MAKING THE CASE FOR RECYCLING

2018 NC SWANA Spring Conference - Asheville, NC

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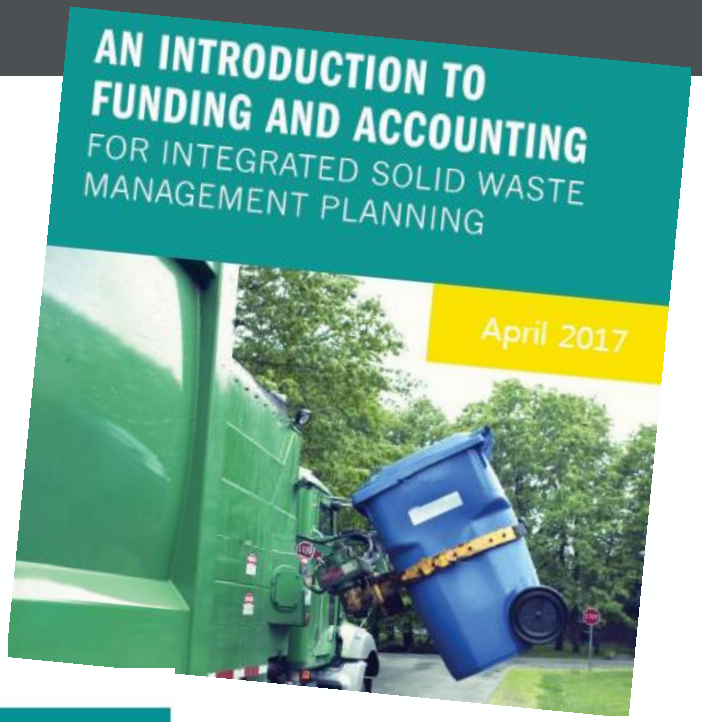
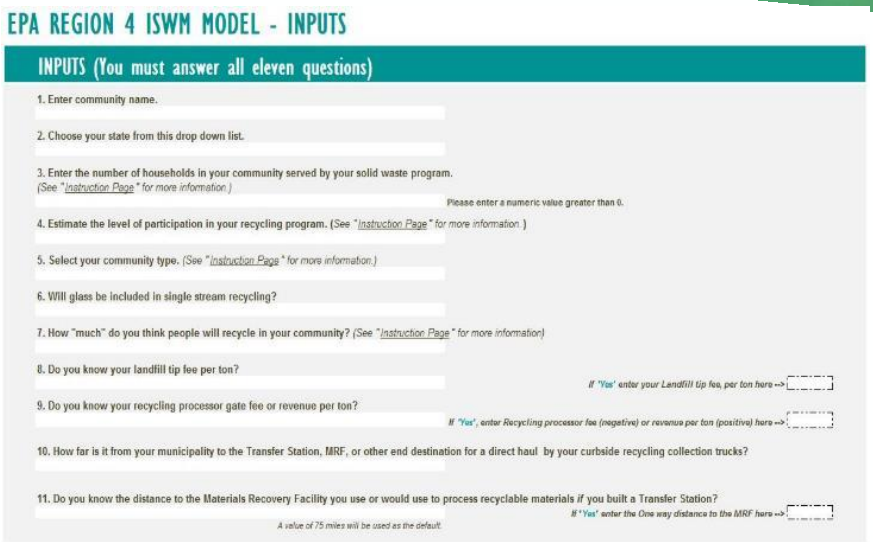
EPA REGION 4 ISWM TOOLKIT

- **ISWM** = Integrated Solid Waste Management
- **In-depth web training** – coming **Summer 2018** – attend, promote, host

❑**Funding and Accounting Handbook**

❑**Directional Tool - ISWM 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?

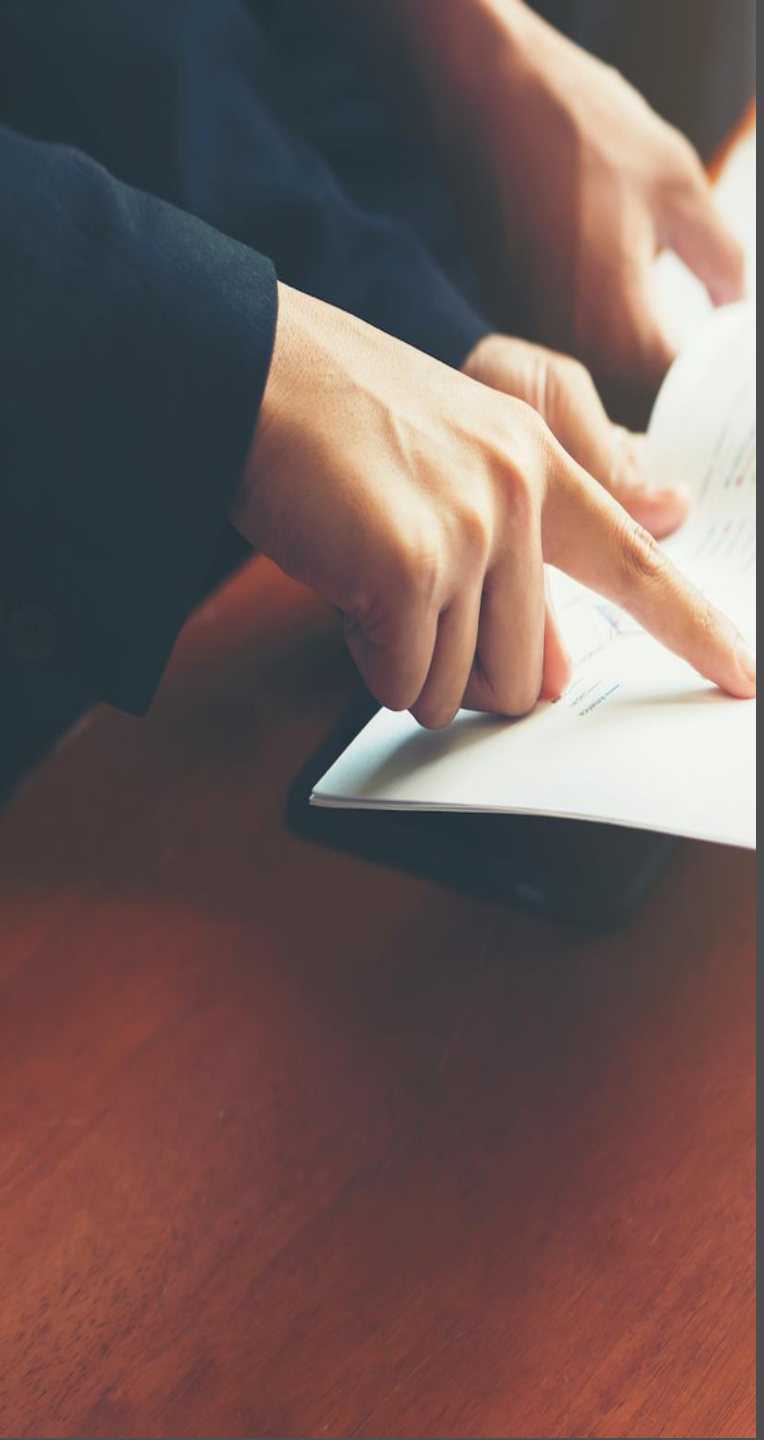
7. How "much" do you think people will recycle in your community? (See "Instruction Page" for more information)

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 -->

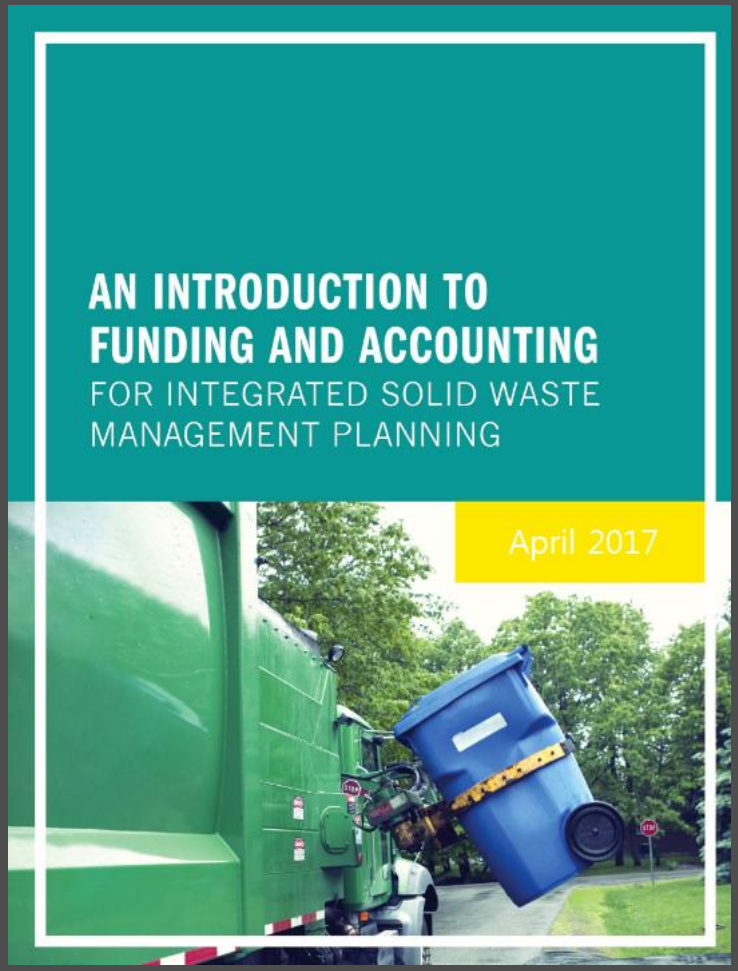
10. How far is it from your municipality to the Transfer Station, MRF, or other end destination for a direct haul by your curbside recycling collection trucks?

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.



ISWM TRAINING COMPONENTS

- Costs, Benefits & Impacts
- Organizational Methods
- Funding Mechanisms
- Policy Supports
- Community & Business Considerations
- Political Engagement



- Provides ready-to-use spreadsheets to identify the costs of ISWM services.
- Creates a planning tool for budget preparation and for determining the future of ISWM services.
- Exposes hidden costs allowing a more accurate comparison of various ISWM services.
- Identifies various sources and methods of department funding.
- Helps explain ISWM costs to the public.

EPA REGION 4 ISWM MODEL

11 QUESTIONS ABOUT YOUR COMMUNITY

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(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 -->

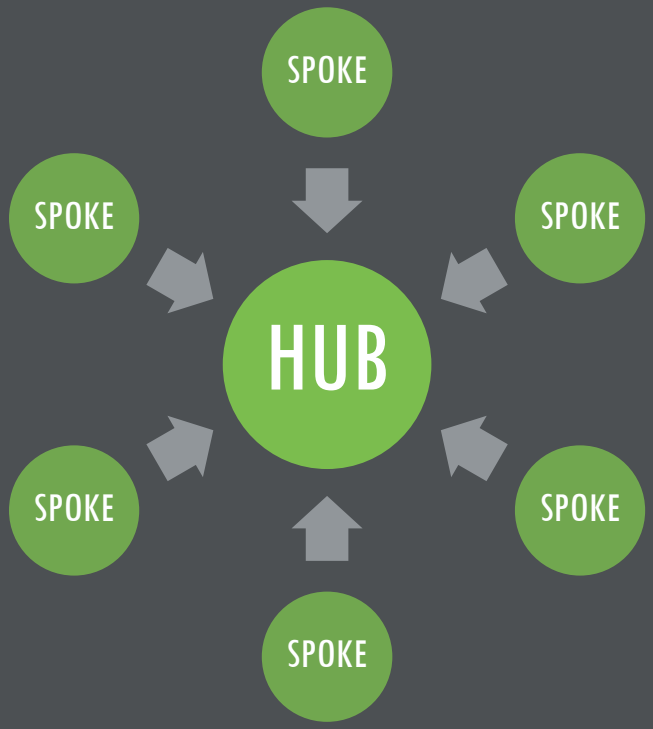
A value of 75 miles will be used as the default.

EPA REGION 4 ISWM MODEL

COMPARES differences in amount recycled and costs of 7 different recycling program scenarios:

1. Comprehensive Drop-off
2. Duel Stream with Bins, Every Other Week Collection
3. Duel Stream with Bins, Weekly Collection
4. Duel Stream with Carts, Every Other Week Collection
5. Duel Stream with Carts, Weekly Collection
6. Single Stream with Carts, Every Other Week Collection
7. Single Stream with Carts, Weekly Collection

EPA REGION 4 ISWM MODEL



HUB AND SPOKE RECYCLING ANALYSIS

Compare the impacts and costs of:

- direct haul
- transfer
- building a transfer station and transferring to a MRF, versus building a regional MRF.

INSTRUCTIONS FOR EPA REGION 4 ISWM MODEL

The following instructions will guide the user through the EPA Region 4 ISWM spreadsheet. This spreadsheet is designed to be used by local governments as a decision making tool. By entering data about your community, including location, community description, number of households and other information, the model will provide an output with directional insights for comparing costs and impacts of various programs. The outputs are designed to help local governments compare the costs and impacts of one ISWM program choice versus another.

GENERAL INSTRUCTIONS

1. Open the 'Inputs' worksheet.
2. Complete all eleven questions.
3. You must fill in responses for Questions 1 through 3.
4. If you do not know the answer to Questions 4 through 11, choose the "Default" setting for each.
5. Open the 'Results - Collection' page to see the model results for collection, and 'Results - Transfer & Processing' to see the hub & spoke results.
6. Once you have completed a single model run, consider changing some of the inputs to understand what impacts the choices you make will have on the overall costs and impacts of your program.

DETAILED INSTRUCTIONS

***Q1. Enter your community name*:** Type the name of your community in the cell. The community name will appear in the model's printable output.

Q2. Choose your State from the drop down list: Each state has individual attributes that will impact the model outputs, you must choose an option.

Q3. Enter the number of households in your community: Enter the number of single-family households and the number of multi-family units served by your residential solid waste program. The model is designed to estimate the costs and impacts of residential programs only, it is *not* designed to estimate the impacts of large multi-family or commercial programs which are generally handled as commercial accounts (i.e. dumpster service). Be sure to enter the number of **households**, not the total population.

Q4. Estimate the level of participation in your recycling program: Recycling participation in the model is defined as the

EPA REGION 4 ISWM MODEL - INPUTS

INPUTS (You must answer all eleven questions)

1. Enter community name.
Chatham County

2. Choose your state from this drop down list.
North Carolina

3. Enter the number of households in your community served by your solid waste program.
(See "Instruction Page" for more information.)
27,000

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

5. Select your community type. *(See "Instruction Page" for more information.)*
Rural

6. Will glass be included in single stream recycling?
No

7. How "much" do you think people will recycle in your community? *(See "Instruction Page" for more information)*
Medium low (Containers about half full, Default setting)

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

If 'Yes' enter your Landfill tip fee, per ton here --> $ 38.00

Be sure that you entered in a dollar amount (i.e. $15.75) for the tip fee

9. Do you know your recycling processor gate fee or revenue per ton?
No (model will use default)

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?
31 to 45 miles (one way)

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?
Yes

If 'Yes' enter the One way distance to the MRF here --> 35

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

ISWM COLLECTION OUTPUT FOR: *Chatham County*

IMPACTS	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	
		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
1. Tons of Recycling per Year	1,760	2,020	3,220	3,390	5,090	3,720	4,770
2. Pounds of Recycling per Household per Year	130	150	239	251	377	276	353
TOTAL COLLECTION COST							
3. Annual Net Cost (Total)	$ (242,000)	$ (1,564,000)	$ (3,125,000)	$ (1,784,000)	$ (3,253,000)	$ (1,025,000)	$ (1,847,000)
4. Annual Net Cost (O&M Only)	$ (261,000)	$ (1,368,300)	$ (2,842,300)	$ (1,103,100)	$ (2,319,400)	$ (652,900)	$ (1,353,700)
5. Cost per Household per Year	$ (9)	$ (58)	$ (116)	$ (66)	$ (121)	$ (38)	$ (68)
6. Cost per Ton Recycled	$ (138)	$ (774)	$ (970)	$ (526)	$ (639)	$ (276)	$ (387)
7. Capital Cost (Total)	$ (1,207,000)	$ (3,045,000)	$ (5,607,000)	$ (7,230,000)	$ (11,578,000)	$ (4,166,000)	$ (6,390,000)

DETAILS							
8. Total Number of Vehicles (Including back-up and support)	3	9	19	12	25	7	15
9. Total Number of Staff	3	17	34	12	24	8	15
10. Total Number of Drop-Offs	6	-	-	-	-	-	-
11. Capital Cost Vehicles (Including back-up and support)	$ (539,300)	$ (2,089,800)	$ (4,651,500)	$ (4,044,800)	$ (8,392,900)	$ (2,572,900)	$ (4,797,500)
12. Capital Cost Containers	Included below	$ (955,600)	$ (955,600)	$ (3,185,200)	$ (3,185,200)	$ (1,592,600)	$ (1,592,600)
14. Annual Cost for Drop-Off Sites (Total)	$ (91,600)	-	-	-	-	-	-

Scenario: Single Stream, Carts, Every Other Week Collection

ISWM HUB & SPOKE OUTPUT FOR: *Chatham County*

INPUTS	
Choose Your Program Type (From Collection Model) →	Single Stream, Carts, Every Other Week Collection
Tons Diverted per Year (from Model)	3,720

IMPACTS	Additional Curbside Collection Cost for Direct Haul	Build Transfer Station (Spoke)	Build Dual Stream MRF (Hub)	Build Single Stream MRF (Hub)
1. Cost per Ton including Revenue	$ (377)	$ (49)	N/A	NOT FEASIBLE
2. Cost per Household per Year	$ (52)	$ (7)	N/A	NOT FEASIBLE
3. Annual Cost (Capital + Operating) without Revenue	$ (1,401,000)	$ (179,000)	N/A	NOT FEASIBLE
DETAILS				
4. Additional Tons to Make Next Level Efficient	NA	6,300	N/A	18,800

- To build a transfer station (spoke), would need **6,300** more tons of recycled material.
- To build a MRF, would need **18,800** more tons pf recycled material.

Another scenario: Single Stream, Carts, Weekly Collection

ISWM HUB & SPOKE OUTPUT FOR: *Chatham County*

INPUTS	
Choose Your Program Type (From Collection Model) →	Single Stream, Carts, Weekly Collection
Tons Diverted per Year (from Model)	4,770

IMPACTS	Additional Curbside Collection Cost for Direct Haul	Build Transfer Station (Spoke)	Build Dual Stream MRF (Hub)	Build Single Stream MRF (Hub)
1. Cost per Ton including Revenue	$ (292)	$ (42)	N/A	NOT FEASIBLE
2. Cost per Household per Year	$ (52)	$ (7)	N/A	NOT FEASIBLE
3. Annual Cost (Capital + Operating) without Revenue	$ (1,391,000)	$ (187,000)	N/A	NOT FEASIBLE
DETAILS				
4. Additional Tons to Make Next Level Efficient	NA	5,200	N/A	17,700

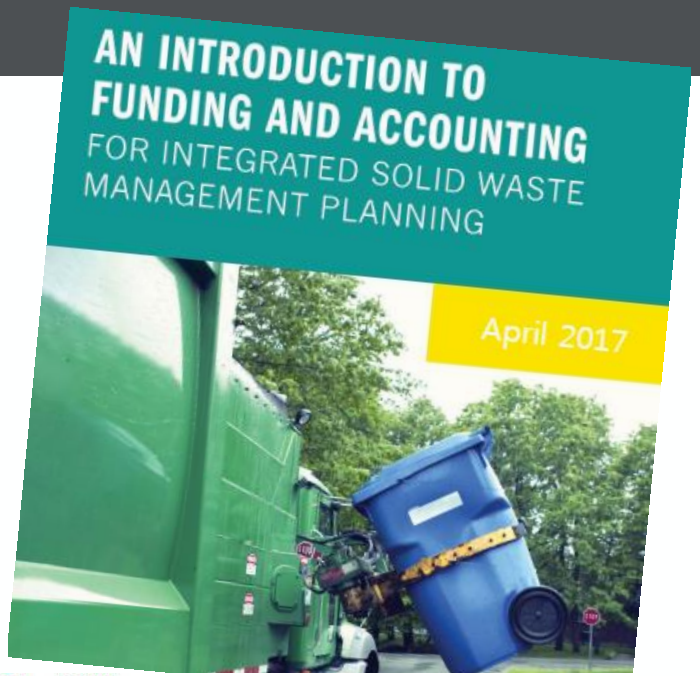
- To build a transfer station (spoke), would need **5,200** more tons of recycled material.
- To build a MRF, would need **17,700** more tons pf recycled material.

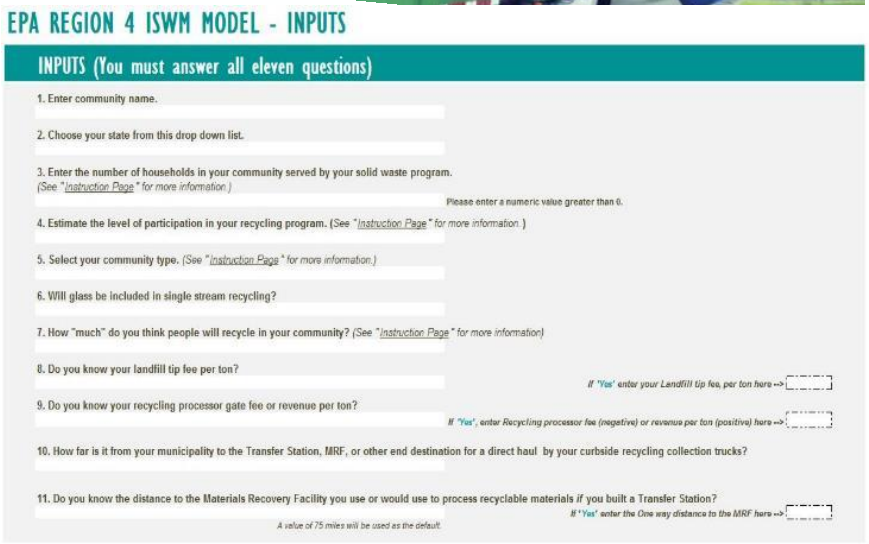
NEXT STEPS:

- Attend Summer 2018 Webinars
- Host a web-based or in-person training
- Download tools at www.serdc.org/iswm
- Make the case for expanded recycling!

QUESTIONS:

- Do you find these ISWM tools useful?
- Would use these tools?
- Will you attend the webinars in the summer?
- Would you promote the tools?
- Would you consider hosting an event?

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If 'Yes' enter the One way distance to the MRF here -->
A value of 75 miles will be used as the default.

RRS recycle.com

Managing change in a resource-constrained world.

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ORGANICS MANAGEMENT

WASTE RECOVERY

GLOBAL CORPORATE SUSTAINABILITY

since 1986

RECYCLING PROGRAM SCENARIO DETAILS

DETAILED DESCRIPTIONS OF PROGRAMS

DROP-OFF

Comprehensive Drop-Off – A comprehensive drop-off is a facility for the collection of single-stream or dual-stream materials at a developed site that is paved, has a minimum of three roll-off recycling containers, and is serviced on a regular schedule with the material then taken to a transfer station of an existing regional MRF that is within 15 miles of the location

DUAL STREAM WITH BINS

Dual Stream Program with Bins, Every Other Week Collection: Recyclables are collected manually in two 18-gallon open-topped containers. Collection occurs at the curb or in the alley and containers are emptied into split-bodied manual rear load trucks. Each truck requires two staff members, one to drive and one to empty containers. Each household in the community is provided with two containers, one container is used to collect fibers (paper, cardboard, paperboard, newspapers and magazines) and the second container is used to collect containers (aluminum, tin and steel cans, plastic jugs and tubs, and glass bottles). Collection occurs on an every-other-week basis, meaning that on Week 1, half of the community is provided service and on Week 2, the other half of the community is provided service.

Dual Steam Program with Bins, Weekly Collection: Same as program above except collection occurs for the entire community on a weekly basis.

DUAL STREAM WITH CARTS

Dual Stream Program with Carts, Every Other Week Collection: Recyclables are collected in two 65-gallon lidded and wheeled carts. Collection occurs at the curb or in the alley and containers are emptied using fully automated side loading trucks. Each truck is staffed by one employee. Each household in the community is provided with two containers: one container is used to collect fibers (paper, cardboard, paperboard, newspapers and magazines) and the second container is used to collect containers (aluminum, tin and steel cans, plastic jugs and tubs, and glass bottles). Collection occurs on an every-other-week alternating basis, meaning that on Week 1 the entire community receives collection of their fibers cart, and on Week 2, the entire community receives collection of their containers cart.

Dual Steam Program with Carts, Weekly Collection: Same as program above except collection occurs for both carts (fibers and containers) for the entire community on a weekly basis.

SINGLE STREAM WITH CARTS

Single Stream Program with Carts, Every Other Week Collection: Recyclables are collected in a single 95-gallon lidded and wheeled cart. Collection occurs at the curb or in the alley and the container is emptied using fully automated side loading trucks. Each truck is staffed by one employee. Each household in the community is provided with one container and all recyclables (paper, cardboard, paperboard, newspapers, magazines, aluminum, tin, and steel cans, plastic jugs and tubs, glass bottles) are collected together. Collection occurs on an every-other-week basis meaning that on Week 1, half of the community is provided service and on Week 2, the other half of the community is provided service.

Single Stream Program with Carts, Weekly Collection: Same as program above except collection occurs for the entire community on a weekly basis.

INTERPRETING YOUR RESULTS

After answering **11** community based questions, **7** recycling scenarios are modeled **13** output results are displayed for comparison between scenarios.

1. Tons of Recycling per Year: The total number of tons recycled in the community per year. This does not include large multi-family, commercial or industrial sectors.

2. Pounds of Recycling per Household per Year: The total number of pounds recycled in the community per year, divided by the total number of households.

3. Annual Net Cost (Total): The total annual cost to run the program. This includes the cost of container purchase, assembly, delivery, inventory, change outs, maintenance, and replacement for carts or bins, the cost of vehicle purchase, operations, insurance and fees, fuel, maintenance, and mileage (collection, support, and back-up vehicles), the cost of collection staff, the cost of a basic level of outreach, a contingency amount for capital and operations expenses, and the cost of servicing loans (all loans are assumed to use a seven-year payback period at 3.00% interest). It also includes the cost savings at the landfill achieved from *not* landfilling recyclables. This cost does *not* include administrative or support staff, billing costs, recyclable material processing cost/revenue, or fleet replacement costs. The costs/revenues of the recyclables collected are included in the Transfer & Processing model.

4. Annual Net Cost (Operations & Maintenance only): Removes the purchase and loan servicing cost of all capital equipment (vehicles and containers) from the Annual Net Cost (Total).

5. Cost per Household per Year: The Annual Net Cost (Total) divided by the total number of households in the community. *Note: This is not the same as the fee that would be charged to households for a program.*

6. Cost per Ton Recycled: The Annual Net Cost (Total) divided by the total number of tons recycled per year. Allows the user to easily compare the cost per ton for each program option.

7. Capital Cost (Total): The total cost for all capital equipment.

8. Total Number of Vehicles: The total number of vehicles, including collection vehicles (split bodied rear load or fully automated side load), back-up collection vehicles for larger fleets, supervisor pick-up trucks for route checks in larger communities, and cart delivery and maintenance vehicles in larger communities.

9. Total Number of Staff: Includes the total number of staff needed to provide collection services, route supervisors and cart maintenance. Does not include administrative staff, fleet maintenance, billing staff or other support staff.

10. Total Number of Drop-Offs: This is the number of recycling drop-off locations, based on an assumption that a drop-off location is required for a specific number of households, depending on the selected community type.

11. Capital Cost Vehicles: The total capital cost of all vehicles, including interest.

12. Capital Cost Containers: The total capital cost of containers, including interest.

13. Annual Cost for Drop-Off Sites (Total): The total annual cost to build and outfit enough drop-off sites to adequately service the entire community. Includes cost to pave, signage, and minimum three roll-off containers. Does not include full time staff at each site or power. Drop-off site building costs are amortized over 20 years and includes interest and inflation. Container costs are amortized over 7 years and include interest.