

Community Tools for Recycling Decisions: Integrated Solid Waste Management Tools (ISWM)

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Overview

- 2030 Vision and Framework for Action
- A Guide to Integrated Solid Waste Management Accounting and System Funding
- FCA Worksheet and ISWM Model

Integrated Solid Waste Management

is a comprehensive waste prevention, recycling, composting, and disposal program. An effective ISWM system considers how to do these things in ways that most effectively protect human health and the environment. ISWM involves evaluating local needs and conditions, and then selecting and combining the most appropriate waste management activities for those conditions. Each of these activities requires careful planning, financing, collection, and transport.



2030 Vision and Framework

Description and Deliverables:

- **Vision Statement**
- **Desired End State for SMM in EPA Region 4**, with specific focus on materials management at end of use
- **Guiding principles** for SMM
- **Framework for Action for Region 4**, contains a proposed list of actions aimed at overcoming gaps and realizing the SMM desired end state for the Region as a whole



Desired outcomes from 2030 Vision

- Need for disposal facilities is eventually eliminated
- Material quality is protected and materials are used in a matter that retains their highest possible value throughout the lifecycle
- Human health and the environment are positively impacted by SMM
- Natural resource use is minimized and resources are used more efficiently and are renewed/replenished before being consumed again
- Nutritive value of the soil is restored... also GHG CO₂ sequestration
- All products/packaging options are sustainable

Desired outcomes continued (idealized)

- Human health and environmental risks from toxic materials in products are eliminated
- Energy Use is minimized
- GHG impacts are minimized
- Local economies are improved
- Material Management programs and systems are funded in an equitable fashion with sustainable funding sources.

Guide to Integrated Solid Waste Management Accounting and System Funding

- This is a guide to accounting intended for solid waste officials, local governments, elected officials, and state agency staff who work with local government staff and officials.
- Guidebook will walk readers through:
 - Various ways to fund solid waste systems
 - Pros and cons of the various funding mechanisms
 - Operating and long-term costs
 - How to amortize capital
 - How to recognize savings from landfill diversion



OPERATIONS & MAINTENANCE EXPENSES

Year:										
	Description of Expenditure	Total Annual Cost	Allocation of Annual Wages and Benefits Expenses by Program Area							
			Collection		Disposal		Recycling		Composting	
			%	\$	%	\$	%	\$	%	\$
1				\$0.00		\$0.00		\$0.00		\$0.00
2				\$0.00		\$0.00		\$0.00		\$0.00
3				\$0.00		\$0.00		\$0.00		\$0.00
4				\$0.00		\$0.00		\$0.00		\$0.00
5				\$0.00		\$0.00		\$0.00		\$0.00
6				\$0.00		\$0.00		\$0.00		\$0.00
7				\$0.00		\$0.00		\$0.00		\$0.00
8				\$0.00		\$0.00		\$0.00		\$0.00
9				\$0.00		\$0.00		\$0.00		\$0.00
10				\$0.00		\$0.00		\$0.00		\$0.00
11				\$0.00		\$0.00		\$0.00		\$0.00
12				\$0.00		\$0.00		\$0.00		\$0.00
13				\$0.00		\$0.00		\$0.00		\$0.00
14				\$0.00		\$0.00		\$0.00		\$0.00
15				\$0.00		\$0.00		\$0.00		\$0.00
16				\$0.00		\$0.00		\$0.00		\$0.00
17				\$0.00		\$0.00		\$0.00		\$0.00
18				\$0.00		\$0.00		\$0.00		\$0.00
19				\$0.00		\$0.00		\$0.00		\$0.00
20				\$0.00		\$0.00		\$0.00		\$0.00
21				\$0.00		\$0.00		\$0.00		\$0.00
22				\$0.00		\$0.00		\$0.00		\$0.00
23				\$0.00		\$0.00		\$0.00		\$0.00
24				\$0.00		\$0.00		\$0.00		\$0.00

COST SUMMARY

Year:					
Costs					
Category	Total Annual Cost to ISWM Program (\$)	Allocation of Costs by Program Area (\$)			
		Collection	Disposal	Recycling	Composting
B. Wages and Benefits	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
C. Operations & Maintenance	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
D. Capital Outlays	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
E. Future Outlays	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
F. Indirect Costs	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
G. Other Costs					
TOTAL COSTS	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Non-Fee Based Revenues					
Category	Total Annual Revenues to ISWM Program (\$)	Allocation of Revenues by Program Area (\$)			
		Collection	Disposal	Recycling	Composting
Interest Income					
Sale of Recyclables					
Salvage of Equipment					
Micellaneous Revenues					
TOTAL REVENUES					
Total Cost					
TOTAL NET COST	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!



COST ALLOCATION TO RESIDENTIAL AND COMMERCIAL CUSTOMERS

Year:					
ISWM Program Area	Total Net Cost	Allocation of Costs by Customer Class by Program Area			
		Residential		Commerical	
		%	\$	%	\$
Collection	#DIV/0!		#DIV/0!		#DIV/0!
Disposal	#DIV/0!		#DIV/0!		#DIV/0!
Recycling	#DIV/0!		#DIV/0!		#DIV/0!
Composting	#DIV/0!		#DIV/0!		#DIV/0!
Total	#DIV/0!		#DIV/0!		#DIV/0!



GOALS

- Deliver a set of decision tools for local governments

Five Options:

- Residential dual stream
- Residential single stream
- Changing from Bins to Carts
- Comprehensive Drop-off
- Hub and Spoke



Assumptions

- Compares scenarios, not changes
- Directional model to fit wide range of users
- SF residential service
- Municipal or contracted service, not open market
- Target audience
- Limited outputs and inputs for simplicity
- Fixed assumptions on a number of determining factors

The Model

EPA REGION 4 ISWM MODEL - INPUTS

INPUTS (You must answer all eleven questions)

1. Enter community name.

2. Choose your state from this drop down list.

3. Enter the number of households in your community served by your solid waste program.

(See "[Instruction Page](#)" for more information.)

Please enter a numeric value greater than 0.

4. Estimate the level of participation in your recycling program. (See "[Instruction Page](#)" for more information.)

5. Select your community type. (See "[Instruction Page](#)" for more information.)

6. Will glass be included in single stream recycling?

7. How "much" do you think people will recycle in your community? (See "[Instruction Page](#)" for more information)

8. Do you know your landfill tip fee per ton?

If "Yes" enter your Landfill tip fee, per ton here -->

9. Do you know your recycling processor gate fee or revenue per ton?

If "Yes", enter Recycling processor fee (negative) or revenue per ton (positive) here -->

10. How far is it from your municipality to the Transfer Station, MRF, or other end destination for a direct haul by your curbside recycling collection trucks?

11. Do you know the distance to the Materials Recovery Facility you use or would use to process recyclable materials if you built a Transfer Station?

If "Yes" enter the One way distance to the MRF here -->

A value of 75 miles will be used as the default.



	B	C	D	E	F	G	H	I	J	K	L	M
2	ISWM Output for: Asheville											
3												
4												
5												
6		Recycling Drop-Off Program	Implementing a Dual Stream Program Using Bins		Implementing a Dual Stream Program Using Carts		Implementing a Single Stream Residential Curbside Program					
7	IMPACTS		Dual Stream, Bins, Every Other Week Collection	Dual Stream, Bins, Weekly Collection	Dual Stream, Carts, Every Other Week Collection	Dual Stream, Carts, Weekly Collection	Single Stream, Carts, Every Other Week Collection	Single Stream, Carts, Weekly Collection				
8	1. Tons of Recycling per Year	1,820.0	1,269.5	2,264.6	2,210.0	3,744.0	3,412.5	4,690.4				
9	2. Pounds of Recycling per Household per Year	364	254	453	442	749	683	938				
10	TOTAL COLLECTION COST											
11	Annual Net Cost (Total)	\$ (190,000)	\$ (406,000)	\$ (771,000)	\$ (428,000)	\$ (620,000)	\$ (171,000)	\$ (247,000)				
12	Annual Net Cost (O&M Only)	\$ (194,600)	\$ (335,400)	\$ (683,700)	\$ (196,000)	\$ (344,900)	\$ (44,000)	\$ (98,500)				
13	Cost per Household per Year	\$ (19.00)	\$ (40.60)	\$ (77.10)	\$ (42.80)	\$ (62.00)	\$ (17.10)	\$ (24.70)				
14	Cost per Ton Recycled	\$ (104)	\$ (320)	\$ (340)	\$ (194)	\$ (166)	\$ (50)	\$ (53)				
15	Capital Cost (Total)	\$ (386,000)	\$ (916,000)	\$ (1,511,000)	\$ (2,258,000)	\$ (2,977,000)	\$ (1,309,000)	\$ (1,668,000)				
16												
17	DETAILS											
18	Total Number of Vehicles (Including back-up and sup	2	2	5	3	5	2	3				
19	Total Number of Staff	2	4	9	3	5	2	3				
20	Total Number of Drop-Offs	\$ 4	N/A	N/A	N/A	N/A	N/A	N/A				
21	Capital Cost Vehicles (Including back-up and support)	\$ (359,500)	\$ (561,800)	\$ (1,157,300)	\$ (1,078,600)	\$ (1,797,700)	\$ (719,100)	\$ (1,078,600)				
22	Capital Cost Containers	\$ (27,000)	\$ (353,900)	\$ (353,900)	\$ (1,179,700)	\$ (1,179,700)	\$ (589,900)	\$ (589,900)				
23												
24												
25												
26												
27												



INPUTS	
Choose Your Program Type (From Collection Model) 	▼
Tons Diverted per Year (from Model)	#N/A

IMPACTS	Additional Curbside Collection Cost for Direct Haul	Build Transfer Station (Spoke)	Build MRF (Hub)
1. Cost per Ton including Revenue	#N/A	#N/A	#N/A
2. Cost per Household per Year	#N/A	#N/A	#N/A
3. Annual Cost (Capital + Operating) without Revenue	#N/A	#N/A	#N/A
DETAILS			
4. Additional Tons to Make Next Level Efficient	NA	20,000	10,500

ISWM Model and Handbook

Hosted by SERDC

<http://www.serdc.org/iswm>

Status Update and Next Steps

- Combined Framework for Action and 2030 Vision was sent out recently.
- Webinars to come:
- Providing instruction, insight and collect feedback on the ISWM Model.
- A moderated panel to discuss system funding and accounting issues and how well the Handbook addresses these.
- Develop additional concepts for tools or other informational needs.

Region 4 Measurement Snapshot

- R4 States have almost 7 years worth of disposal/recycling data (2009 – 2015)
- R4 States represent roughly 20% of the US population
- In 2015, R4 States landfilled/Incinerated 67 million tons of Solid Waste Disposal (8 States reporting)
- R4 also recycled 22 million tons, composted 1.3 million tons of organics, created an estimated 37,055 jobs, and estimated the region's economic net benefit at \$3.5 billion (landfill cost avoidance + recycling revenue extrapolated).



2015 SMP Summary

32 states and District of Columbia Participated in 2015
Template

Disposed	Recycled	Composted
269.2 million tons with 225 million tons MSW	85 million tons	12 million tons
(32 states+ DC) 237 million people	(22 states + DC) 171 million people	(23 states + DC) 150 million people

Other Updates

- National Measurement Summit—Feb. 27-March 1, 2018 in Chattanooga, TN
Register now at www.measurementmatters.net
- Food Waste
 - Food Nutrition and K12 Education

National Measurement Summit

Who: 50 States, local governments, stakeholders, industry and anyone interesting in measurement & related performance.

What issues?:

- Help each other, including States that are not reporting
 - Learn how materials move in SMP
- How to use SMP to measure system performance
 - Hands on training on SMP
- Face to face discussions on measurement and data

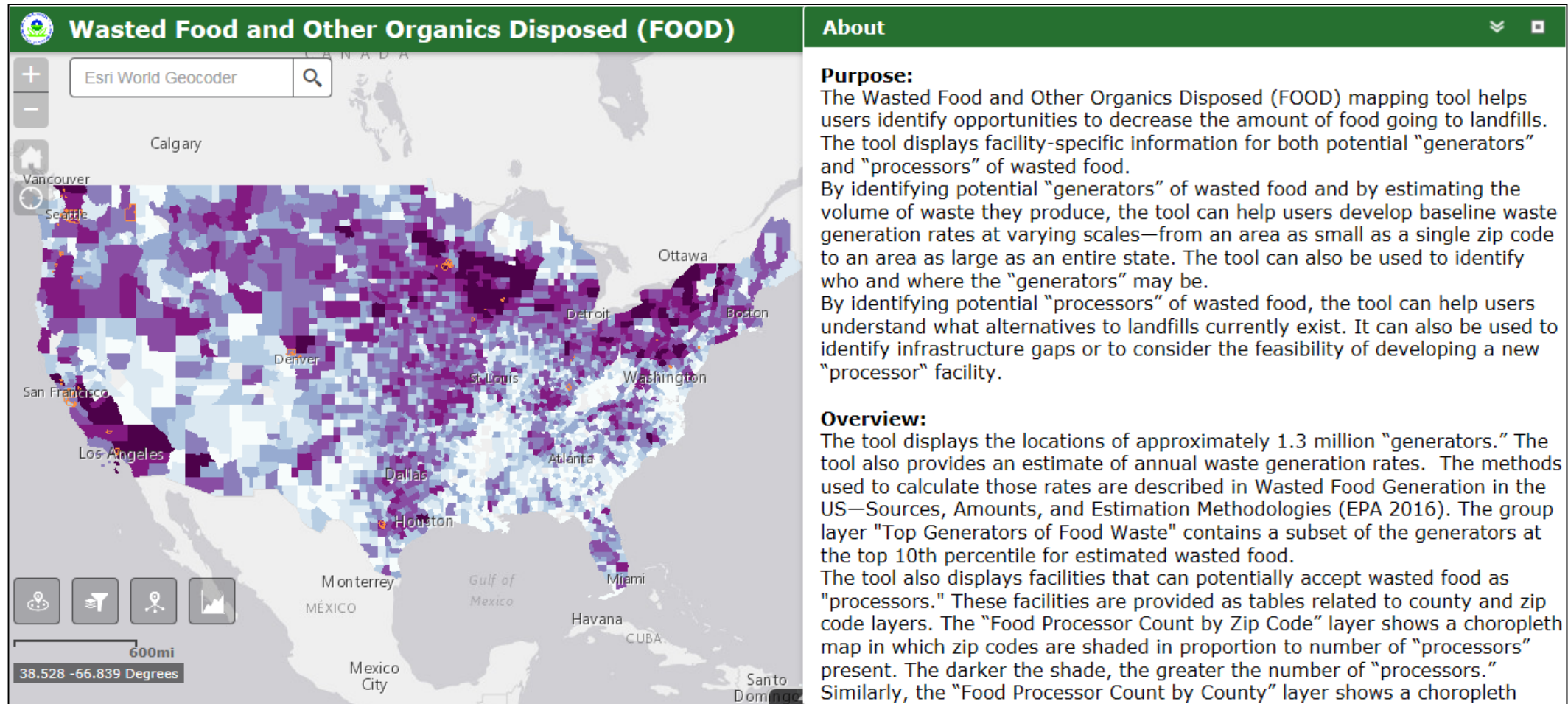
National Measurement Summit

- Garner tips on enhancing data quality
 - Create the business case for local governments
- Develop roles for local governments in the supply chain
- Learn what data collection is need to support your program
 - Learn how participant rates improve after optimizing collection program and data collection?
 - Help set standards for waste sorts, capture rates, characterization
- Networking and building future collaborations

School food waste

- Region 4 (Southeast, 8 states) with South Carolina DHEC, University of Arkansas, EREF, WWF and USDA
 - Creating a Regulatory Road Map for school food conservation
 - Focus on conversations with school and government officials
 - Explain the different kinds of food donation programs and why they are important
 - Explain post consumer food donation programs regulations state by state
 - Transfer liability of food donation

EPA's Wasted Food Opportunities Map



Thank you!

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<http://www.serdc.org/iswm>

www.measurementmatters.net