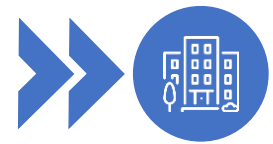


Today's Discussion – Implementation Options

1	Traditional Pathway
2	Regional Pathway
4	WTE Pathway
4	Statewide Legislation
5	Program Logistics
6	Program Control



Municipalities individually adopt Unit Based Pricing (UBP) systems with or without waste standard or UBP legislation.

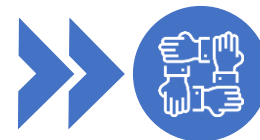
+ Strengths & Opportunities

- Enables municipalities to choose the type of UBP program and rate structure that they want
- Legislation would ease the burden municipal officials

- Weaknesses & Threats

- Is time-consuming and must be carried out individually in each of 169 cities and towns
- Is easily derailed by local political considerations
- General lack of waste expertise in decision making process
- Haulers are opposed to change in their business
- Difficult to expand to multi-family and commercial sectors
- Co-collection of organics more challenging

Would work best if coupled with UBP or waste standard legislation to ease the burden on municipal officials



Regional government coalitions (10 COGs, 8 SWPGs) adopt SMART systems for their members:

- Each could COG and SWPG creates its own program and decides if participation voluntary or mandatory.
- Revenues from the sale of UBP bags, or cart fees would flow to the COGs and/or SWPGs (see following slide)
- Each COG/SWPG could use those funds to pay the tip fees (waste, recycling, digestion) for members who participate in the SMART program.
- Co-Collection could be added in with UBP bags + Commercial and multifamily could be added with UBP Bags

+ Strengths & Opportunities

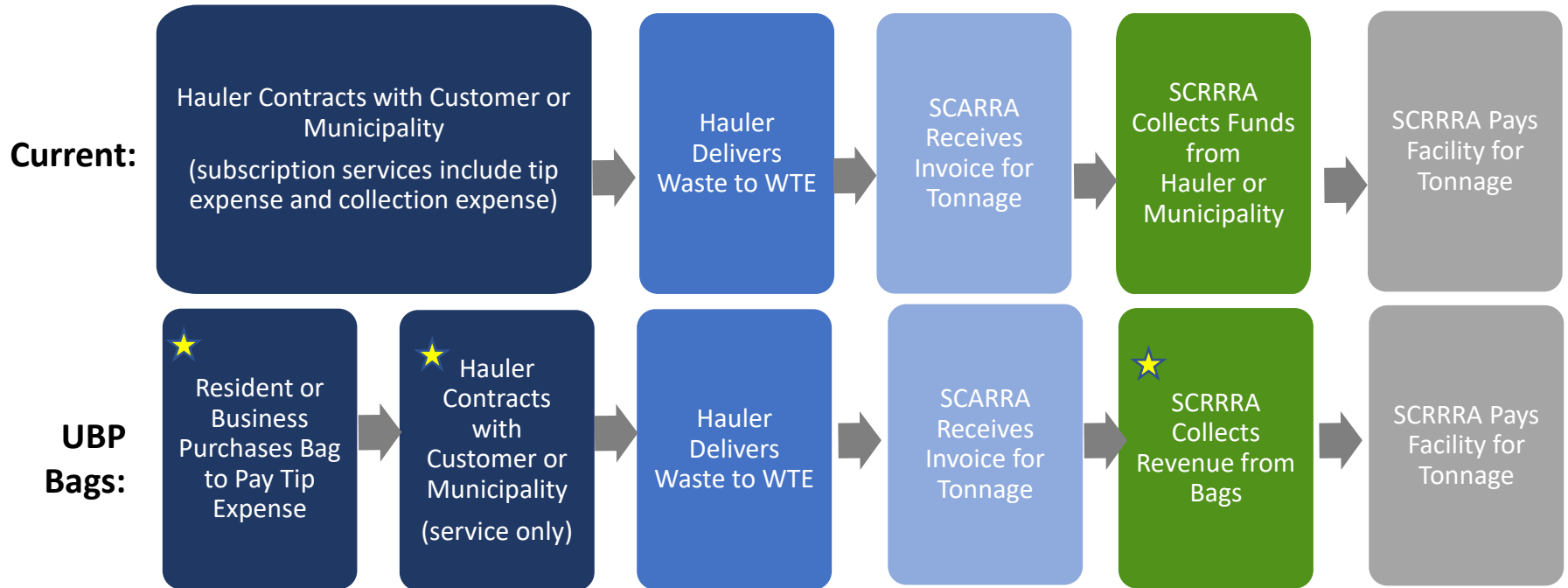
- Could provide an optimized, uniform solution for a region, group or authority – Save time and work for municipal officials
- Could make UBP adoption easier for municipalities (especially if coupled with legislation)
- Would eliminate tip fees for municipalities and haulers and create a revenue stream for the regional group
- Legislation would ease the burden municipal officials

Weaknesses & Threats

- Would require close coordination among WTE and recycling facilities and municipalities regarding enforcement, dealing with mixed (commercial and residential) loads, etc.
- Variation at the COG and SWPG-level could result in deeply variable results across the State
- Would still require each municipality to pass SMART individually, though it could be easier
- Haulers are opposed to change in their business. Carts would require audits and could be invasive. Carts might also require franchising.
- A cart program would limit co-collection expansion to commercial and multi-family sector

Regional Led Pathway - Bags

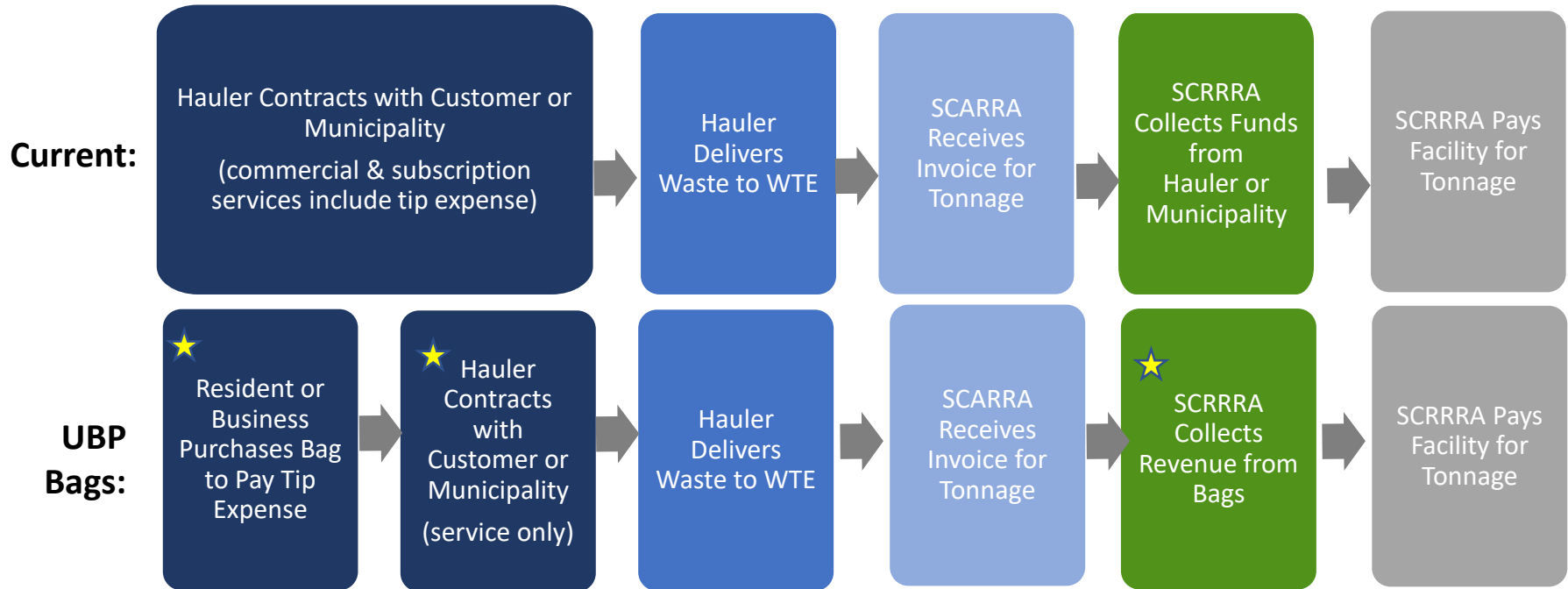
SCRRRA Example (Current vs. UBP)



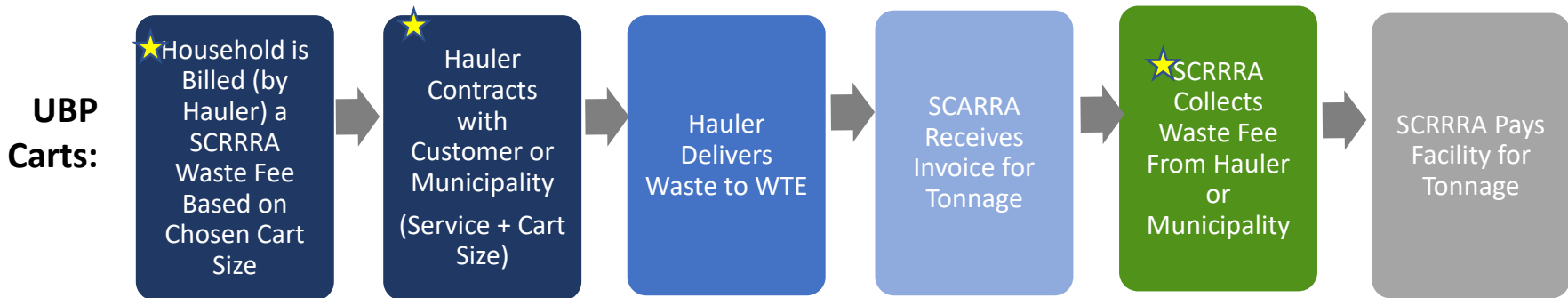
Bag system easily accommodates co-collection of food and will work for multi-family and commercial waste

Regional Led Pathway – Volume based

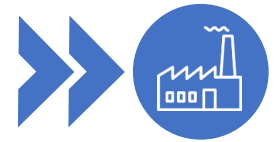
SCRRRA Example (Current vs. UBP)



Bag system easily accommodates co-collection of food and will work for multi-family and commercial waste



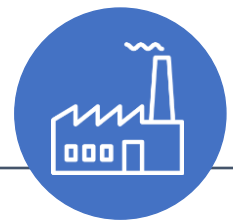
Cart system could be achieved by franchising the region; would not work with commercial or co-collection



WTE's or MIRA could facilitate a UBP program with UBP bags. Municipalities may choose to participate:

- **Municipalities that choose the UBP option:**
 - Require their residents to use the WTE facility's official trash bags
 - Send all residential trash to the WTE in official bags
 - Pay no per-ton tip fees to the WTE facility
 - Revenue goes to facility to cover tip costs – could include recycling and food waste tips – could be done through a rebate.
- **Municipalities that choose not to use the UBP option:**
 - Continue as they do today
 - Would pay higher tip fees

Waste-to-Energy (WTE) Facility-Led Pathway

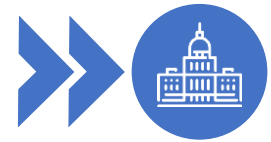


+ Strengths & Opportunities

- Would make SMART adoption politically easier for each municipality,
- Zero disposal costs for municipalities
- Would provide an optimized, uniform solution for a WTE facility's service area
- Would reduce residential waste, leaving more capacity for higher-fee commercial waste
- Steady revenue and guaranteed tip fee
- **Would provide an opportunity to co-collect all residential-food waste**
- Could be scaled to multi-family waste and commercial waste as in Europe
- For subscription hauling, haulers would have no tip fees. In initial months, they would realize a financial benefit; within a short period market pricing would likely lower monthly / quarterly pricing to residents

Weaknesses & Threats

- If optional, would still require each municipality to pass SMART individually, though it would be easier
- Haulers could be opposed to change
- Residents might see this as a way for municipalities to free up tax revenue in a way they oppose



Waste standards legislation would shift from measuring diversion to measuring per capita waste. Standards could “waterfall” over time (i.e. 600lbs by 2023, 450lbs by 2025, etc.) OR other UBP Legislation.

Pros

- Would address the entire state at once (if properly structured)
- Can remove “political heat” from local officials, making it easier for them to adopt SMART
- Can provide DEEP authority to promulgate and amend regulations to achieve the purposes
- Can provide flexibility for local or regional approaches to achieving standards

Cons

- Takes time to craft, debate, and pass
- May not pass the General Assembly
- Carries a risk that any legislation would be improperly structured, reducing its impact
- Waste Standard would require local data submission on an ongoing basis

Program Logistics

1	Variable Carts
2	Bags or Bag Inside of Carts
4	Hybrids

Program Logistics	Variable Rate Carts	Bags (with or without Carts)
Average Annual PPC (lbs per capita)	450 - 600	280 - 420
Average Annual PPC with Separate Organics Waste Collection	395 - 525	220

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Average Annual PPC (lbs per capita)	450 - 600	280 - 420
Average Annual PPC with Separate Organics Waste Collection	395 - 525	220
Rate Structure	<p>Linear Rate Structures: Best results occur with rates that take the total cost of waste out of the taxes and creates a proportional tiered scale where cost differences promote the adoption of the smallest container. Revenue certainty can be problematic as more homes move to the smallest container.</p> <p>Two-Tiered Rate Structures: A portion of the cost of waste would remain either within the general fund taxes or within a flat household fee. The remaining revenue would be generated through a second household fee based on cart size. Can be less effective than a linear rate, as the results are dependent on the degree of change between different cart sizes.</p>	<p>Linear Rate Structures: Are not recommended with a bag program, as bag revenues would have to cover all program costs.</p> <p>Two-Tiered Rate Structures: A portion of the cost of waste would remain either within the general fund taxes or within a household fee. The remain costs would be covered by the purchase of prepaid municipal garbage bags.</p>

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Logistics	Added Expense - Initial cart distribution and ongoing change outs as residents move or wish to save money and downsize their cart drive up logistics costs.	Built into the bag price - Bag vendors can provide retailer relationships and distribution to stores that are convenient for residents to purchase bags. Municipal costs and burdens are minimal.

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Logistics	Added Expense - Initial cart distribution and ongoing change outs as residents move or wish to save money and downsize their cart drive up logistics costs.	Built into the bag price - Bag vendors can provide retailer relationships and distribution to stores that are convenient for residents to purchase bags. Municipal costs and burdens are minimal.
Use of Plastic Bags	Plastic bags are still generally used to hold daily or weekly waste and there is still an expense to the resident. Co-collection is not efficient unless the bags are standard.	Plastic bags become the unit of measure that best represents waste. A standard UBP bag would allow for co-collection of food and other items in the same cart. UBP bag could eliminate regular bags – reducing spend.

Program Logistics

Variable Rate Carts

Bags (with or without Carts)

Implications for Low-Income Residents

Most communities assign cart sizes based on the request of the property owner, not the occupant. Property owners tend to pick the largest bin (highest cost) and build that cost into the rent. Lower income residents have no option to save money by reducing their waste.

Fixed costs (collection and personnel, etc.) remain in the tax base or, in the case of a subscription hauler, as a fixed regular fee. The fixed fee can be covered by the owner, but the bag fee is paid by the occupant. The occupant now has the ability to save by reducing waste generation.

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Billing and Past Due Collections

Added expense - Thousands of residents would need to be billed on a monthly or quarterly basis. This service can be turned over to the hauler as their responsibility, however the hauler will increase prices to cover the service.

Bag vendors can handle retailer billing and receivables. The city will not have to manage collections. The cost is built into each bag.

Program Logistics

Variable Rate Carts

Bags (with or without Carts)

Implications for Low-Income Residents	Variable Rate Carts	Bags (with or without Carts)
Billing and Past Due Collections	Added expense - Thousands of residents would need to be billed on a monthly or quarterly basis. This service can be turned over to the hauler as their responsibility, however the hauler will increase prices to cover the service.	Bag vendors can handle retailer billing and receivables. The city will not have to manage collections. The cost is built into each bag.
Stability	Since waste reduction is the goal, cart pricing is difficult because as more residents move to the smaller carts, the cost of those carts continues to go up in order to cover all costs of the disposal services.	As waste decreases, bag sales also decrease. By setting retail bag prices based on the average weights associated with the waste contained within the bag, the revenue from bags will always cover disposal expense.

Program Logistics

Variable Rate Carts

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<p>Billing and Past Due Collections</p>	<p>Added expense - Thousands of residents would need to be billed on a monthly or quarterly basis. This service can be turned over to the hauler as their responsibility, however the hauler will increase prices to cover the service.</p>	<p>Bag vendors can handle retailer billing and receivables. The city will not have to manage collections. The cost is built into each bag.</p>
<p>Stability</p>	<p>Since waste reduction is the goal, cart pricing is difficult because as more residents move to the smaller carts, the cost of those carts continues to go up in order to cover all costs of the disposal services.</p>	<p>As waste decreases, bag sales also decrease. By setting retail bag prices based on the average weights associated with the waste contained within the bag, the revenue from bags will always cover disposal expense.</p>
<p>Flexibility</p>	<p>Not Flexible - Trash is not the same each week. When selecting a bin, some residents size up just in case they need the space on a given week, which provides less of daily incentive. If residents choose a small size and have more trash than normal than they are stuck without enough space.</p>	<p>Flexible Plastic bags are still generally used to hold daily or weekly waste and there is still an expense to the resident. Co-collection is not efficient unless the bags are standard.</p>

Program Logistics

Variable Rate Carts

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<p>Recycling Contamination</p>	<p>The cart system encourages people to choose the smaller container, which is sometimes not enough to accommodate the week's trash. This brings out more wishful recycling (i.e. paper plates, streamers, and cups from a birthday party). These are not recyclable, but residents often try because they have no alternative.</p>	<p>Individual bags can provide extra space as needed. Waste is not the same each week and residents can always use an extra bag at a low cost to accommodate (i.e. disposables from a child's birthday party). Contamination is generally not negatively affected by this system.</p>

Program Control

1	Municipal
2	Subscription

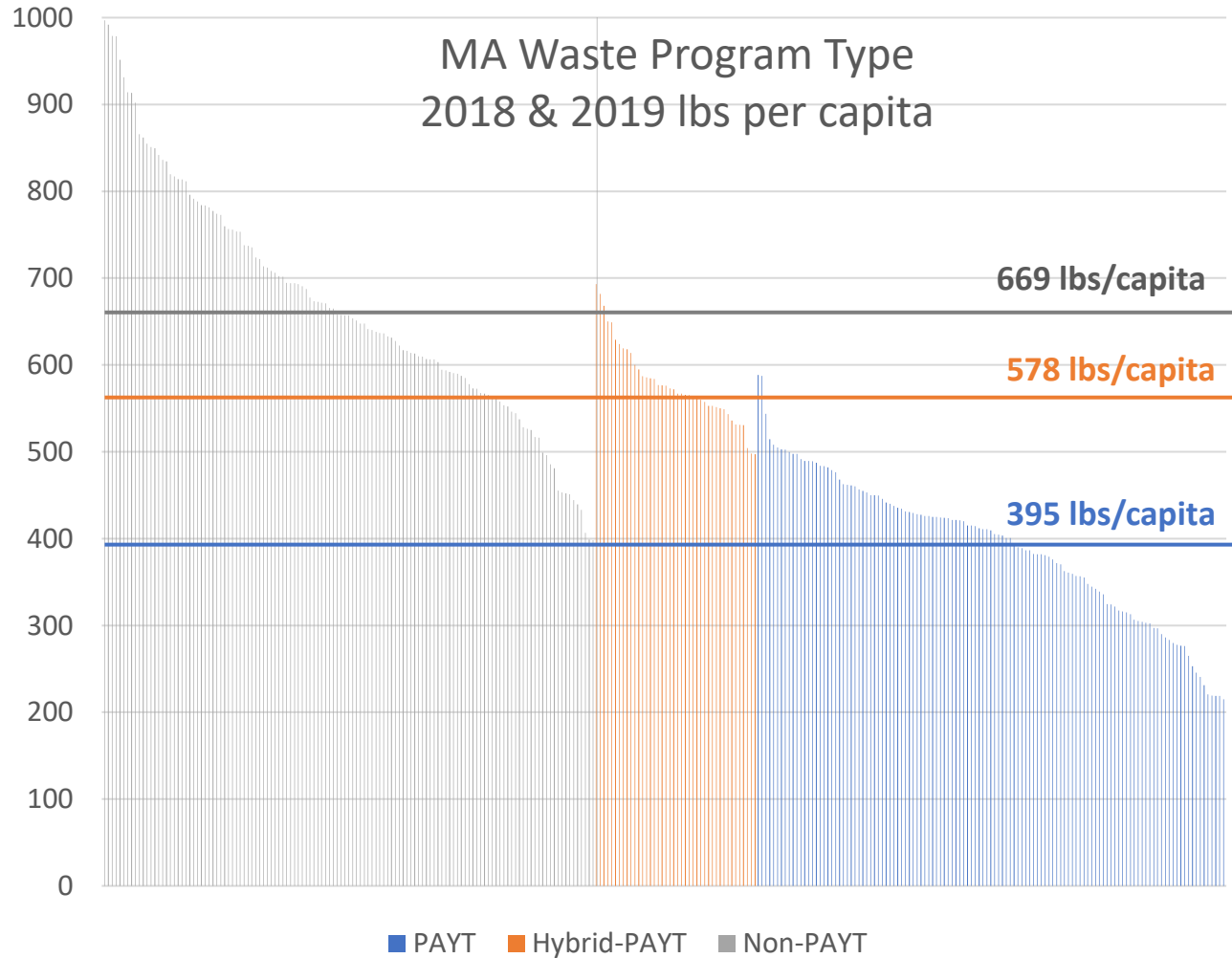
Program Control: Municipality

Variable Rate Carts	Bags (with or without Carts)
Create a linear or two-tiered rate structure.	Create a bag fee that all or a portion of the waste program i.e. tip only
Bill residents monthly or quarterly. Revenue covers all or a portion of the program.	Residents purchase bags through local stores. Bag vendor collects revenue from stores on behalf of community.
Municipality manages carts and cart sizes	No change in collection, bags go into automated cards
Municipality manages cart sizes and regular cart switch outs.	
Compliance would be at the curb. Materials would not overflow the cart without the purchase of an overflow bag.	Compliance can be monitored at the transfer station or disposal facility

Program Control: Subscription Hauler

Variable Rate Carts	Bags (with or without Carts)
Haulers current collection system would change. Hauler would need multiple cart options and inventory.	Haulers' current collection system would not change (e.g. automated, semi-automated, or manual). Bags go in carts and can be monitored with cameras.
Haulers would need to work with town or region on the new rate structures for residents. Either linear or two tiered.	Haulers' relationship' with residents would not change.
Since overall material generation would decrease, haulers should be able to reroute and will likely see some productivity / efficiency savings with UBP Bags. Haulers would need to bill monthly or quarterly	Since overall material generation would decrease, haulers should be able to reroute and will likely see some productivity / efficiency savings with UBP Bags.
Haulers would still pay tip fee at the transfer station. Hauler would need to monitor rate structure to ensure that tip costs are covered	Haulers would pay \$0 tip fee at a municipal transfer station or regional or WTE facility or MIRA transfer station.
Haulers would change the rates structure, depending on the cart size some residents would pay more and some would pay less.	Haulers would be encouraged but not compelled to reduce their rates and charge residents for collection service only.
Compliance would be at the curb. Materials would not overflow the cart without the purchase of an overflow bag.	Compliance would be monitored at the transfer station or disposal facility
Residents could opt out of collection and use a bag at the transfer station (if transfer station is available)	Residents could opt out of collection and use a bag at the transfer station (if transfer station is available)

MA Program Comparison



- 189 Towns Reported 2018 and 2019
- Hybrid communities include: 64-gallon and 32-gallon overflow programs, curbside tag programs, and variable cart programs
- Mix of transfer station, subscription and municipal curbside programs

UBP Carts Pay for Disposal (plus a portion collection costs)

With cart programs, the cart size should be the responsibility of the property renter and not the property owner or the behavior will not change. **The average home will spend \$91 on cart fees annually.**

Windsor Locks Example

Cart cost covers trash incineration+ some operational costs



Cart Size (gallons)	Distribution	Number	Annual Revenue per Cart
24	25.0%	1,188	48
32	41.0%	1,949	74
64	26.0%	1,236	122
96	8.0%	380	216

*Based on achieving the same per capita as Mansfield, CT. Mansfield is an aggressive target

Cart programs where the landlord chooses the size are less fair to renters because they have no control of their true costs. Landlords simply add the annual fee to the rent.

Number of Official Bags the Average Home will Use per Week

With UBP, the average home will use less than one 33-gallon bag per week.



The average home will use...



...less than one bag per week

Windsor Locks
Example

Based on data collected from hundreds of UBP programs:

- Residential trash will drop by 44% (from 5,014 tons/yr. to 2,808 tons/yr.)
- 2,808 tons per year equals
 - 1,056 lbs. per home per year
 - 20.31 lbs. per home each week
- A 33-gallon bag collected through a UBP program contains about 21.25 lbs. of trash
- That's less than one bag per week per hh

How the Bags Pay for Trash

The average home will spend \$71 on bag fees annually (plus reduced expense on standard trash bags).



\$1.50 per Bag

Bag & Bag Distribution	\$0.31
Trash Incineration+ some operational costs	\$1.19
Total	\$1.50



Windsor Locks Example

\$.80 per Bag

Bag & Bag Distribution	\$0.21
Trash Incineration + some operational costs	\$0.59
Total	\$0.80

Comparing SMART Program Types: Up-Front Costs

Windsor Locks Example

Carts require an upfront investment, bag programs do not.

Cart Size (gal.)	Purchase Cost (per unit)	Distribution Costs (per unit)	Direct Costs	Including Start up Logistics
24	\$32.00	\$5.00	\$43,965	\$50,560
32	\$50.00	\$5.00	\$107,180	\$123,257
64	\$60.00	\$5.00	\$80,326	\$92,375
94	\$70.00	\$5.00	\$0	\$0
Total			\$231,471	\$266,192

Cart Program

Cart sizes not currently in the municipal inventory must be purchased.

Carts must be distributed to every home.

The logistics of the roll-out must be carefully planned and managed.

Bag Program

An upgrade to camera or software for trucks to monitor compliance is @ \$2,500

+ @\$5,000 for compliance during start up for either program

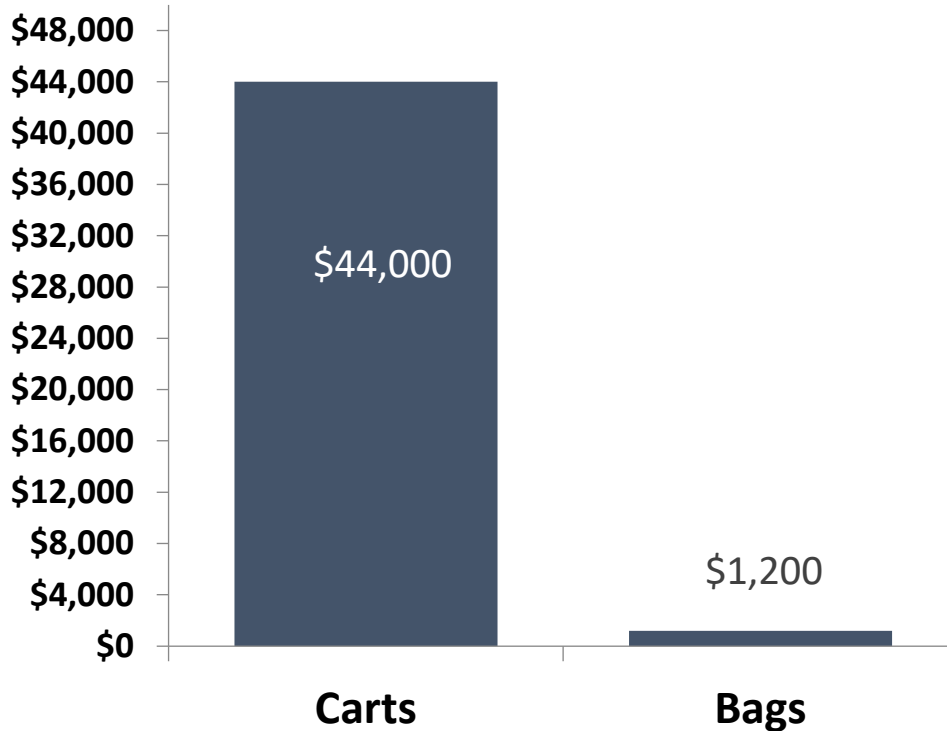
A SMART Bag program requires minimal start up expense.

Comparing SMART Program Types: Ongoing Costs

**Windsor Locks
Example**

Ongoing costs are the expenses required to run and maintain a SMART program.

Projected Annual Ongoing Costs



Projected costs based on Austin, TX VRC per HH program costs.

Cart Program

Residents must have the option to change cart size, in order to continue to reduce waste. Approximately 5% per year

The municipality must set up a regular billing mechanism for each home based on cart size. Approximately \$0.33 per month per household.

Progress toward program goals requires ongoing outreach and education. Approximately \$0.25 per month per household.

Bag Program

There is a nominal cost to review monthly statements. GPS services \$1,200 per year

A SMART Bag program can be managed with minimal effort and cost to the town.

Comparing SMART Program Types

**Windsor Locks
Example**

	Current Waste Program	UBP Bag	UBP Cart
Revenues			
Net Bag Revenue	\$0	\$261,579	\$0
Net Cart Revenues	\$0	\$0	\$434,139
Tax Revenue	\$937,250	\$528,267	\$490,125
Total Revenues	\$937,250	\$789,846	\$924,264
Expenses			
Curbside Disposal	\$335,008	\$187,604	\$278,057
Recycling Disposal	\$0	\$0	\$0
Cart Management (Billing, Change Outs, Marketing)	0	0	\$43,965
Other Solid Waste Costs	\$602,242	\$602,242	\$602,242
Total Expenses	\$937,250	\$789,846	\$924,264

Total department costs are 16% less with UBP Bag Program

MIRA Bag-Based SMART Details

Program Funding Flows	SMART Bag Specs & Pricing	SMART Bag Distribution	Program Compliance & Enforcement	Ongoing Education / Support
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Enforcement at MIRA:



Hauler loads can easily be monitored at the Transfer Station / WTE as they are delivered. Its easy to attendant to gauge compliance levels.

Drivers would report non-compliant homes to MIRA daily. Compliance can be recorded using current systems or haulers can use an automated GPS tracking system.

Variable Rate Cart (VRC) Approach: Example (Austin, TX)

A VRC approach incentivize residents to reduce waste by pricing different size carts at increasing levels.

Rates Pay-As-You-Throw (two tiered) Rate Structure Austin, Texas

Residential Rates	Cents Per Gallon Trash Cart Size	Monthly Trash Fee	Monthly Recycling and Organics Fee	Total Monthly Fee	Customer Selection
<i>Trash Can Size</i>					
24 gallon	\$0.16 x 24	\$3.85	\$11.35	\$15.20	5%
32 gallon	\$0.16 x 32	\$5.10	\$11.35	\$16.45	20%
64 gallon	\$0.16 x 64	\$10.25	\$11.35	\$21.60	65%
96 gallon	\$0.25 x 96	\$24.00	\$11.35	\$40.15	10%

- Provide multiple size cart options
- Set up a billing mechanism for homes (monthly is ideal)
- Its best if occupant of home is responsible for size selection and paying the fee
- The goal is to continue moving residents into smaller containers or reduced frequency
- Continued education is necessary