Demonstrating the Climate, Financial, and Diversion Benefits of Zero Waste

A New Calculator for California Businesses

May 2, 2011

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California's Commercial Climate Calculator

Motivation & Goals

CalRecycle provides an easy-to-use calculator to show benefits of waste reduction and diversion:

Dollars saved

Tons of resources returned to the economy

Greenhouse gas emissions reduced

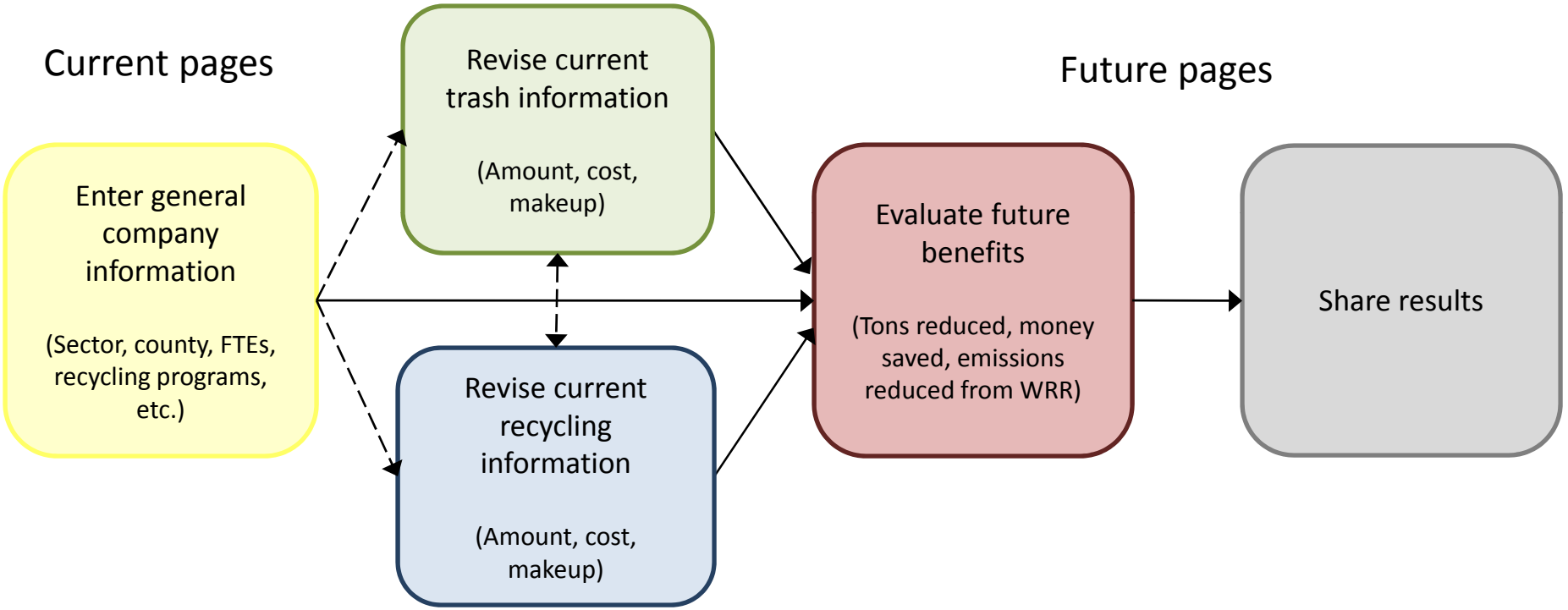
Developing the Calculator

Process & Considerations

- Existing calculator research
- Stakeholder engagement
  - 20 initial phone interviews
  - 12 first-round beta tests
  - 9 second-round beta tests
  - 30 additional feedback reports
- Inter-agency collaboration
  - ARB and UC Berkeley: COOLCalifornia

Calculator Overview

User Steps



Support pages

Read Overview, Information Checklist, & Instructions

Commercial Climate Calculator

Introduction

CalRecycle

Overview

This calculator helps your business identify the benefits of reducing trash and increasing recycling/composting.
In doing so, your business should:

- Save money,
- Reduce its contribution to climate change, and
- Keep valuable material out of landfills.

Information Needs Checklist

Any business may use this calculator. Trash or recycling information is helpful, but not required.
If your business has multiple different types of facilities, please use a separate workbook for each.

To estimate the amount and composition of your trash and recycling, you must enter three items about your busine

- Business sector, described in the *Glossary* (e.g. Business Services, Retail)
- Whether your business currently recycles any materials
- One of the following:
  - Businesses: Number of full-time employee equivalents (FTEs)
  - Multifamily Buildings: Number of occupied units
  - Public Events Venues: Number of visitors per year

To estimate the cost of your trash and recycling, you must enter your county.

If you don't have any information about your trash or recycling, this calculator will estimate it for most sectors.

If you have information about your trash or recycling, you may revise the calculator estimates. To do this, you will need either:

(A) Information about your trash and/or recycling service, including:

- Number, size, and average fullness of your containers
- Number of pickups per week, and
- Whether the container is shared with other businesses

OR

(B) Annual tons of trash and/or recycling your business produces

OR

(C) Annual cost of trash and/or recycling hauling services

Using the Calculator

The calculator consists of nine Microsoft Excel worksheets (click on a worksheet name or use tabs below to go to th

Required: Enter data in Worksheet 1
Optional: Enter data in Worksheets 2, 3, and/or 4

To use each sheet, follow the directions on the page. **Pale yellow cells require your inputs.**

Part	Worksheet	Instructions
A.	1. General Info:	Begin here. Enter general information about your business.
	2. Current Trash:	If you have actual information on the amount, cost, or makeup of your current trash, you may enter it here.
	3. Current Recyclin	If you have actual information on the amount, cost, or makeup of your current recycling, you may enter it here.
B.	4. Future Benefits:	Combines current trash data with potential future action(s) to reduce trash and/or increase recycling/composting. Displays results by material. Charts "before & after" total tons of trash, disposal costs, and carbon footprint.
C.	5. Print Report:	Summarizes information in a format suitable for sharing: · Current trash reduction and recycling/composting information · Benefit of further reducing trash, increasing recycling/compos
	6. Resources:	Identifies helpful resources that may assist your business reduce trash and increase recycling/composting.
	7. Glossary:	Defines terms used in this calculator, describes business sectors and materials, and displays pictures of trash and recycling containers to assist you in determining your container size(s).
	8. Guidelines:	Provides references, examples, and guidelines for what can be source reduced or recycled based on case studies from other businesses.
	9. Custom Rates:	Allows local service providers to enter custom service level rates, creating more accurate cost and cost saving results.

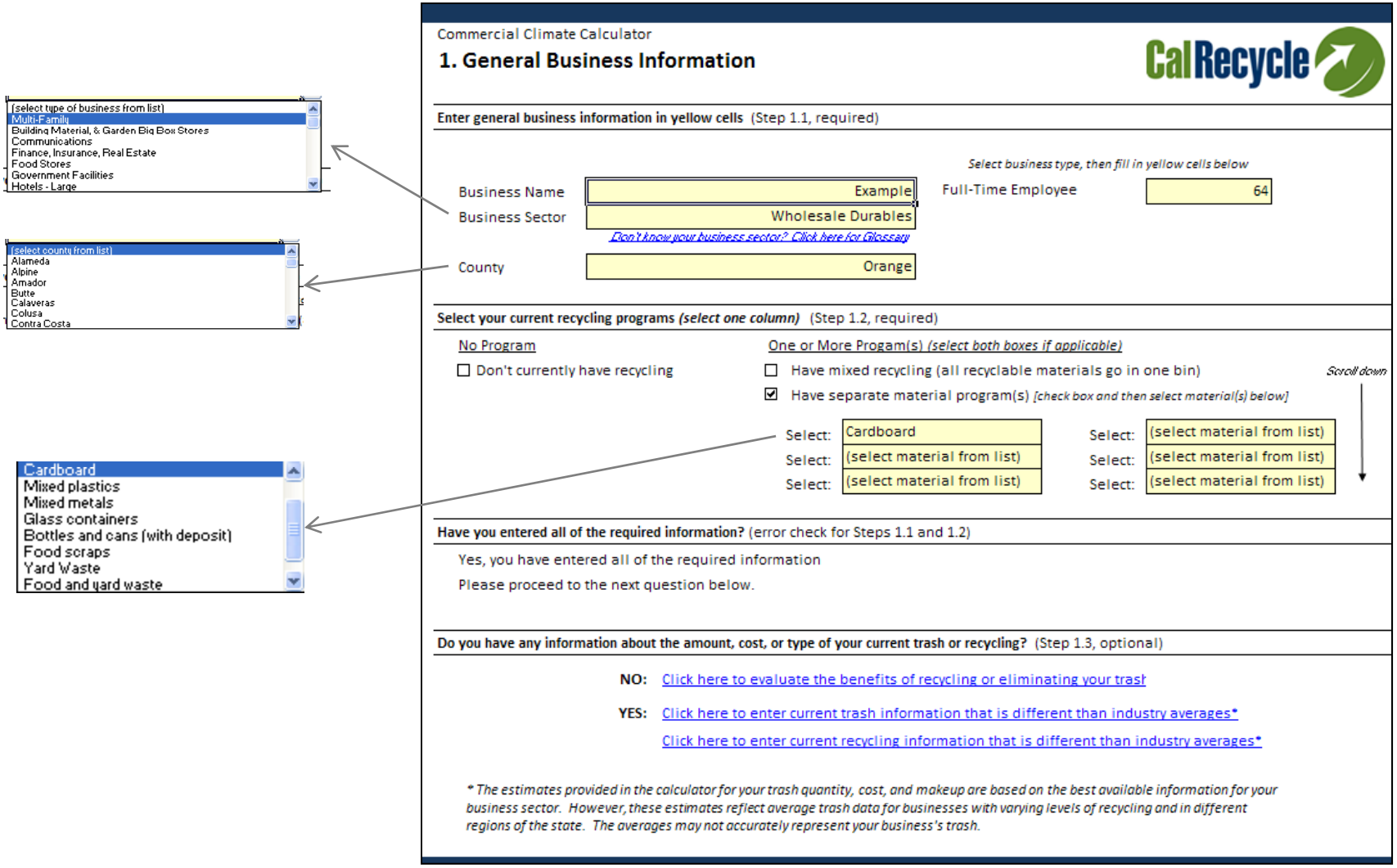
NOTES

1 This calculator uses Microsoft Excel 2007 or 2003 software. It may not function properly if used with other software.

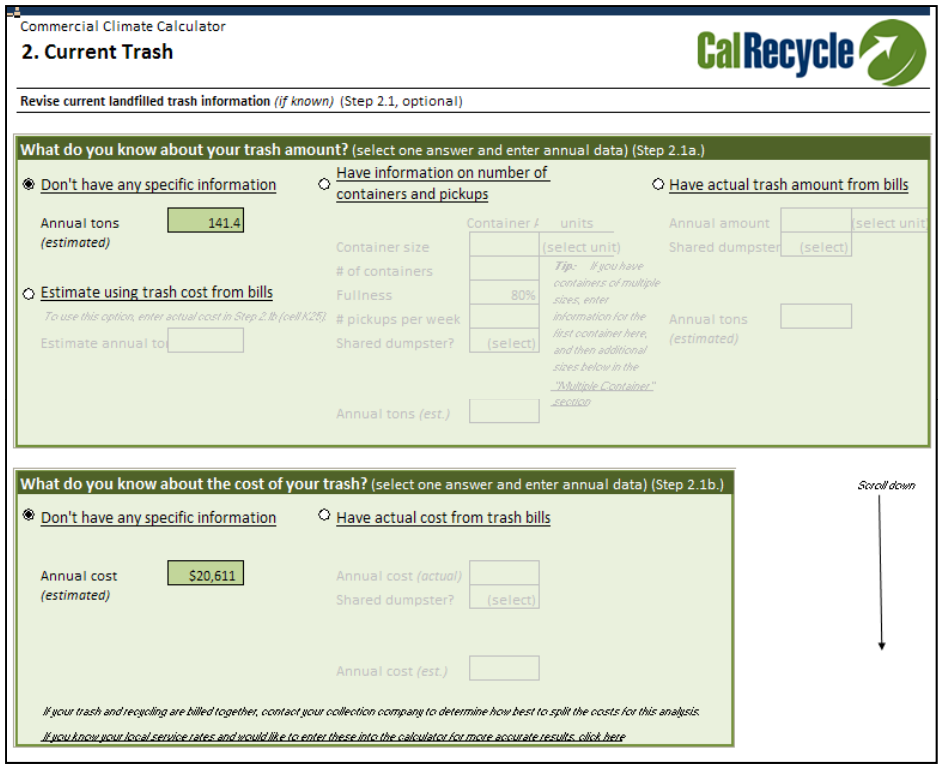
2 The California Department of Resources Recycling and Recovery (Cal Recycle) contracted with HF&H Consultants, LLC, and Cascadia Consulting Group to build this calculator.

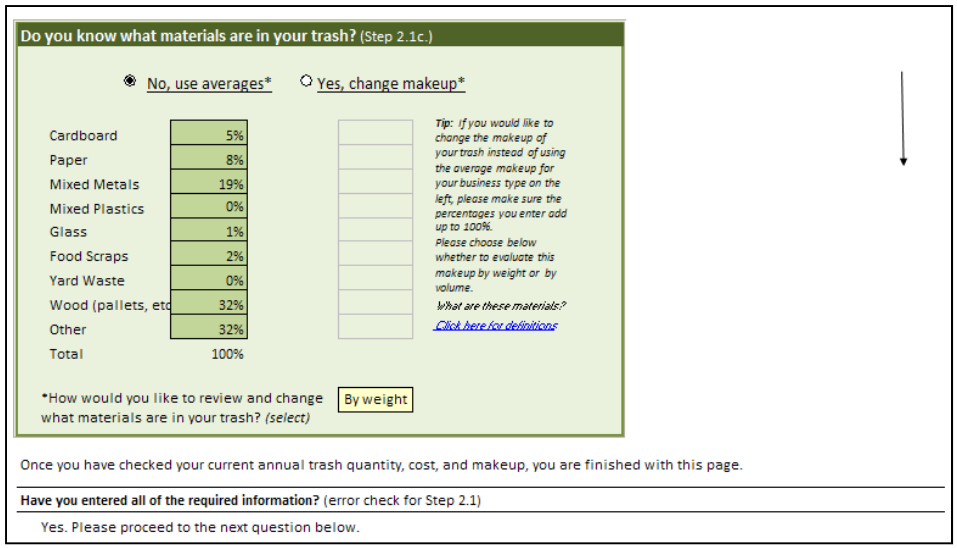
3 *Last updated:* June 16, 2010

Enter General Business Information

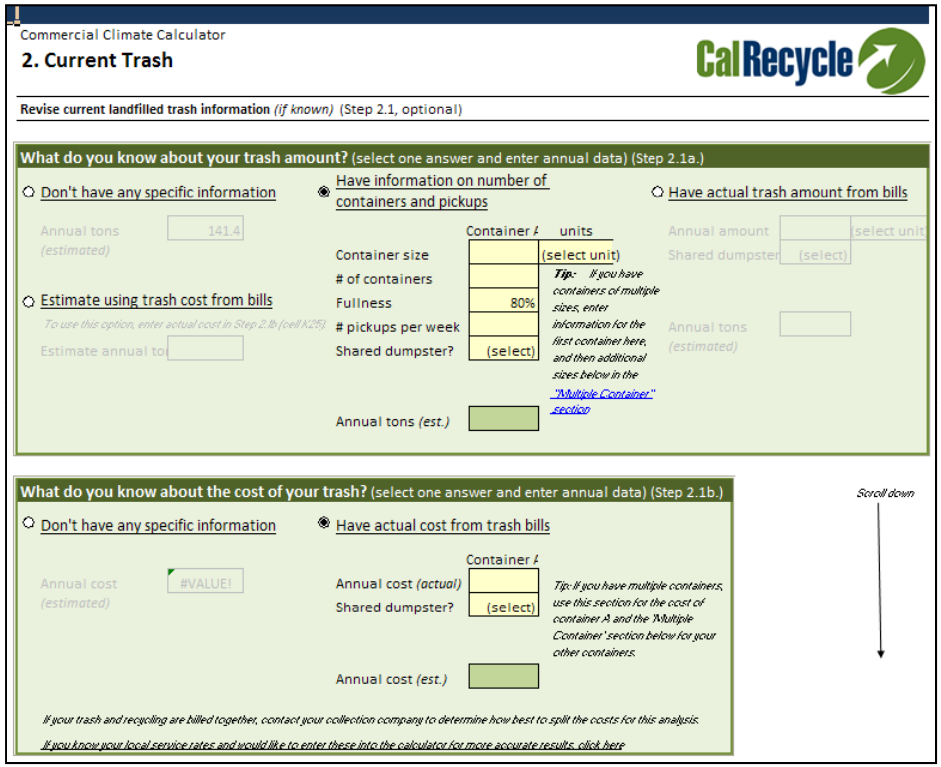


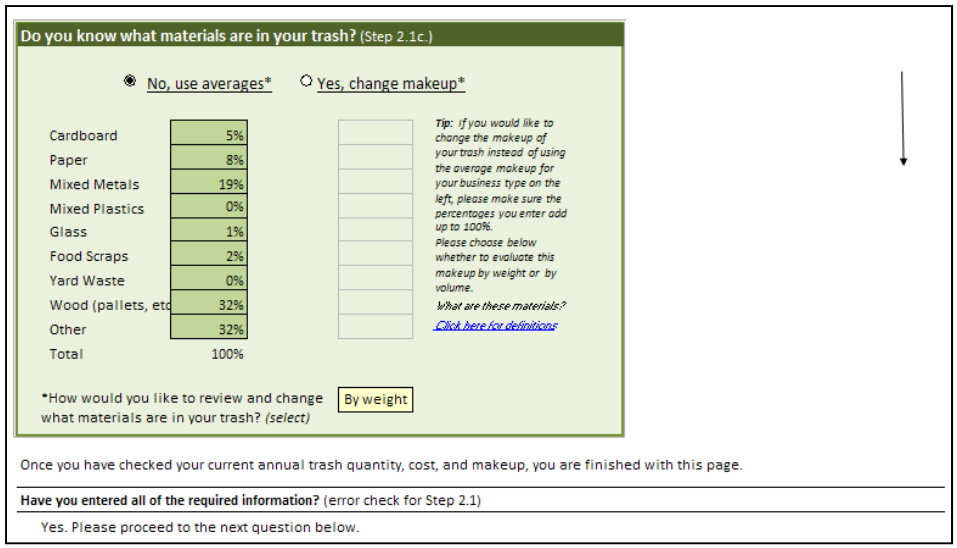
Enter Current Trash Information, if known



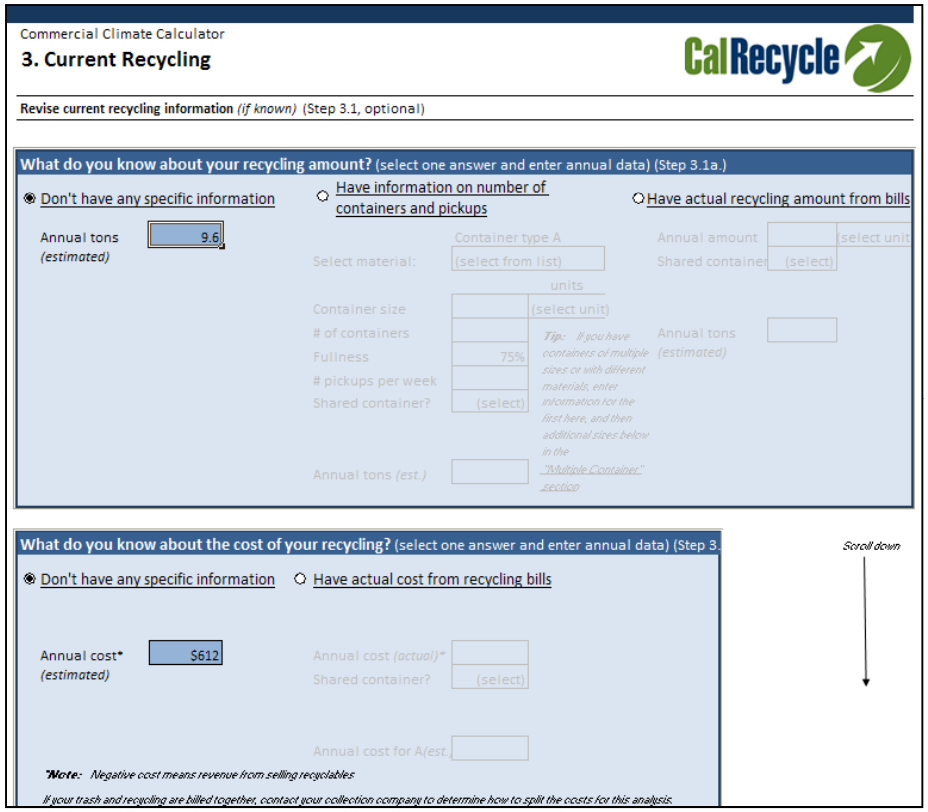


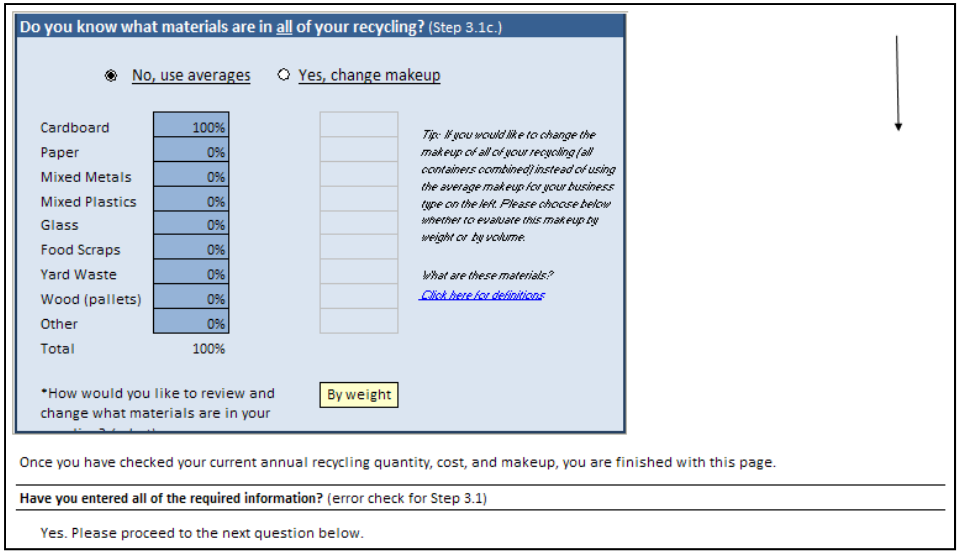
Enter Current Trash Information, if known



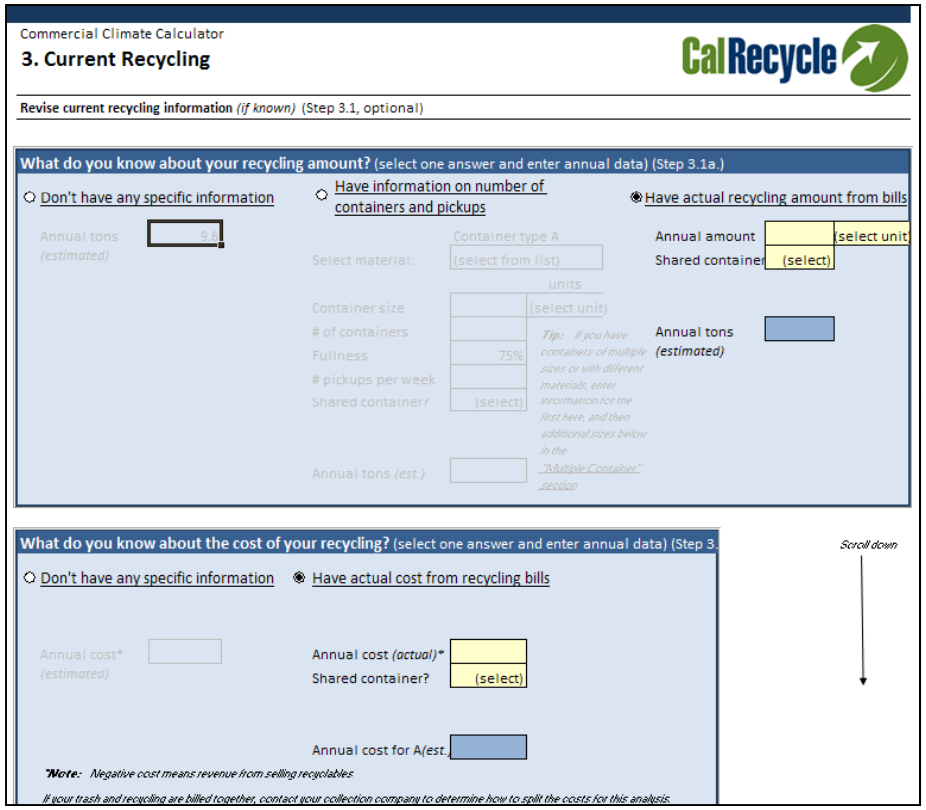


Enter Current Recycling Information, if known





Enter Current Recycling Information, if known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3. Current Recycling

CalRecycle

Revise current recycling information *(if known)* (Step 3.1, optional)

What do you know about your recycling amount? (select one answer and enter annual data) (Step 3.1a.)

○ Don't have any specific information ○ Have information on number of containers and pickups ◉ Have actual recycling amount from bills

Annual tons *(estimated)* 9.6

Container type A

Select material: (select from list)

Container size units (select unit)

# of containers

Fullness 75%

pickups per week

Shared container? (select)

Annual tons *(est.)*

Tip: If you have containers of multiple sizes or with different materials, enter information for the first here, and then additional sizes below in the "Multiple Container" section

Annual amount (select unit)

Shared container (select)

Annual tons *(estimated)*

What do you know about the cost of your recycling? (select one answer and enter annual data) (Step 3.

○ Don't have any specific information ◉ Have actual cost from recycling bills

Annual cost* *(estimated)*

Annual cost *(actual)**

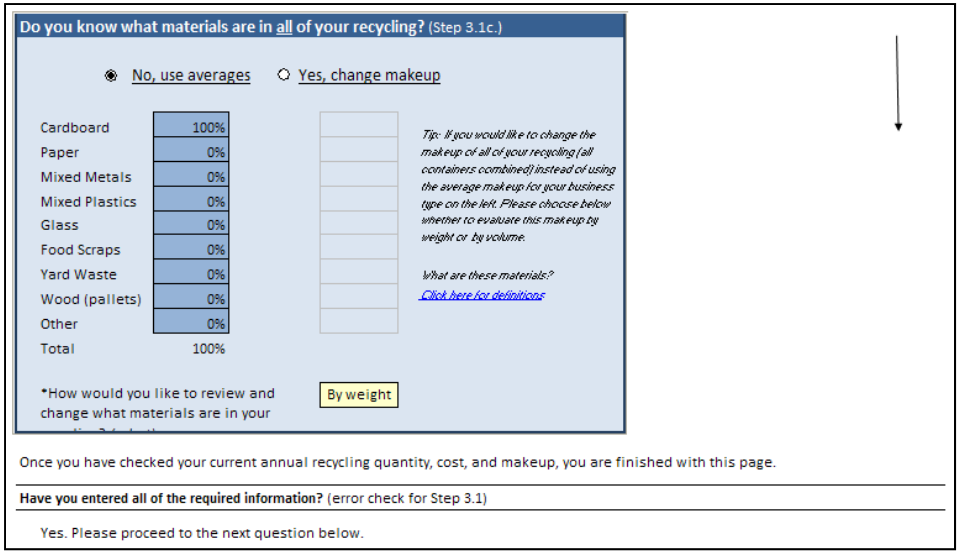
Shared container? (select)

Annual cost for A*(est.)*

***Note:** Negative cost means revenue from selling recyclables*

If your trash and recycling are billed together, contact your collection company to determine how to split the costs for this analysis.

Scroll down


Do you know what materials are in all of your recycling? (Step 3.1c.)

◉ No, use averages ○ Yes, change makeup

Cardboard	100%
Paper	0%
Mixed Metals	0%
Mixed Plastics	0%
Glass	0%
Food Scraps	0%
Yard Waste	0%
Wood (pallets)	0%
Other	0%
Total	100%

Tip: If you would like to change the makeup of all of your recycling (all containers combined) instead of using the average makeup for your business type on the left. Please choose below whether to evaluate this makeup by weight or by volume.

What are these materials?

Click here for definitions

*How would you like to review and change what materials are in your

By weight

Once you have checked your current annual recycling quantity, cost, and makeup, you are finished with this page.

Have you entered all of the required information? (error check for Step 3.1)

Yes. Please proceed to the next question below.

Evaluate Future Benefits

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4. Future Benefits of Recycling & Reduction

Check out the benefits (Step 4.1, required)

Use the table below to evaluate the benefits you can achieve by reducing your current trash that is landfilled. To use this table:

Review the "Current" section of the table, which is based on the information about your business, trash, and recycling that you have already entered.

Enter a new, higher recycling rate and/or enter the percent of your trash that you would like to reduce in the yellow action cells in the "Future Actions" section (refer to the Glossary and Guidelines pages for more information about these two types of actions).

The "Results" section and bar charts below the table summarize the trash, cost, and footprint savings[1] for you!

Evaluate Future Actions: Example

Click here for guidelines about actions

Recycling and waste reduction are different; click here for definitions

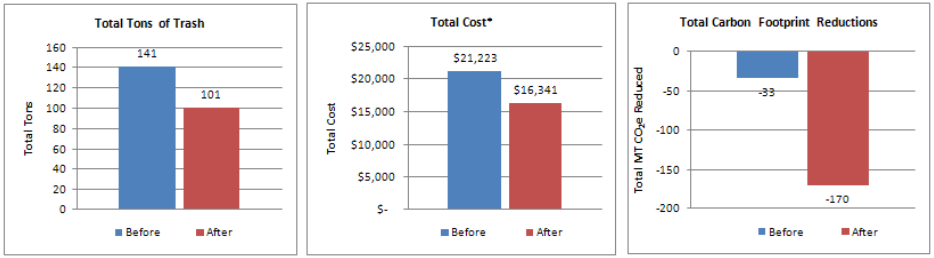
Click here for definitions of materials	Current						Future Actions		Results		
	Annual Trash	Annual Recycling	Annual Total Material	Annual Recycling Rate	Total Cost Savings*	Carbon Footprint Reducti	Increase Recycling Rate to _%	Reduce _% of Total Material	Additional Trash Reduced	Additional Cost Savings*	Additional Footprint Reductions
Materials	Tons	Tons	Tons	%	$	MT CO_2e	%	%	Tons	$	MT CO_2e
Cardboard	7.6	9.6	17.2	56%	$789	33.1	75%		3.3	$271	11.37
Paper	11.5	0.0	11.5	0%	$0	0.0		10%	1.1	$167	10.03
Mixed Metals	26.6	0.0	26.6	0%	$0	0.0	50%		13.3	$1,887	71.55
Mixed Plastics	0.6	0.0	0.6	0%	$0	0.0			0.0	$0	0.00
Glass	1.9	0.0	1.9	0%	$0	0.0			0.0	$0	0.00
Food Scraps	2.1	0.0	2.1	0%	$0	0.0			0.0	$0	0.00
Yard Waste	0.6	0.0	0.6	0%	$0	0.0			0.0	$0	0.00
Wood (pallets, etc.)	45.2	0.0	45.2	0%	$0	0.0	50%		22.6	$2,558	43.72
Other	45.3	0.0	45.3	0%					0.0	$0	0.00
Total	141.4	9.6	151.0	6%	$789	33.1			40.3	$4,883	136.7

Scroll down

Source reduction cost savings $0 *Enter the amount of money that you will save each year by not purchasing as much material*

If you know your local service rates and would like to enter these into the calculator for more accurate cost saving results, click here

What do your savings look like?



***Note:** Cost savings in the "Evaluate Future Actions" table include the savings you achieve by not having to pay the cost of disposal for materials that you move out of the trash. Costs in the "Total Cost" graph above reflect your estimated current and future disposal and recycling costs.*

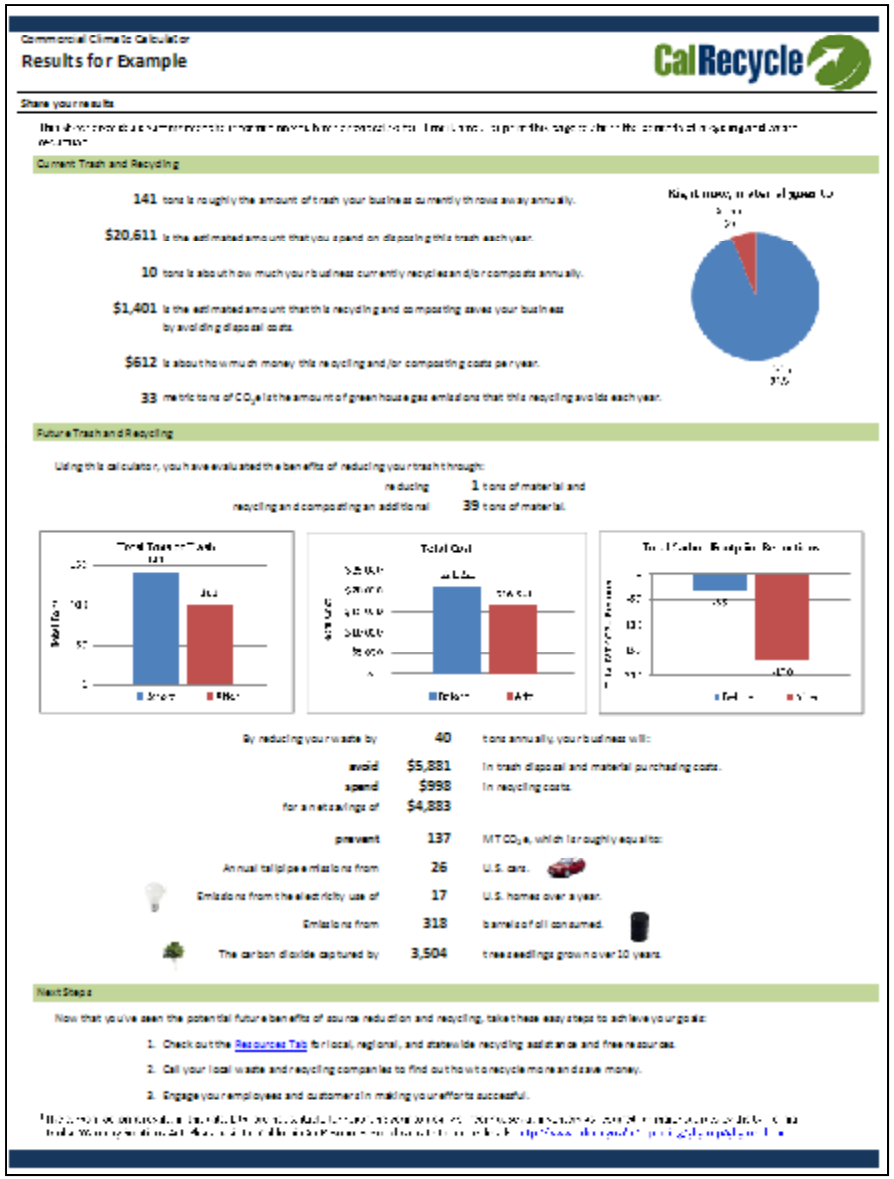
What do my carbon footprint savings mean?

MT CO_2e stands for metric tons of carbon dioxide equivalent. This is the standard unit used to measure a carbon footprint. Tons of carbon dioxid methane, and other greenhouse gases are all accounted for and converted to MT CO2e. These gases are emitted when you dispose and recycle.

It can be difficult to visualize what a MT CO2e really means. For this reason, **your additional and total** future emission reductions, including your current estimated emission reductions and any reductions from future actions, are shown below in easier-to-understand terms.

	Additional	Total	
Saving	**137**	**170**	**metric tons of CO_2e is roughly equal to:**
Annual tailpipe emissions from	26	32	U.S. cars.
Emissions from the electricity use of	17	21	U.S. homes over a year.
Emissions from	318	395	barrels of oil consumed.
The carbon dioxide captured by	3,504	4,353	tree seedlings grown over 10 years.

Share Results



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Results for Example

CalRecycle

Share your results

Current Trash and Recycling

141 tons is roughly the amount of trash your business currently throws away annually.

$20,611 is the estimated amount that you spend on disposing this trash each year.

10 tons is about how much your business currently recycles and/or composts annually.

$1,401 is the estimated amount that this recycling and composting saves your business by avoiding disposal costs.

$612 is about how much money this recycling and/or composting costs per year.

33 metric tons of CO_2e is the amount of greenhouse gas emissions that this recycling avoids each year.

Future Trash and Recycling

Using this calculator, you have evaluated the benefits of reducing your trash through:

reducing **1** tons of material and

recycling and composting an additional **39** tons of material.

By reducing your waste by **40** tons annually, your business will:

avoid **$5,881** in trash disposal and material purchasing costs.

spend **$998** in recycling costs.

for a net savings of **$4,883**

prevent **137** $MTCO_2e$, which is roughly equal to:

Annual tailpipe emissions from **26** U.S. cars.

Emissions from the electricity use of **17** U.S. homes over a year.

Emissions from **318** barrels of oil consumed.

The carbon dioxide captured by **3,504** tree seedlings grown over 10 years.

Next Steps

Now that you've seen the potential future benefits of source reduction and recycling, take these easy steps to achieve your goals:

1. Check out the Resources Tab for local, regional, and statewide recycling assistance and free resources.
2. Call your local waste and recycling companies to find out how to recycle more and save money.
3. Engage your employees and customers in making your efforts successful.

Review Background Data and Information


Commercial Climate Calculator

Resources

CalRecycle

Check your city's website, contact your trash or recycling company, or use the resources below to start reducing your trash today!

California Statewide Resources

California Department of Resources Recycling and Recovery - Division of Recycling (CalRecycle)

http://www.calrecycle.ca.gov/BevContainer/

(800) 327-9886

Recycling locati

CalRecycle - Bus

http://www.ciw

(800) 533-2962

The department

resources for bu

CalRecycle - Cali

http://www.cal

(916) 341-6600

This program co

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California Mate

http://www.cal

(877) 520-9703

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California Mand

http://www.cal

climatechange

Information abo

of 2006 (AB 32)

California Resou

http://www.crr

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Glossary

General Terms

Term	Description
Carbon footprint	A comprehensive measure of greenhouse gas emissions and their climate change impact, typically measured in MT CO_2e.
Composting Cost	Controlled decomposition of organic material such as yard debris and food scraps to produce soil amendm
Cost savings	
MT CO_2e	
Multi-family Recycling	
Recycling Rate	
Waste reduction	
Shared dumpster/ container	
Trash	

Click here to return to

Business Sectors

Multi-Family

Building Material

Communications

Finance, Insuranc

Food Stores

Government Facil

Commercial Climate Calculator

Reduction and Recycling Examples

Check out what other businesses are saving

This sheet provides references, examples, and guidelines for what can be source reduced or recycled. Review the experience of other businesses to help gauge how much more you could be recycling. Use the information on this page to get an idea of the percentages to enter in the Future Actions tab.

Recycling

California businesses recycle an average of about 40%, or between about 20% and 70% of their total waste generated. California multi-family complexes recycle an average of about 10% of their total waste.* Award-winning business examples are shown below:

- 3M Unitek, a medical device manufacturer recycles more than 65% of its waste, saving about $200,000 each year. (2009, Calrecycle.ca.gov/WRAP)

- Hewlett Packard recycles about 88% of its landfilled waste. (2008, Paperrecycles.org)

- PRIDE Industries, the nation's largest employer of people with disabilities, diverts more than 84% of its waste, saving over $8,000 annually. (2009, Calrecycle.ca.gov/WRAP)

- Safeway stores in California have diverted more than 85% of their waste for recycling and composting, saving over $22 million each year. (2009, Calrecycle.ca.gov/WRAP)

- Sierra Nevada Brewing Company is achieving a 99.5% diversion rate, saving over $4.5 million each year. (2009, Calrecycle.ca.gov/WRAP)

- Stanford University diverts about 64% of its waste, saving more than $500,000 annually. (2008, Paperrecycles.org)

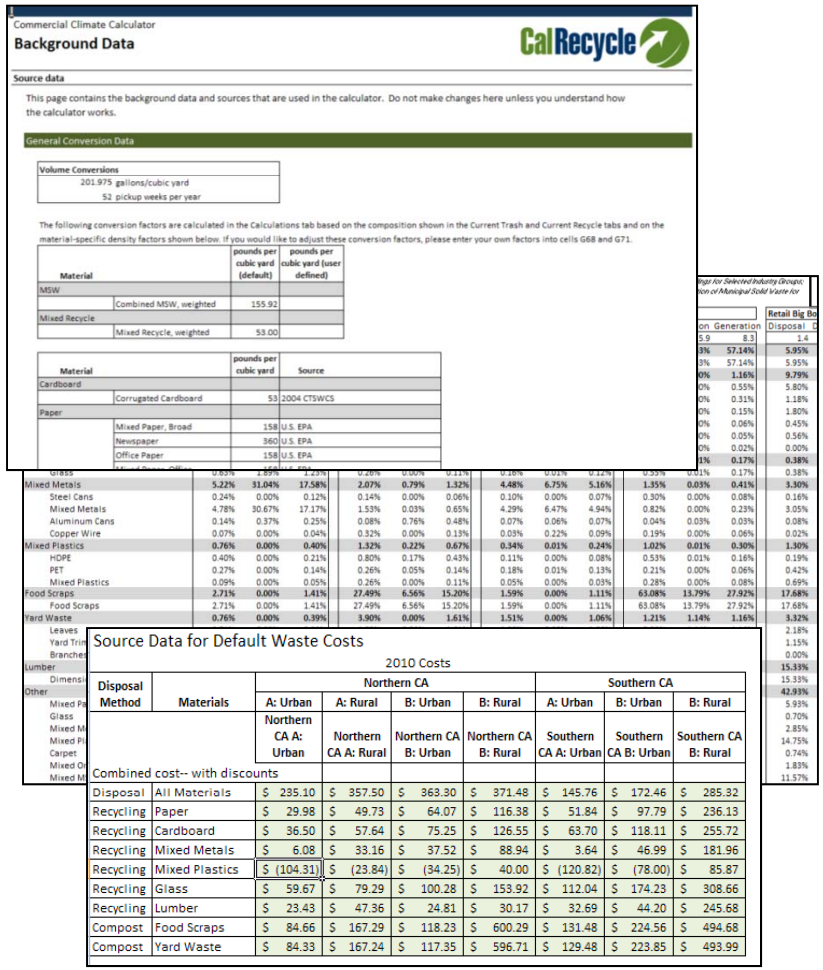
The examples above highlight large, well-known companies; however, cost saving benefits are not unique to large businesses. For a more comprehensive selection of case studies, visit the CalRecycle or StopWaste.org websites: http://www.calrecycle.ca.gov/WRAP/ and http://stopwaste.org/home/index.asp?page=109.

** These figures are from the California business waste and recycling studies used throughout this calculator. See the Waste_Data tab for specific sources.*

Source Reduction

Source reduction programs are variable in terms of the amount or percentages of material reduced. EPA offers the following resource to help calculate the benefits of waste reduction for your business: http://www.epa.gov/epawaste/partnerships/wastewise/pubs/wwupda11.pdf. Award-winning business examples are shown below:

- Through simple paper-reduction methods, offices can reduce paper costs by 20–25%. For example, by implementing paperless investment statements, Citigroup saved millions on paper costs over the course of a few years. American Century estimated that paper costs associated with its customers were cut approximately 90% when the company converted to online statements. (2009,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Background Data

CalRecycle

Source data

This page contains the background data and sources that are used in the calculator. Do not make changes here unless you understand how the calculator works.

General Conversion Data

Volume Conversions	
201.975	gallons/cubic yard
52	pickup weeks per year

The following conversion factors are calculated in the Calculations tab based on the composition shown in the Current Trash and Current Recycle tabs and on the material-specific density factors shown below. If you would like to adjust these conversion factors, please enter your own factors into cells G68 and G71.

Material		pounds per cubic yard (default)	pounds per cubic yard (user defined)
MSW			
	Combined MSW, weighted	155.92	
Mixed Recycle			
	Mixed Recycle, weighted	53.00	

Material		pounds per cubic yard	Source
Cardboard			
	Corrugated Cardboard	53	2004 CTSWCS
Paper			
	Mixed Paper, Broad	158	U.S. EPA
	Newspaper	360	U.S. EPA
	Office Paper	158	U.S. EPA

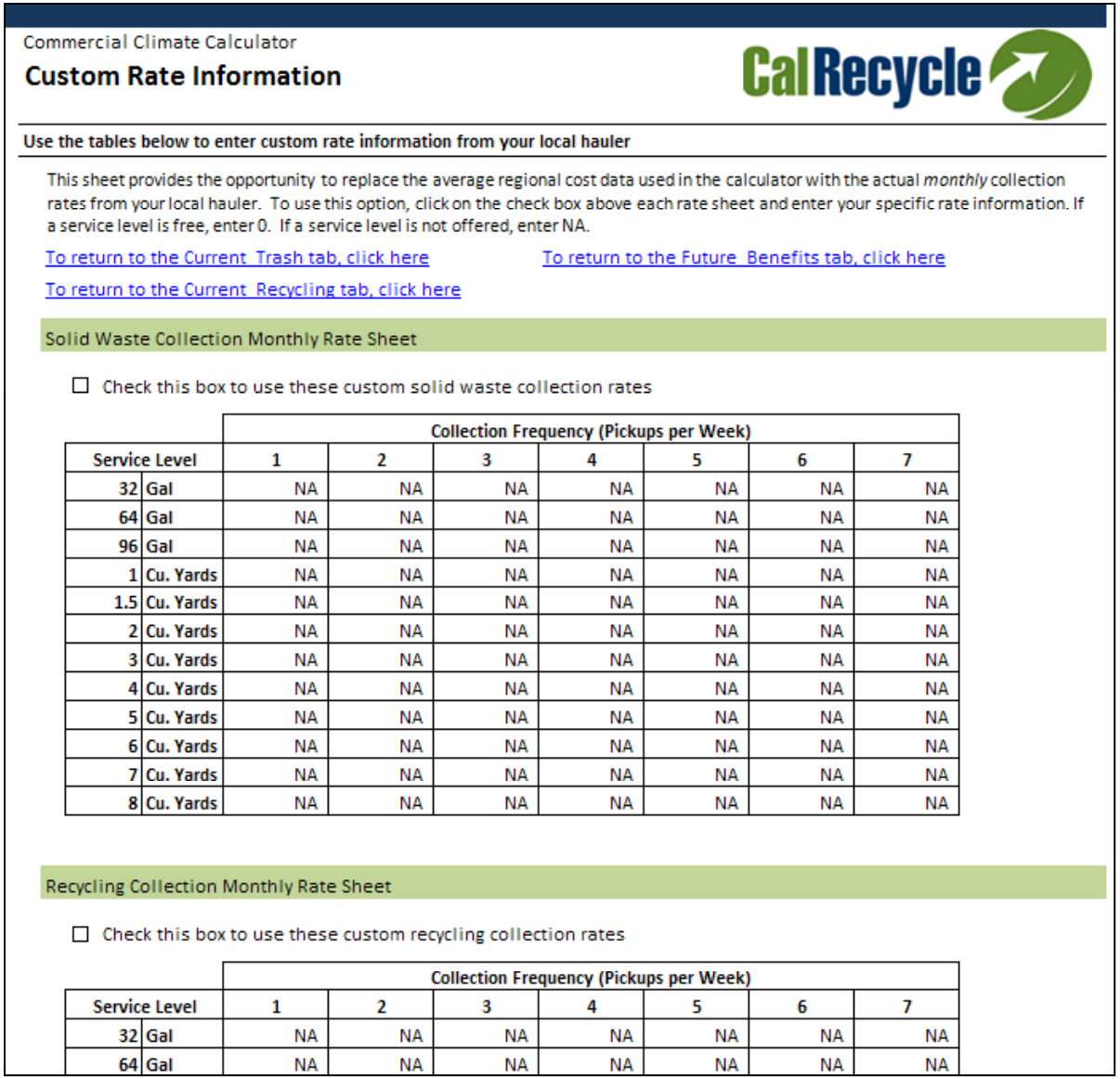
Glass	0.83%	2.89%	1.23%	0.26%	0.00%	0.11%	0.16%	0.01%	0.12%	0.33%	0.01%	0.17%	0.38%
Mixed Metals	**5.22%**	**31.04%**	**17.58%**	**2.07%**	**0.79%**	**1.32%**	**4.48%**	**6.75%**	**5.16%**	**1.35%**	**0.03%**	**0.41%**	**3.30%**
Steel Cans	0.24%	0.00%	0.12%	0.14%	0.00%	0.06%	0.10%	0.00%	0.07%	0.30%	0.00%	0.08%	0.16%
Mixed Metals	4.78%	30.67%	17.17%	1.53%	0.03%	0.65%	4.29%	6.47%	4.94%	0.82%	0.00%	0.23%	3.05%
Aluminum Cans	0.14%	0.37%	0.25%	0.08%	0.76%	0.48%	0.07%	0.06%	0.07%	0.04%	0.03%	0.03%	0.08%
Copper Wire	0.07%	0.00%	0.04%	0.32%	0.00%	0.13%	0.03%	0.22%	0.09%	0.19%	0.00%	0.06%	0.02%
Mixed Plastics	**0.76%**	**0.00%**	**0.40%**	**1.32%**	**0.22%**	**0.67%**	**0.34%**	**0.01%**	**0.24%**	**1.02%**	**0.01%**	**0.30%**	**1.30%**
HDPE	0.40%	0.00%	0.21%	0.80%	0.17%	0.43%	0.11%	0.00%	0.08%	0.53%	0.01%	0.16%	0.19%
PET	0.27%	0.00%	0.14%	0.26%	0.05%	0.14%	0.18%	0.01%	0.13%	0.21%	0.00%	0.06%	0.42%
Mixed Plastics	0.09%	0.00%	0.05%	0.26%	0.00%	0.11%	0.05%	0.00%	0.03%	0.28%	0.00%	0.08%	0.69%
Food Scraps	**2.71%**	**0.00%**	**1.41%**	**27.49%**	**6.56%**	**15.20%**	**1.59%**	**0.00%**	**1.11%**	**63.08%**	**13.79%**	**27.92%**	**17.68%**
Food Scraps	2.71%	0.00%	1.41%	27.49%	6.56%	15.20%	1.59%	0.00%	1.11%	63.08%	13.79%	27.92%	17.68%
Yard Waste	**0.76%**	**0.00%**	**0.39%**	**3.90%**	**0.00%**	**1.61%**	**1.51%**	**0.00%**	**1.06%**	**1.21%**	**1.14%**	**1.16%**	**3.32%**
Leaves													2.18%
Yard Trim													1.15%
Branches													0.00%
Lumber													15.33%
Dimensi													15.33%
Other													42.93%
Mixed Pa													5.93%
Glass													0.70%
Mixed M													2.85%
Mixed Pl													14.75%
Carpet													0.74%
Mixed O													1.83%
Mixed M													11.57%

Source Data for Default Waste Costs

2010 Costs

Disposal Method	Materials	Northern CA				Southern CA		
		A: Urban	A: Rural	B: Urban	B: Rural	A: Urban	B: Urban	B: Rural
		Northern CA A: Urban	Northern CA A: Rural	Northern CA B: Urban	Northern CA B: Rural	Southern CA A: Urban	Southern CA B: Urban	Southern CA B: Rural
Combined cost-- with discounts								
Disposal	All Materials	$ 235.10	$ 357.50	$ 363.30	$ 371.48	$ 145.76	$ 172.46	$ 285.32
Recycling	Paper	$ 29.98	$ 49.73	$ 64.07	$ 116.38	$ 51.84	$ 97.79	$ 236.13
Recycling	Cardboard	$ 36.50	$ 57.64	$ 75.25	$ 126.55	$ 63.70	$ 118.11	$ 255.72
Recycling	Mixed Metals	$ 6.08	$ 33.16	$ 37.52	$ 88.94	$ 3.64	$ 46.99	$ 181.96
Recycling	Mixed Plastics	$ (104.31)	$ (23.84)	$ (34.25)	$ 40.00	$ (120.82)	$ (78.00)	$ 85.87
Recycling	Glass	$ 59.67	$ 79.29	$ 100.28	$ 153.92	$ 112.04	$ 174.23	$ 308.66
Recycling	Lumber	$ 23.43	$ 47.36	$ 24.81	$ 30.17	$ 32.69	$ 44.20	$ 245.68
Compost	Food Scraps	$ 84.66	$ 167.29	$ 118.23	$ 600.29	$ 131.48	$ 224.56	$ 494.68
Compost	Yard Waste	$ 84.33	$ 167.24	$ 117.35	$ 596.71	$ 129.48	$ 223.85	$ 493.99

Optional: Use Custom Hauling Rates



Commercial Climate Calculator

Custom Rate Information

CalRecycle

Use the tables below to enter custom rate information from your local hauler

This sheet provides the opportunity to replace the average regional cost data used in the calculator with the actual *monthly* collection rates from your local hauler. To use this option, click on the check box above each rate sheet and enter your specific rate information. If a service level is free, enter 0. If a service level is not offered, enter NA.

To return to the Current_Trash tab, click here

To return to the Future_Benefits tab, click here

To return to the Current_Recycling tab, click here

Solid Waste Collection Monthly Rate Sheet

☐ Check this box to use these custom solid waste collection rates

	Collection Frequency (Pickups per Week)						
Service Level	1	2	3	4	5	6	7
32 Gal	NA	NA	NA	NA	NA	NA	NA
64 Gal	NA	NA	NA	NA	NA	NA	NA
96 Gal	NA	NA	NA	NA	NA	NA	NA
1 Cu. Yards	NA	NA	NA	NA	NA	NA	NA
1.5 Cu. Yards	NA	NA	NA	NA	NA	NA	NA
2 Cu. Yards	NA	NA	NA	NA	NA	NA	NA
3 Cu. Yards	NA	NA	NA	NA	NA	NA	NA
4 Cu. Yards	NA	NA	NA	NA	NA	NA	NA
5 Cu. Yards	NA	NA	NA	NA	NA	NA	NA
6 Cu. Yards	NA	NA	NA	NA	NA	NA	NA
7 Cu. Yards	NA	NA	NA	NA	NA	NA	NA
8 Cu. Yards	NA	NA	NA	NA	NA	NA	NA

Recycling Collection Monthly Rate Sheet

☐ Check this box to use these custom recycling collection rates

	Collection Frequency (Pickups per Week)						
Service Level	1	2	3	4	5	6	7
32 Gal	NA	NA	NA	NA	NA	NA	NA
64 Gal	NA	NA	NA	NA	NA	NA	NA

Thanks!

Amity Lumper

Shannon Donegan

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