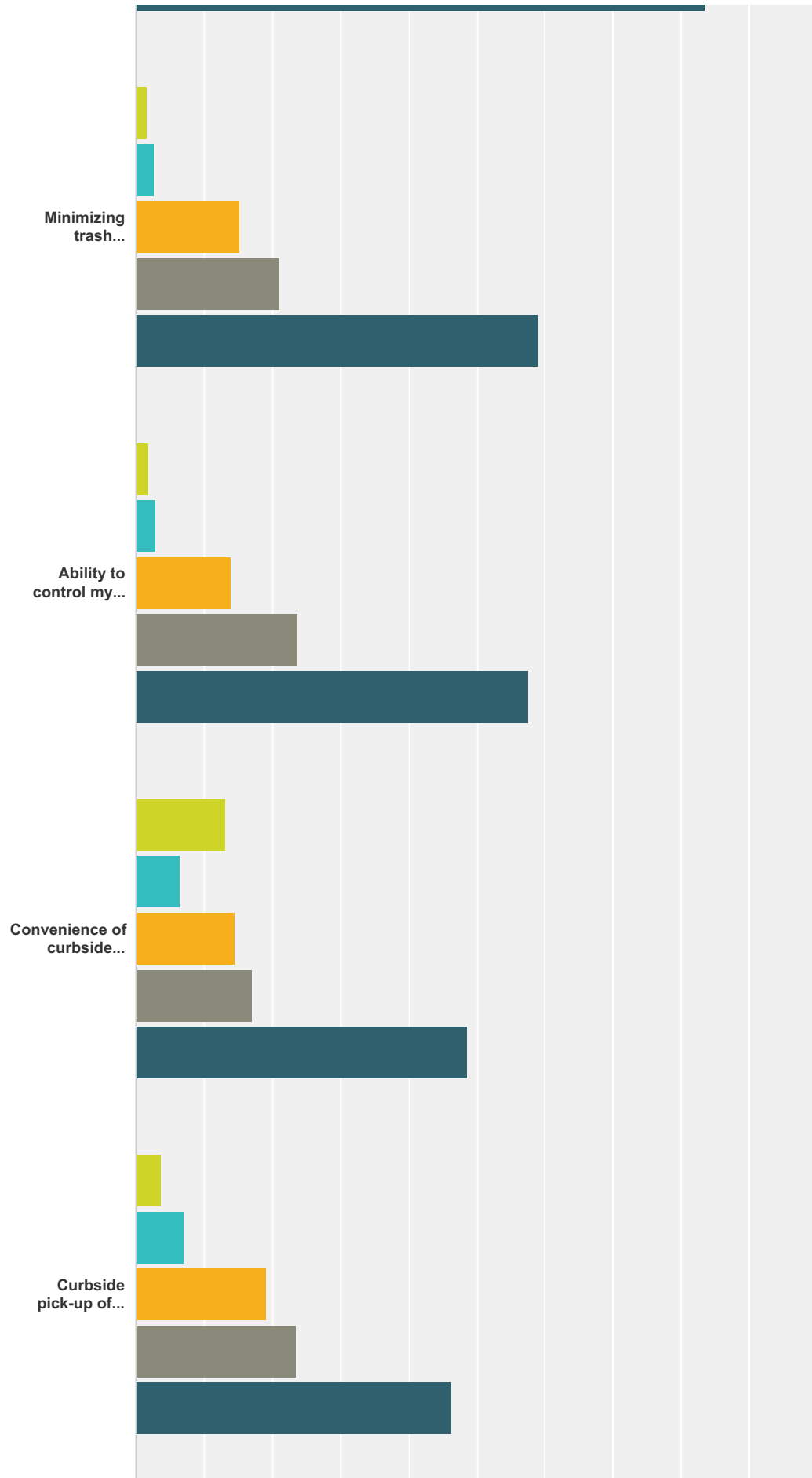
Q30 How important are the following items to you? (where 1 is unimportant and 5 is

very important)

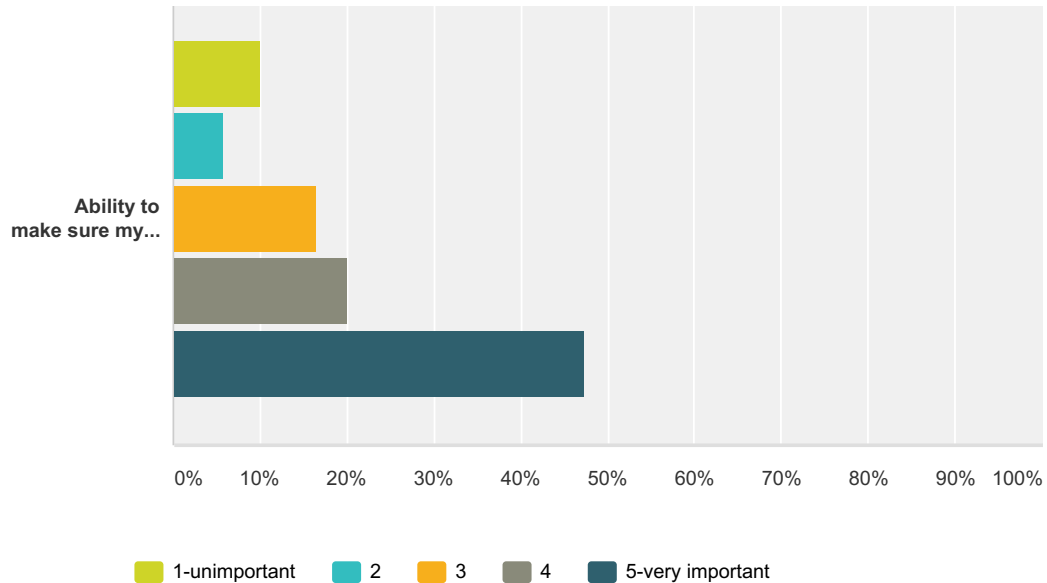
Answered: 877 Skipped: 190



Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



	1-unimportant	2	3	4	5-very important	Total
High quality of service in trash collection	0.81% 7	1.62% 14	12.28% 106	27.93% 241	57.36% 495	863
Ability to recycle at the curb	4.14% 36	2.53% 22	8.75% 76	15.65% 136	68.93% 599	869
Ability to recycle many materials	1.60% 14	1.15% 10	4.01% 35	13.63% 119	79.61% 695	873
Take actions to preserve the environment	0.57% 5	1.26% 11	3.55% 31	11.10% 97	83.52% 730	874
Minimizing trash bills/cost	1.73% 15	2.77% 24	15.26% 132	21.16% 183	59.08% 511	865
Ability to control my trash costs	1.86% 16	2.91% 25	13.95% 120	23.72% 204	57.56% 495	860
Convenience of curbside pick-up of yard trimmings	13.11% 112	6.56% 56	14.52% 124	17.21% 147	48.59% 415	854
Curbside pick-up of appliances or large bulky items	3.72% 32	7.09% 61	19.30% 166	23.49% 202	46.40% 399	860
Ability to make sure my yard trimming and organics get composted at a professional compost facility.	10.10% 87	5.92% 51	16.49% 142	20.09% 173	47.39% 408	861

Q31 Are there any changes you would like to see Maui make to their trash and recycling services?

Answered: 398 Skipped: 669

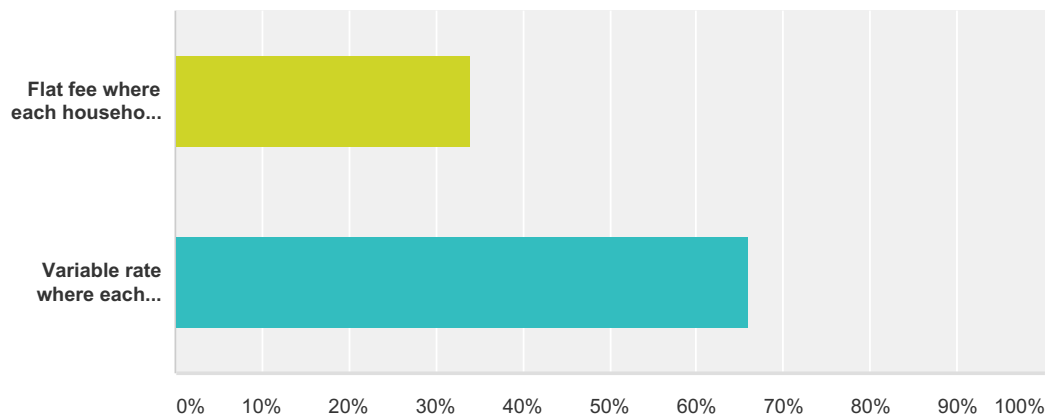
Q32 Are there any aspects of Maui's trash and recycling program you would like to see left unchanged or any other comments

you may have?

Answered: 236 Skipped: 831

Q33 There are two common ways to pay for rubbish collection. Which system do you prefer?

Answered: 856 Skipped: 211

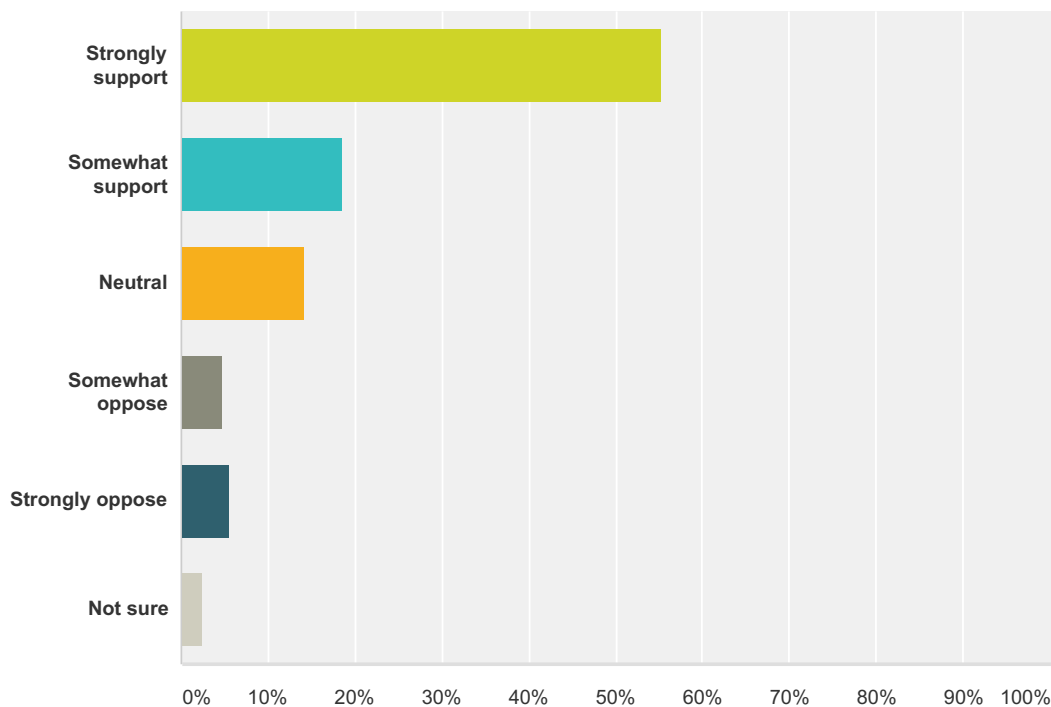


Answer Choices	Responses	
Flat fee where each household pays the same rate regardless of how much they dispose.	34.00%	291
Variable rate where each household is charged based only on how much rubbish they dispose.	66.00%	565
Total		856

Q34 If the county were to offer a variable rate program for refuse collection (where households are charged more or less based on what size trash cart they use) would you support or oppose this type of program? Under this program, all households are provided with curbside recycling and yard waste collection as a way to reduce trash disposal costs.

Answered: 860 Skipped: 207

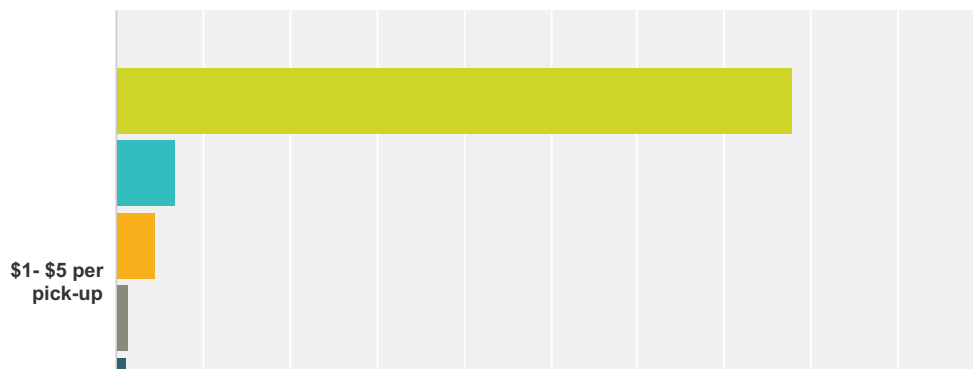
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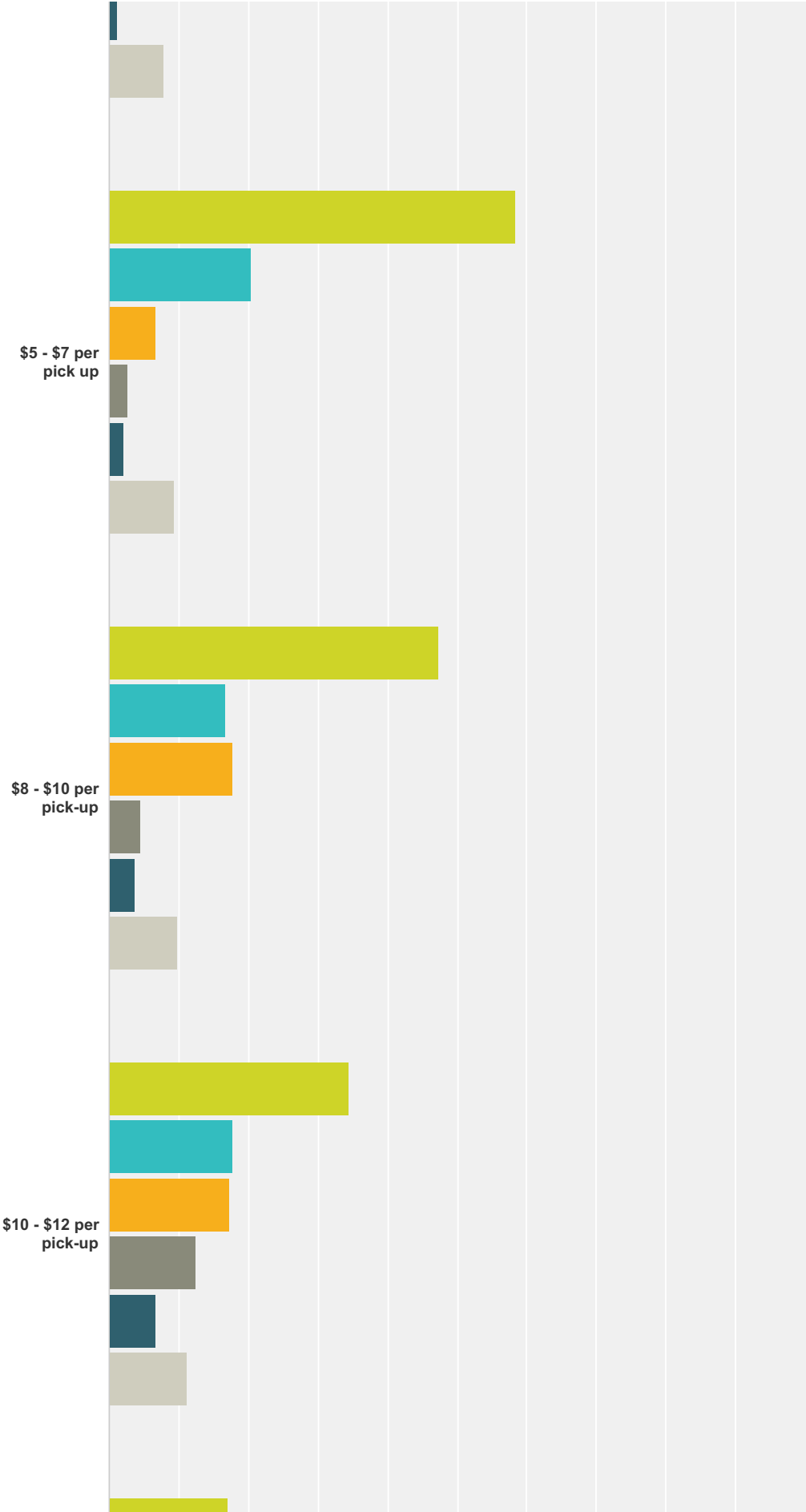
Answer Choices	Responses	
Strongly support	55.35%	476
Somewhat support	18.60%	160
Neutral	14.19%	122
Somewhat oppose	4.77%	41
Strongly oppose	5.58%	48
Not sure	2.44%	21
Total Respondents: 860		

Q35 If the County offered a large bulky item pick-up service (for example a sofa), what is the chance that you would use for the service if it cost....

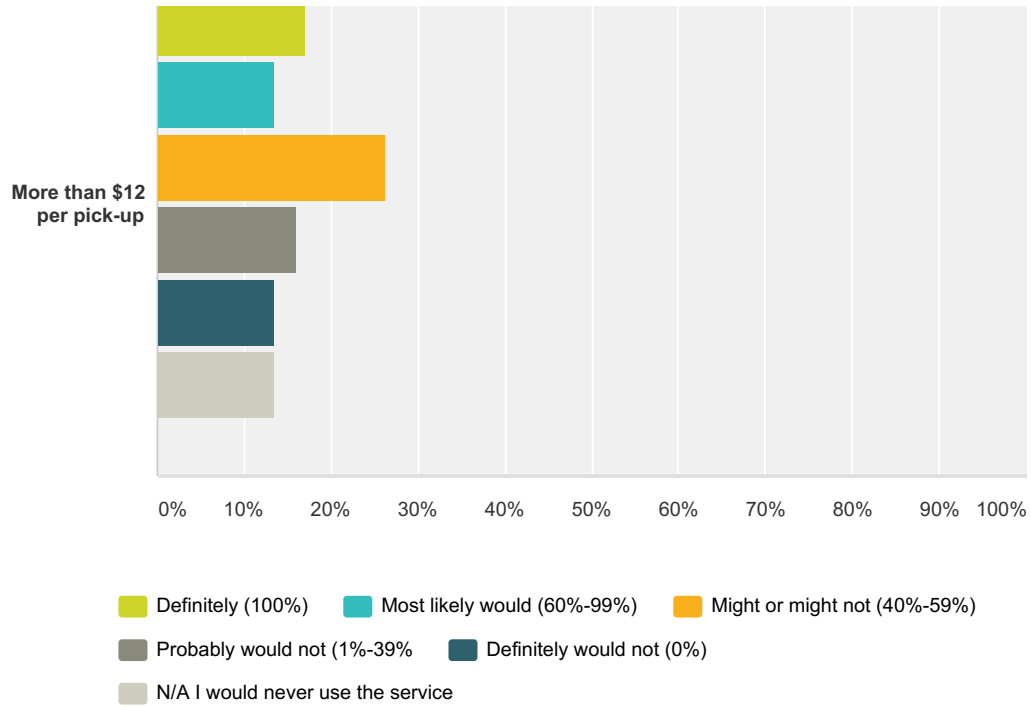
Answered: 857 Skipped: 210



Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

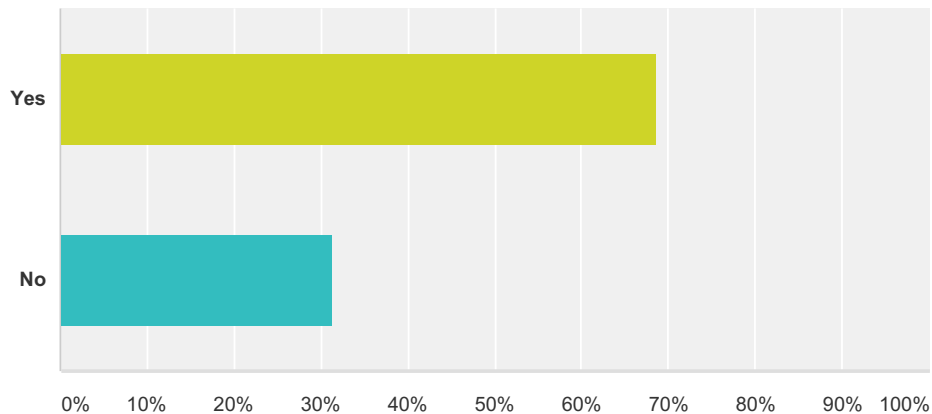


	Definitely (100%)	Most likely would (60%-99%)	Might or might not (40%-59%)	Probably would not (1%-39%)	Definitely would not (0%)	N/A I would never use the service	Total
\$1- \$5 per pick-up	77.79% 606	6.80% 53	4.62% 36	1.54% 12	1.28% 10	7.96% 62	779
\$5 - \$7 per pick up	58.54% 432	20.46% 151	6.78% 50	2.71% 20	2.03% 15	9.49% 70	738
\$8 - \$10 per pick-up	47.42% 359	16.64% 126	17.70% 134	4.62% 35	3.70% 28	9.91% 75	757
\$10 - \$12 per pick-up	34.44% 259	17.82% 134	17.42% 131	12.50% 94	6.65% 50	11.17% 84	752
More than \$12 per pick-up	17.11% 128	13.50% 101	26.20% 196	16.18% 121	13.50% 101	13.50% 101	748

Q36 Would you be willing to ask 3 other people to take this survey on-line at www.garbageandrecyclingsurvey.com ?

Answered: 861 Skipped: 206

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

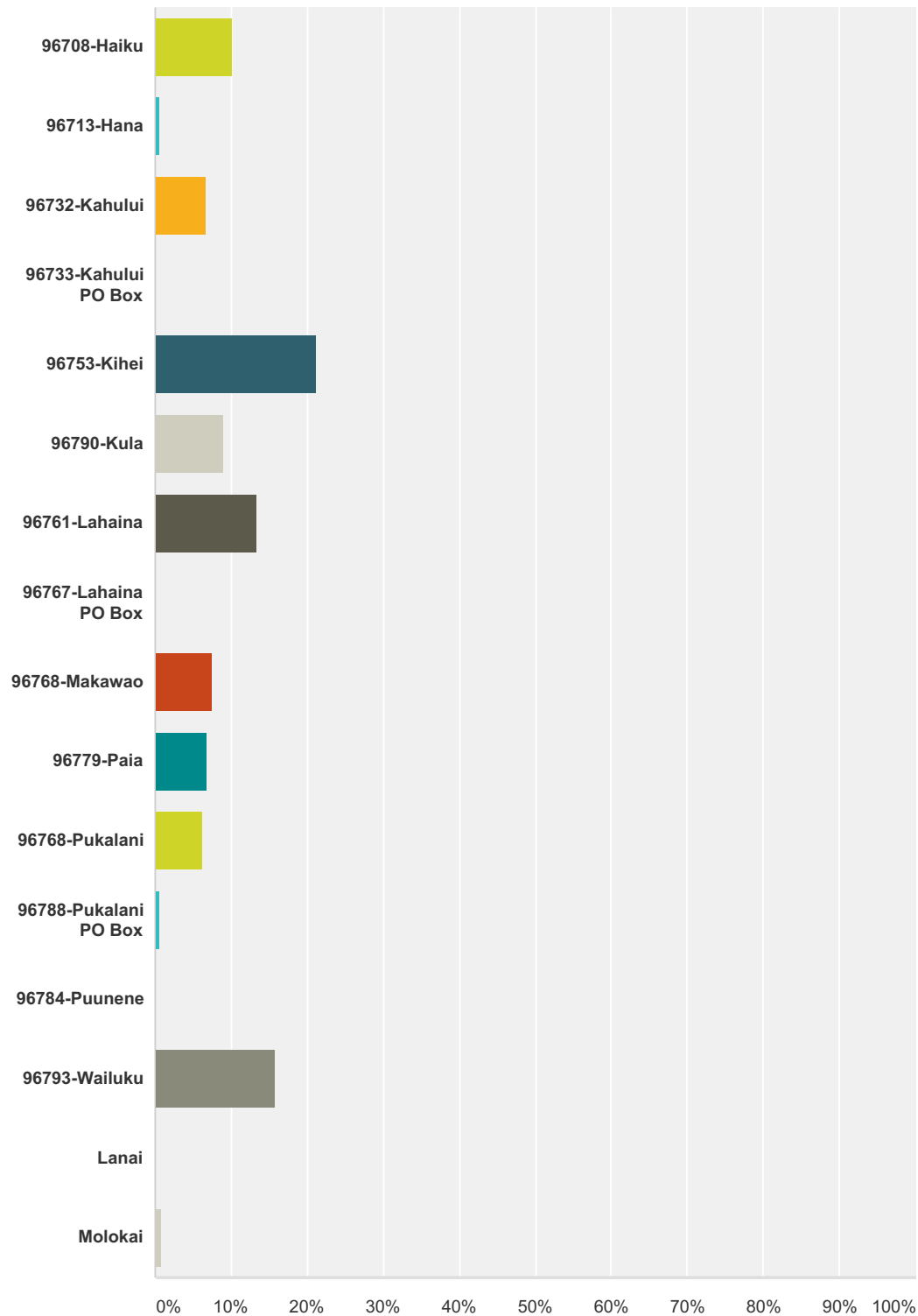


Answer Choices	Responses	
Yes	68.76%	592
No	31.24%	269
Total		861

Q37 What part of the County do you live in?

Answered: 855 Skipped: 212

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



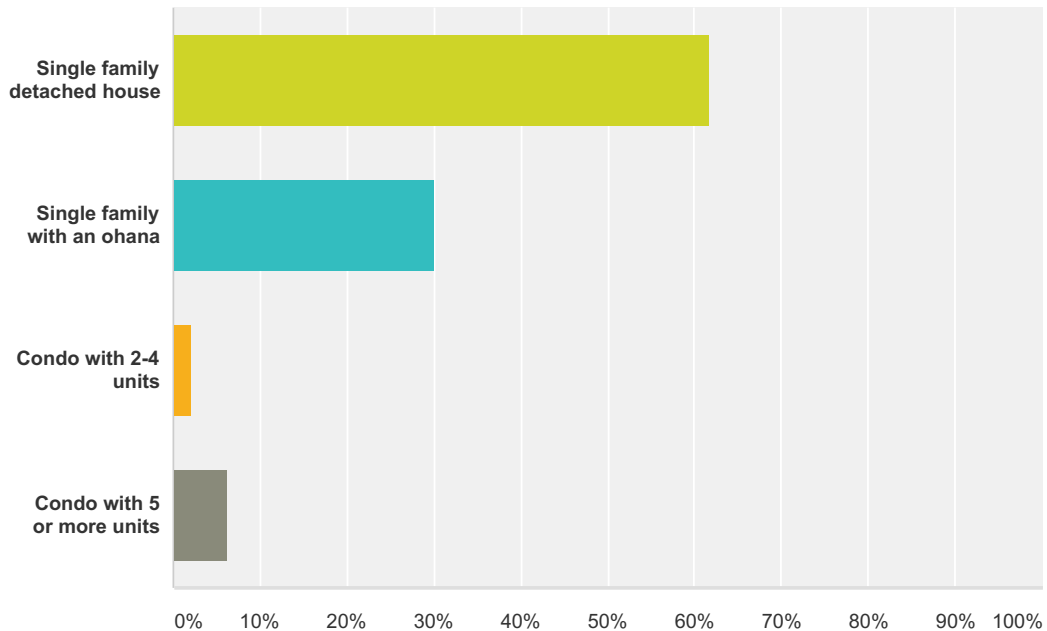
Answer Choices	Responses	
96708-Haiku	10.29%	88
96713-Hana	0.58%	5
96732-Kahului	6.78%	58
96733-Kahului PO Box	0.00%	0

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

96753-Kihei	21.29%	182
96790-Kula	9.01%	77
96761-Lahaina	13.33%	114
96767-Lahaina PO Box	0.23%	2
96768-Makawao	7.60%	65
96779-Paia	6.90%	59
96768-Pukalani	6.32%	54
96788-Pukalani PO Box	0.70%	6
96784-Puunene	0.00%	0
96793-Wailuku	15.91%	136
Lanai	0.12%	1
Molokai	0.94%	8
Total		855

Q38 Which of the following housing types best describes your home?

Answered: 839 Skipped: 228



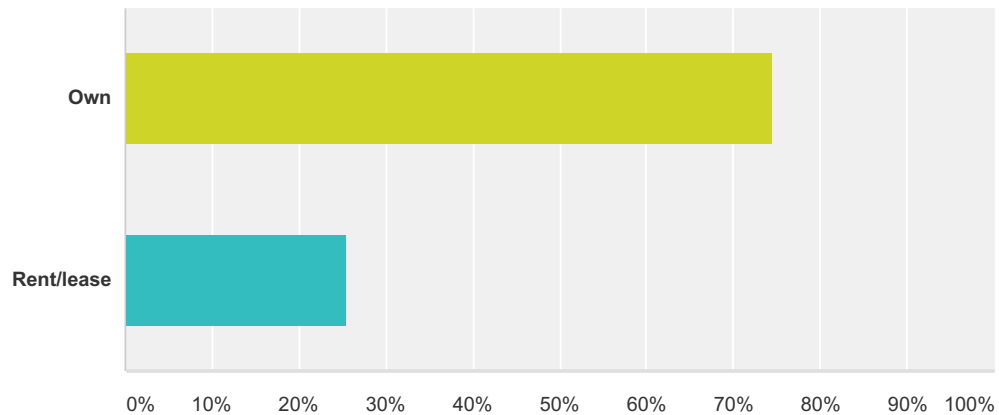
Answer Choices	Responses
Single family detached house	61.74% 518
Single family with an ohana	30.04% 252
Condo with 2-4 units	2.03% 17

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

Condo with 5 or more units	6.20%	52
Total		839

Q39 Do you or members of your house own or do you rent?

Answered: 833 Skipped: 234

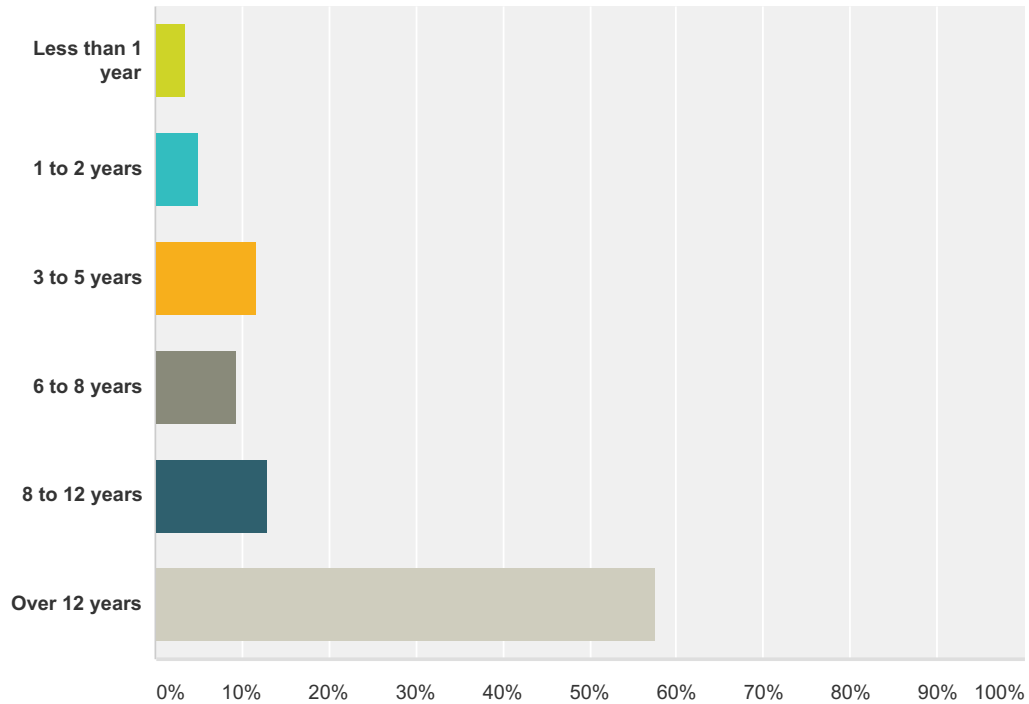


Answer Choices	Responses	
Own	74.43%	620
Rent/lease	25.57%	213
Total		833

Q40 How long have you lived in Maui County

Answered: 861 Skipped: 206

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

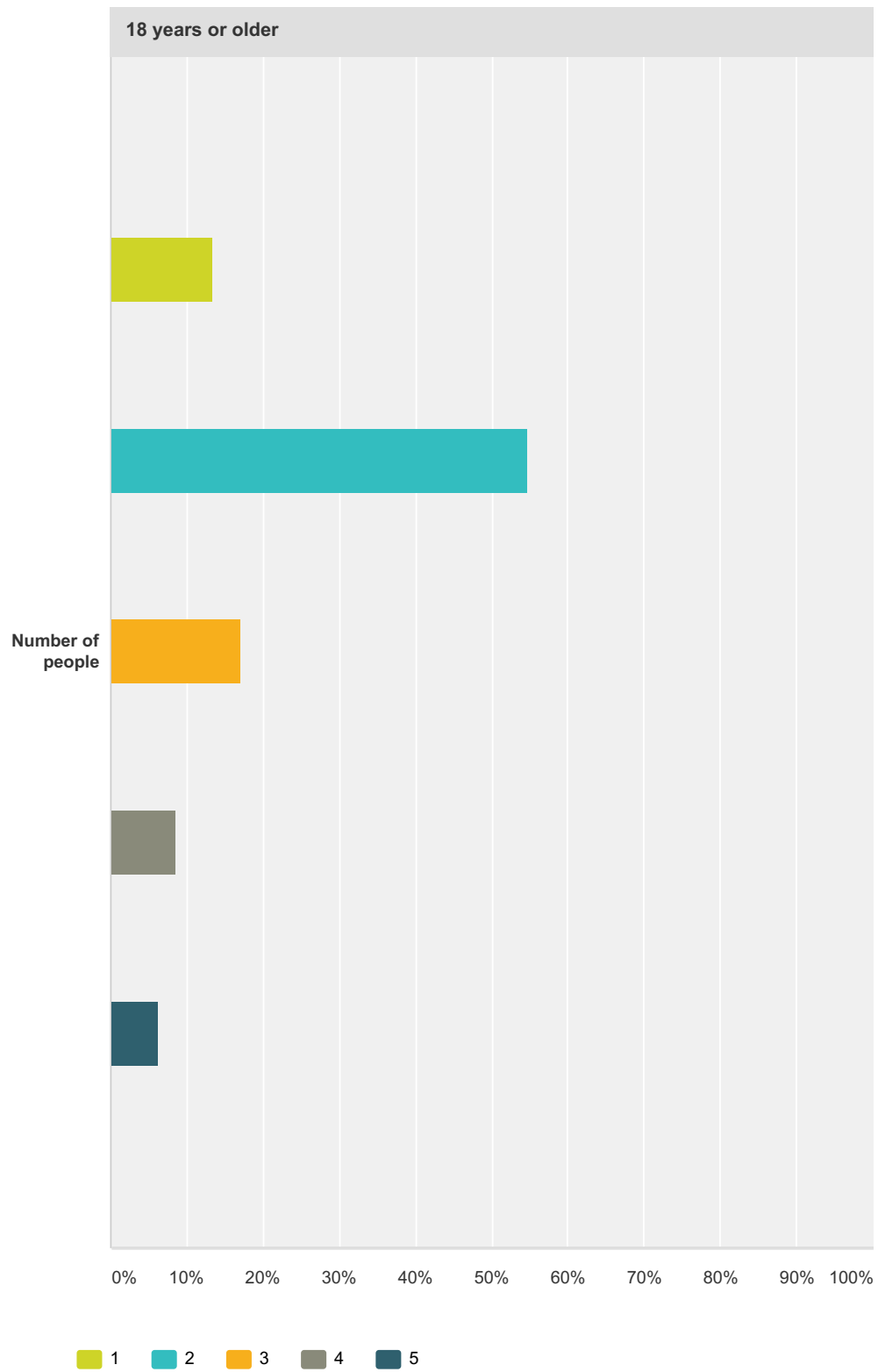


Answer Choices	Responses	
Less than 1 year	3.48%	30
1 to 2 years	4.99%	43
3 to 5 years	11.61%	100
6 to 8 years	9.41%	81
8 to 12 years	12.89%	111
Over 12 years	57.61%	496
Total		861

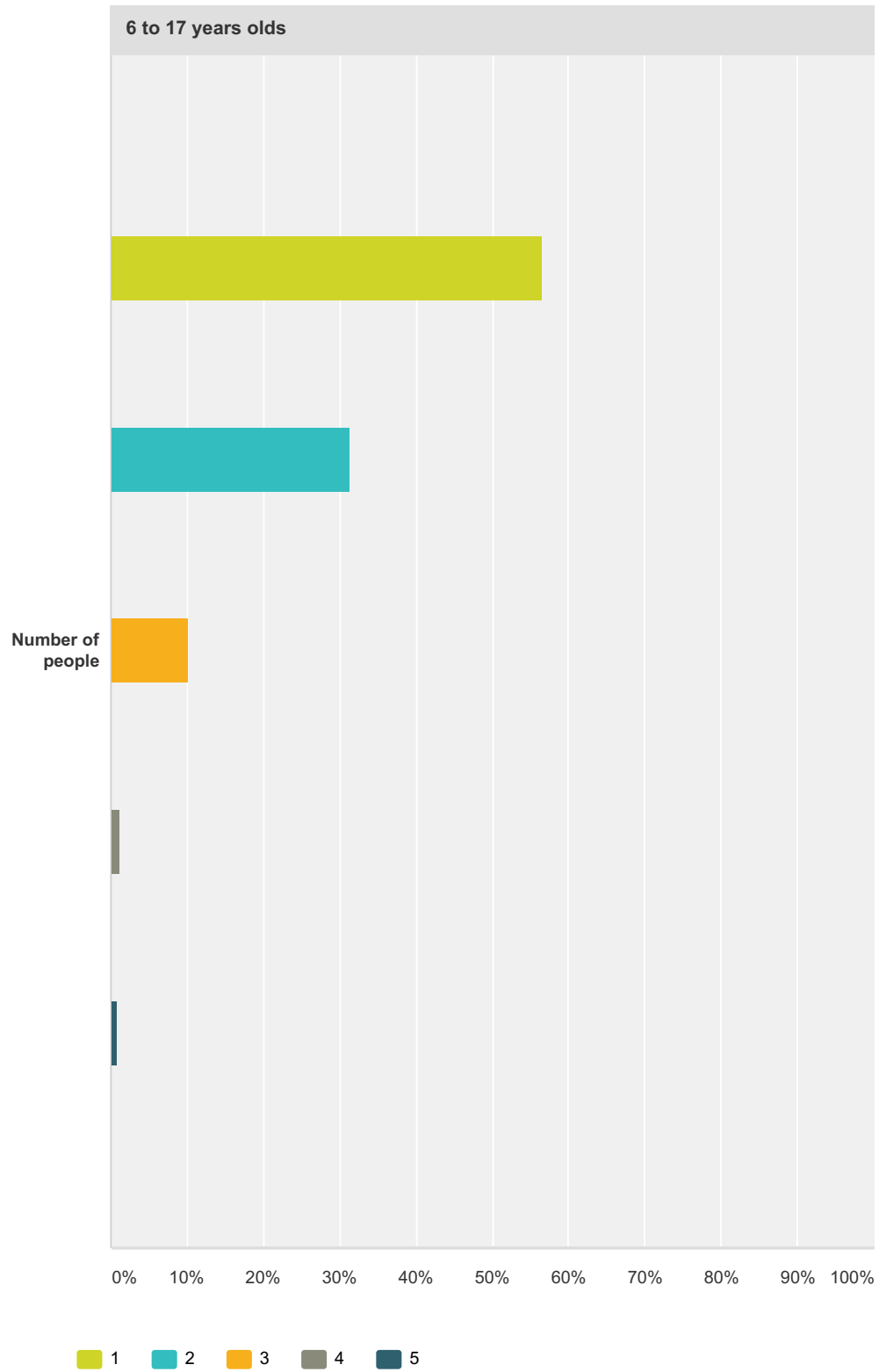
Q41 Including yourself, how many people normally live in the household on a full time basis? (exclude children away at college or military, include all members of the household whether they are related to you or not)

Answered: 845 Skipped: 222

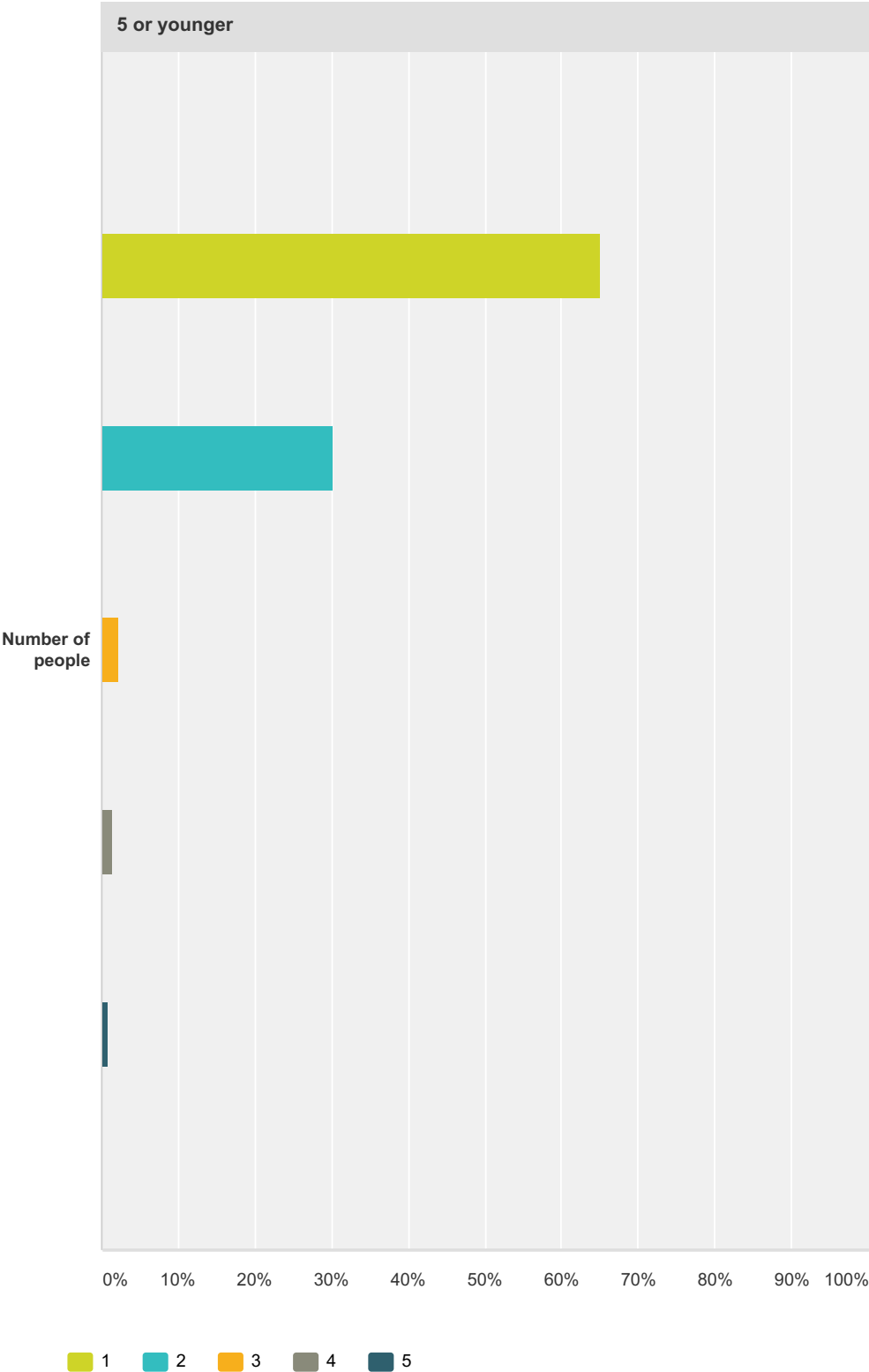
Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)



18 years or older						
	1	2	3	4	5	Total
Number of people	13.31% 111	54.80% 457	17.03% 142	8.63% 72	6.24% 52	834

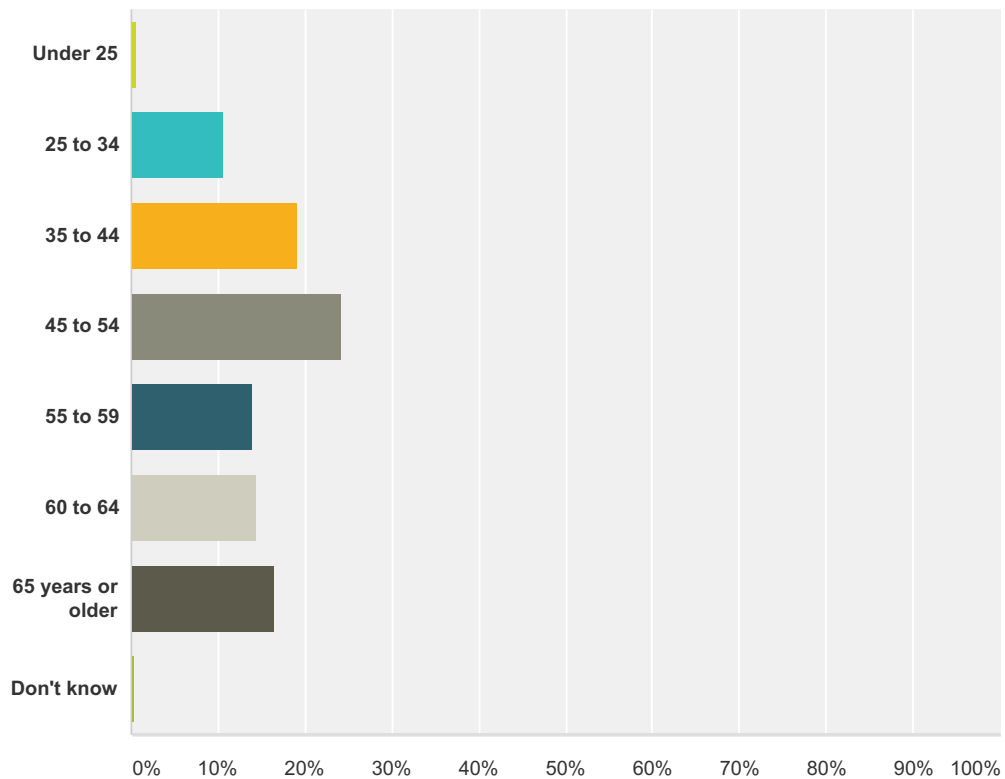
6 to 17 years olds						
	1	2	3	4	5	Total

Maui County Rubbish and Recycling Survey (Sponsored by US EPA Region 9)

Number of people	56.54% 134	31.22% 74	10.13% 24	1.27% 3	0.84% 2	237
5 or younger						
	1	2	3	4	5	Total
Number of people	65.19% 88	30.37% 41	2.22% 3	1.48% 2	0.74% 1	135

Q42 How old is the head of household?

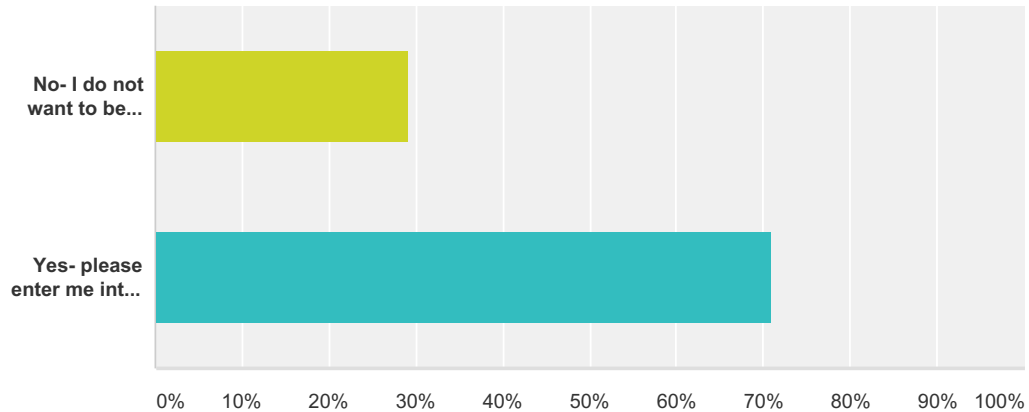
Answered: 862 Skipped: 205



Answer Choices	Responses
Under 25	0.70% 6
25 to 34	10.56% 91
35 to 44	19.26% 166
45 to 54	24.13% 208
55 to 59	13.92% 120
60 to 64	14.50% 125
65 years or older	16.47% 142
Don't know	0.46% 4
Total	862

Q43 Thank you very much for your help. If you would like to be entered into the drawing for a KINDLE E-READER please enter your information below so that we may contact you if you win.

Answered: 848 Skipped: 219



Answer Choices	Responses	
No- I do not want to be entered into the drawing	29.13%	247
Yes- please enter me into the drawing	70.99%	602
Total Respondents: 848		

Tribal Pay-As-You-Throw Training

May 18, 2011 ■ Reno-Sparks Indian Colony, NV

8:30 am – 8:35 am: Introductions

8:35 am – 8:55 am: Basics of PAYT

8:55 am – 9:20 am: PAYT System Types

- Automated
- Bags
- Hybrid
- Drop-off only

9:20 am – 9:25 am: PAYT in Rural Situations

9:25 am – 9:35 am: PAYT Impacts on Illegal Dumping

9:35 am – 9:45 am: Billing and Revenue Issues

9:45 am – 10:00 am: Question and Answer Period

10:00 am – 10:15 am: Break

10:15 am – 10:35 am: Review of Goals, Current Situation, and Programs

- Round Robin
- Table Groups

10:35 am – 11:00 am: Group Discussions

- What would PAYT look like in this area?
- What are the local concerns, barriers, and issues?

11:00 am – 11:10 am: Rate Setting

11:10 am – 11:20 am: PAYT Implementation Steps

11:20 am – 11:30 am: PAYT Implementation Steps in Your Community

11:30 am – 11:35 am: Environmental and Other Impacts of PAYT

11:35 am – 11:50 am: Programs Beyond PAYT

11:50 am – 12:20 pm: Group Discussions

- Areas of on-going concern
- Opportunities to move forward
- Next steps and remaining issues

12:20 pm – 12:30 pm: Question and Answer Period

Sponsored by:



ECONSERVATION INSTITUTE





Notes from EPA Region 9 Pay-As-You-Throw Workshop

May 18th, 2011, Reno-Sparks Indian Colony, Nevada

Presented by:

Econservation Institute, Lisa Skumatz and Juri Freeman (303)494-1178

skumatz@econservationinstitute.org, freeman@serainc.com

Attendees:

Highlight programs that are working well in your community:

Weekly collection of trash in 96-gallon carts provided by the tribe

Bulky items collected on an on-call basis for no fee to help reduce illegal dumping

A zero waste casino in near San Diego, CA

The tribe pays a private waste hauler for services, the service is inexpensive for tribal members, it is a simple and convenient program

A drop-off for MSW and recycling, the site is conveniently located and has cameras and signs to deter illegal dumping, staff is located near-by to assist in maintaining the site, recyclable materials are collected in a trailer that can be hauled without having to move the materials to new containers

A hub and spoke collection system to consolidate recyclables for greater market value being set up in New Mexico. For more information see:

http://www.recyclenewmexico.com/rural_recycling.htm

- A good contact to learn more about it is: English Bird, Executive Director 505-983-4470, 505-466-6266 FAX, english@recyclenewmexico.com

A program that collects white good and e-waste from households for no cost

A scrap metal program collected periodically from the transfer station. The program is free to drop-off materials and the tribe gets some revenues from the sale of the collected scrap metal. They use signs and fences at the drop-off to keep it clean and dump free

Adding solid waste services to the water utility bill to reduce tribal members in arrearages. The tribe can cut off water services for households that do not pay their trash bills.

A curbside recycling program provided to households in 18-gallon open topped bins. The program is funded through an EPA grant.

An outside hauler collects trash in the tribe with a PAYT type bag program. Households can buy bags from the tribe for a subsidized cost of \$2/bag.

Issues that tribes are trying to deal with include:

Illegal dumping on the reservation after surrounding areas increased their trash rates

Illegal dumping of bulky items

Illegal dumping on the reservation by outsiders coming to the reservation (the residents on the reservation are also illegally dumping)

Currently the trash fees in the community are very low or non-existent

Revenue from the sale of recyclables is locked up by the tribal council and does not go back toward paying for recycling/trash services

Recycling and trash is not an enterprise fund, it is funded by the general fund

Infrastructure is missing

We do not generate the volume of recycling needed to make the commodities valuable

The tribe pays for services, not the individuals/households so there is no link between behavior, responsibility, and accountability

People store trash at their house until the “free” drop or collection days, overwhelming the tribe on these days
 Informal collectors are putting trash in the free tribal dumpsters
 People hoarding materials on their property because they do not want to pay a minimal fee
 Any fee, no matter how small, is a potential barrier
 Burning materials

What might a PAYT program look like in your community/tribe:

Community/tribe	Who will Collect?	What containers will be used for MSW?	What will the recycling program look like?
Washoe	The tribe will collect all materials. To do this the tribe would need to purchase a truck (significant capital outlay) and will offer rates that are slightly below the market price.	PAYT will be a cart based system with 32, 64, and 96 gallon carts. Residents sign-up for a cart size and rates are based on the size of the cart. The average cost to collect will be about \$10-\$12/hh and PAYT rates will be set to cover that cost, provide recycling, and incentivize recycling/source reduction.	Continue with the current curbside program funded by an EPA grant using 18-gallon bins
Fort Bidwell	Contract for a single hauler to provide service via a Request for Proposal (RFP) process. The RFP will require all bidding haulers to charge variable rates for residential trash service.	Trash will be collected in brightly colored and logo'd bags. The bags will be sold by the tribe from the administration building. The contracted hauler may or may not (depending on what the tribe decides) provide a set number of bags (perhaps 6 bags per month included) for all households as a base level of service. Extra trash would need to go into the bags bought from the tribe (revenue from bag sales remitted to contracted hauler). The price of the bags will be set to help cover the costs of the recycling drop-off center	Recycling will be drop-off only. The drop-off will be staffed with set operating hours, a fenced area, and signs to limit illegal dumping and maintain the cleanliness of the site. Funding will be from the PAYT program and the sale of recyclables. The drop-off may or may not be run by the tribe or the contracted hauler.
Santa Ysabel	The tribe will operate a drop-off for trash. No curbside collection for trash or recycling.	Residents are charged by the bag/can for trash brought to the drop-off. The cost to drop-off the bags/cans will be set to cover the costs of running the trash drop-off as well as adding some “free” recycling drop options	The tribe will offer “free” recycling drop-off or might consider a Container Redemption Center so tribal members would have an incentive to recycle more.
Smith River	Contract for a single hauler to provide service via a Request for Proposal (RFP) process. The RFP will require all bidding haulers to charge variable rates for residential trash service and will require that the costs of recycling are embedded in the trash rates. Thus all households would be getting trash and recycling service.	They will continue with the current bag program they are using. The hauler charges for trash based on the number of bags set-out (\$2/bag)	The cost of the bags will include curbside recycling collection. They may also set-up a recycling drop-off for households not getting curbside trash service.
Reno-Sparks	They will continue to use the public works staff to collect trash and will add recycling	Incorporate a hybrid PAYT system. Under this program all households will pay a base fee for a set level of service, a 32 (or 64) gallon container for trash and a 96 gallon	Recycling will be collected by public works from households on an every-other-week basis. They will switch the 96-gallon carts

		for recycling. If HHs want more trash service they need to pay more. They can also buy bags from the tribe for materials that do not fit in their trash container.	currently used for trash to be recycling carts and offer new, smaller, carts for the trash service.
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Brief Rate Study Examples:

These are rough and simplified examples only. The actual rates, percentages on each can, revenues for recycling, etc. will vary greatly in each community. The examples are provided only to show what a rate setting analysis looks like, not what the actual rates would be in a community.

Example 1: Curbside Collection

In this example, the current average monthly cost to provide trash and recycling services per household (HH) are shown in table 1. Table 2 displays the proposed costs per household for trash and recycling service.

Table 1: Current Curbside Costs per Household

Current trash services cost per HH	Current recycling services cost per HH
\$8 per HH to pay for the truck, staff	\$0- no services available
\$2 per HH to pay for the landfill tipping fee	
\$10 total cost per HH	\$0 total cost per HH

Table 2. New Costs per Household for both Trash and Recycling Service

New trash services cost per HH	New Every-Other-Week recycling services cost per HH
\$8 per HH to pay for the truck, staff	\$4 per HH to pay for the truck, staff (This is half the cost of trash because collection is only twice a month)
\$1.60 per HH to pay for the landfill tipping fee (Because there is now less trash going to the landfill)	-.80 For recycling revenues
\$9.60 total cost per HH	\$3.20 total cost per HH
<i>Total new Costs (Revenue Requirements) \$12.80 average cost per HH</i>	

Costs Distribution under PAYT:

Under PAYT, the rates are set to encourage recycling while still covering the revenue requirement for each household (\$12.80/hh/month shown table 2 above). Table 3 demonstrates how the distribution of cart/can/bag sizes impacts the actual rates each household is charged.

Note: the new rates all include unlimited curbside recycling for all households.

Table 3. Distribution of Household Rates to meet the average cost of \$12.80/HH

Service Level	Percent of HH signing up for this level (this is an estimate and changes here would greatly impact the rates)	New Rate per Household/Month
1 can/bag service (32-gallons)	35%	\$6.75
2 can/bag service (64-gallons)	40%	\$12.75
3 can/bag service (96-gallons)	25%	\$18.75

Example 2: Drop-off Pay-as-You-Throw

The average cost to transport and dispose of 1 bag (32-gallons) equivalent of trash and recycling dropped off at the transfer station are shown in table 5.

Table 5.Costs per 32-gallons equivalent of trash and recycling:

Cost of Trash	Cost of Recycling
\$.50 to pay for the PAYT bag itself	\$0 to pay for the bag itself (recyclables do not go in the bags)

\$1.50 cost to landfill the trash in the bag	-.50 revenues for recycling
\$1 cost to haul trash from the transfer station to the landfill	\$1.50 cost to haul from the transfer station to recycling processor
\$3 total cost per bag	\$1 total cost for recycling

The total cost per bag under the PAYT program is designed to cover the costs of disposal of trash as well as the costs of recycling. In this example, the total costs of disposal are **\$3/bag** and the costs for recycling are only **\$1.00**. It is assumed that for every 4 bags of trash that people bring to the drop-off, they will bring an equivalent of 1 bag of recycling (this is a 20% diversion rate). At this level, the cost of the PAYT bags must be **\$3.25/bag** (\$3 for to cover the cost of trash and \$.25 extra per bag to cover the costs of recycling).