

Maximizing Organics Diversion: A Comparison of Residential Food Waste Capture Rates

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Living Chemistry for Quality of Life.

Outline

- Background on Novamont
- The Need For Residential Food Waste Collection
 - Five Years of Growth in the U.S.
 - Metrics for Success: Participation, Capture Rates
- Lessons From Abroad
 - Canada
 - Italy
- Conclusion: Planning for SSO

Our mission

- ❑ Novamont's mission is to find solutions to environmental problems by developing products from **renewable raw materials of agricultural origin**, minimizing post-consumer waste and using low environmental impact processes.
- ❑ Novamont encourages the transition from a product based economy to a **system based economy**.



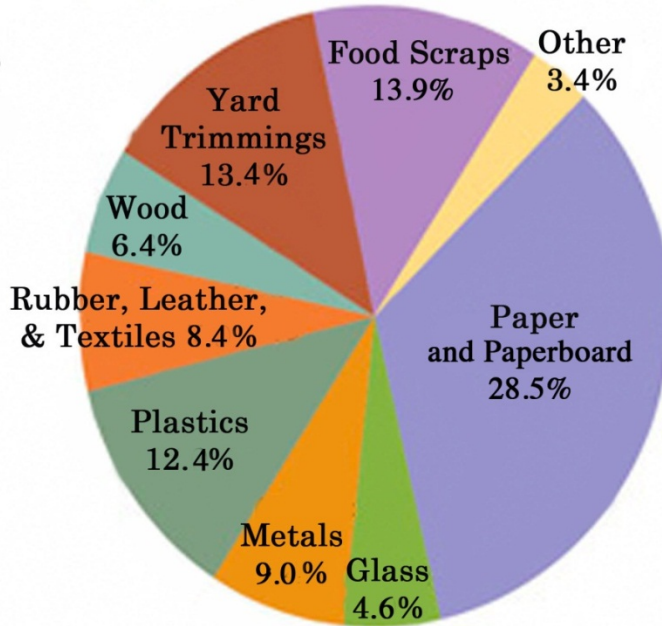
Mater-Bi®: Compostability



Why Is Residential Food Waste Collection Important?

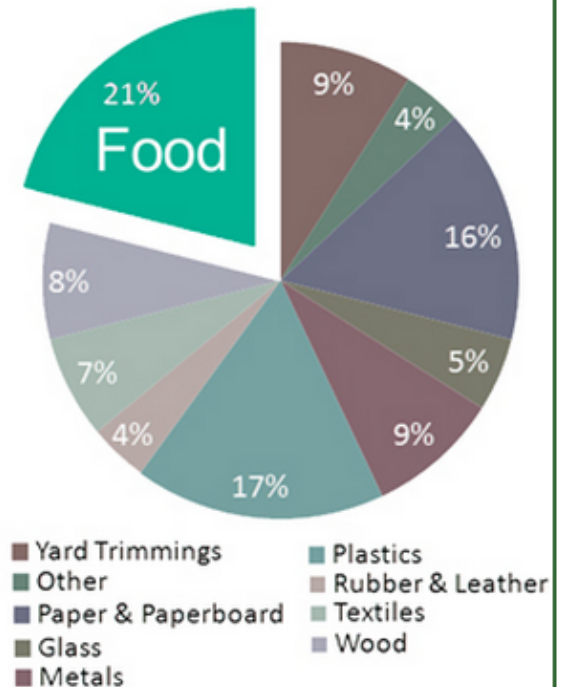
Total MSW Generation (by Material) 2010
250 Million Tons (Before Recycling)

- Paper and Paperboard 28.5%
- Yard Trimmings 13.4%
- Food Scraps 13.9%
- Plastics 12.4%
- Metals 9.0%
- Rubber, Leather, & Textiles 8.4%
- Wood 6.4%
- Glass 4.6%
- Other 3.4%



Source: USEPA

Food makes up the largest percentage
of waste going into municipal landfills and combusted for energy recovery



Data from the 2010 Municipal Solid Waste Characterization Report

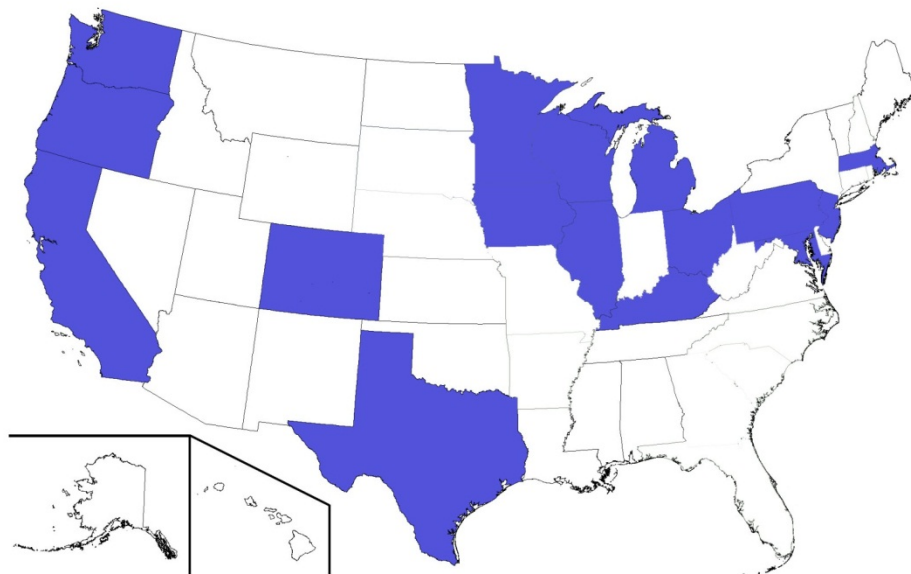
33 million tons of food waste reach landfills each year in the United States. This food could be prevented, used to feed people, or composted to create a valuable soil amendment.

Food scraps composted in 2010: 2.8% (0.97 million tons)
Over 50% of material disposed of could be composted.

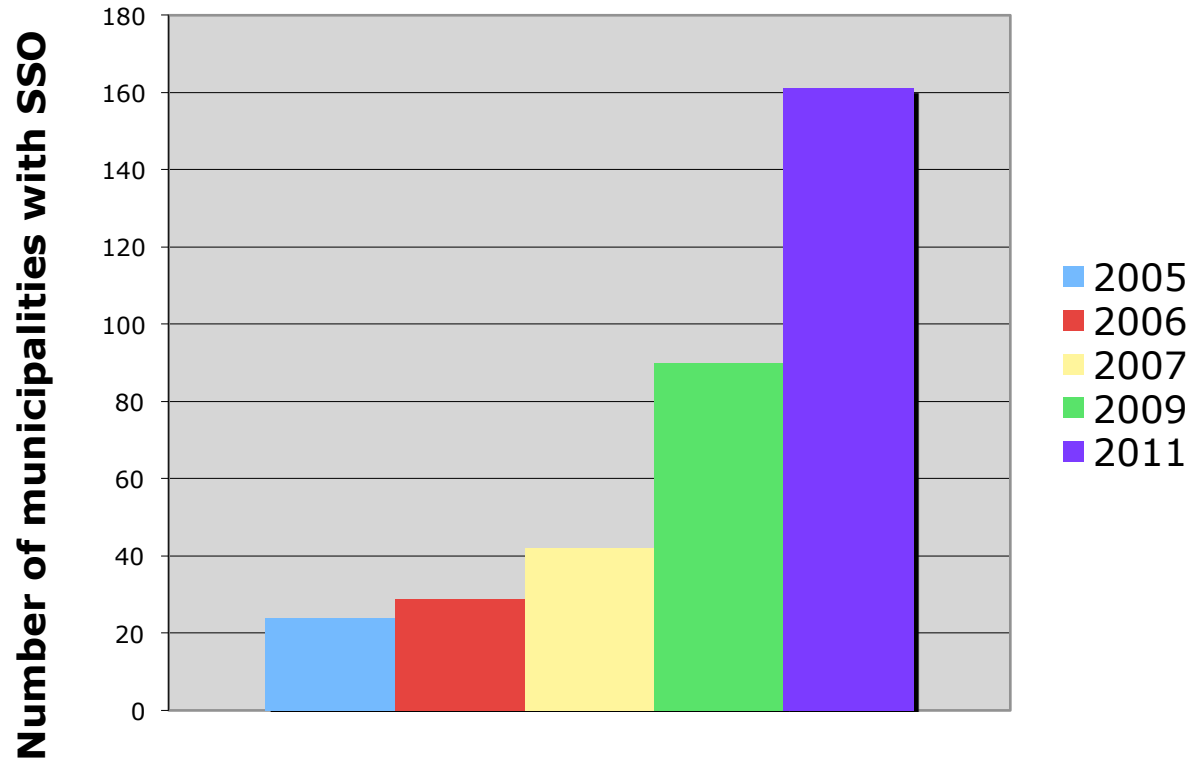
Current Status: Residential SSO in the U.S.

Key Data (Dec 2011):

- Over 160 residential SSO programs across 16 states
- Over 2.3 million households served
- Roughly 50% growth in the past five years



Growth Of U.S. Food Waste Collection: Municipalities



Metrics: Participation vs. Capture Rate

- Participation
 - Percent of households that have a green cart (if subscription)
 - Percent of households placing green cart at the curb weekly
 - Percent of households placing food waste in green cart weekly
- Recycling Rate
 - Percent of MSW diverted (out of tons MSW generated)
- Capture Rate
 - Percent of food waste diverted (out of food waste generated)

Residential Food Waste: Major Behavior Change

U.S. Trend—Food waste added to existing yard trimmings program

Pros:

- Build on initial investment in green carts, trucks, etc.
- Composting facility contract in place (likely needs new permit)

Cons:

- Separating food waste is major behavior change
- Difficult to monitor food waste capture rates



Residential Food Waste: Program Maturity

U.S. Trend—Focus on methods of increasing participation and capture rates

- Collection frequency
- Kitchen pails & compostable bags
- PAYT & other incentives



King County “Ick Factor”

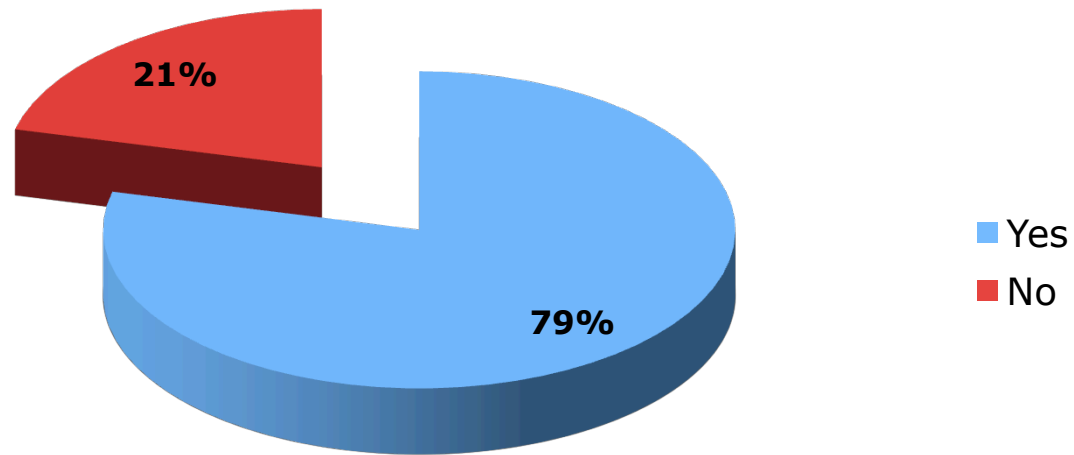
2008 study *Overcoming the “Ick Factor”*

“I would recycle food scraps if...”

- **85%** - City provided products that make participation easier cheaply or at cost, specifically compostable bags and kitchen pails
- **83%** - City promoted how participating can lower my garbage bill
- **71%** - Switched to weekly organics collection
- **53%** - More info on why residents should participate

King County’s 2010 capture rate (including yard trimmings) was approximately 28.5 lbs/week/household

SSO Programs That Allow Compostable Bags (2012)



Collection Frequency & PAYT

Less-than-weekly (LTW) trash collection, paired with weekly organics and recycling collection

- Not just adding a new service, but re-thinking how all materials are handled (weekly trash no longer needed)
- Leads to space constraints in garbage cart, odor concerns from food scraps sitting for two weeks
- Connect with Pay-As-You-Throw (PAYT) pricing

LTW already practiced in: Portland (OR), Olympia (WA), King County (WA), Hutchinson (MN), Hennepin County (MN). Pilots in Seattle (WA) and San Francisco (CA).

Seattle, WA

Highlights:

- PAYT fee structure; certified compostable bags encouraged
- April 2009—organics collection frequency increased from bi-weekly to weekly pickup; all single-family customers required to either sign up for service or request an exemption for backyard food waste composting
- In 2010, capture rate for residential food waste reaches 45%
- September 2011, multi-family and multiplex customers are also required to sign up for organics service



Portland, OR

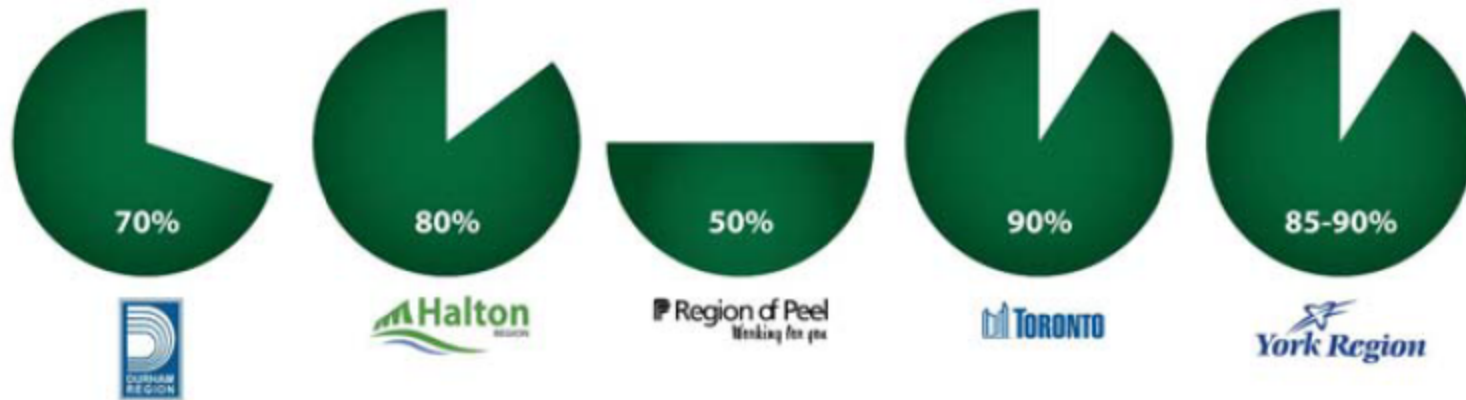
Highlights

- Piloted residential food waste in 2010, rolled out citywide in 2011.
- With citywide rollout, switched to bi-weekly garbage collection (with PAYT option for monthly and on-call service)
- Certified compostable bags promoted
- First year results:
 - Participation (green cart at curb, and had food waste): 78%
 - Food waste capture rate: 45%



Canada: Ontario

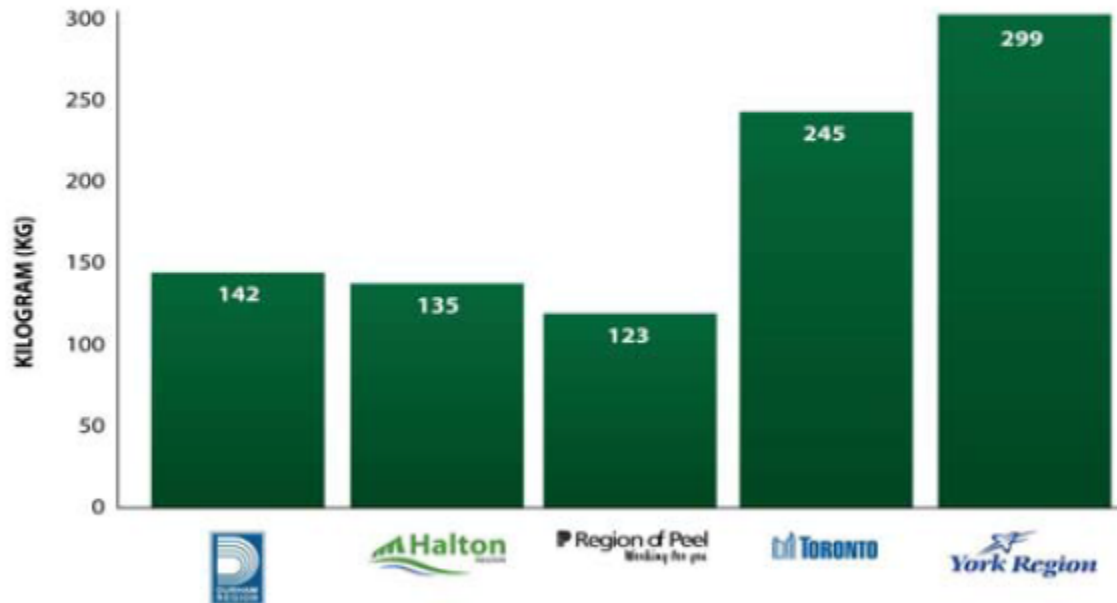
SSO Curbside Participation Rate (%)



Source: York Region Environmental Services Committee—2010

Canada: Ontario

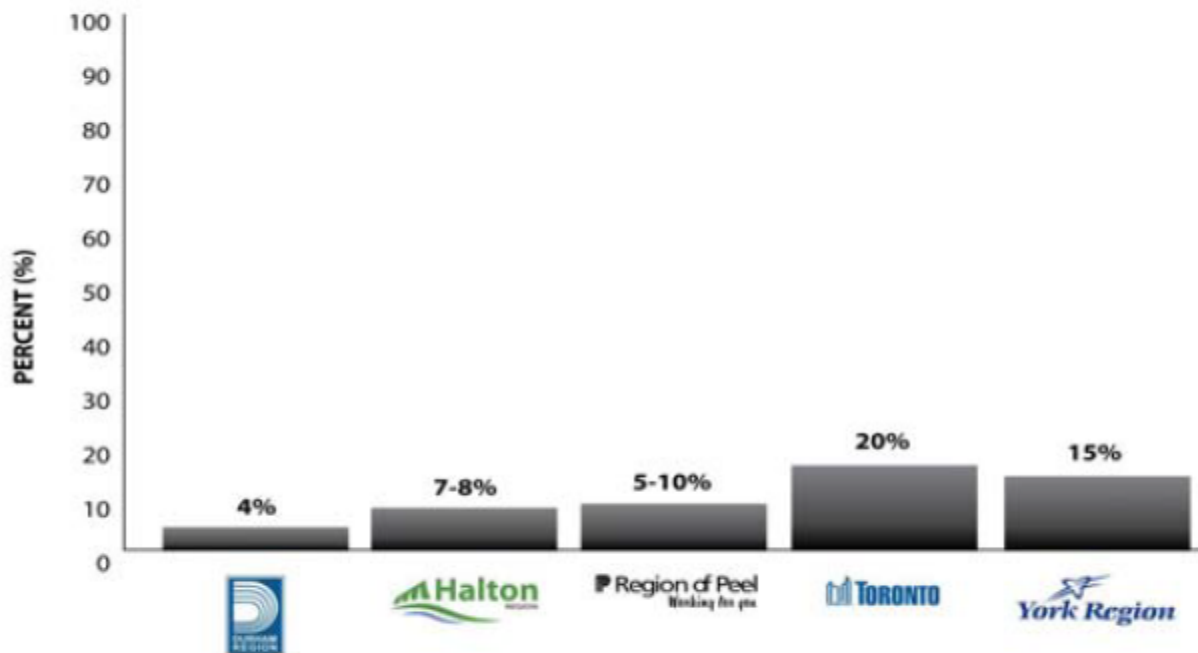
SSO Collected Curbside in 2008 / Household Serviced (kg)



Source: York Region Environmental Services Committee—2010

Canada: Ontario

SSO Residual Rate (%)



Source: York Region Environmental Services Committee—2010



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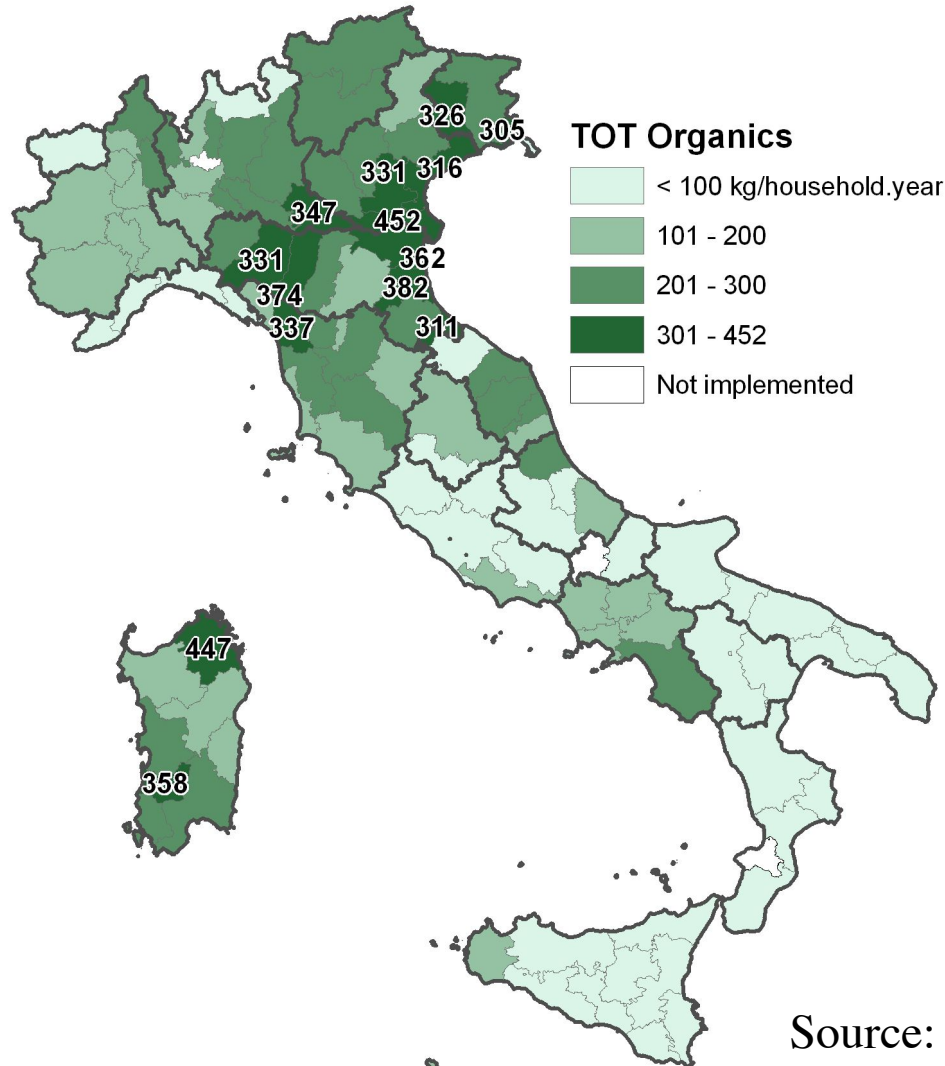
Italy

Intensive Source Separated Organics (ISSO)

- Maximize organics diversion from landfill
- Reduce food scraps in trash to less than 10%
- Food waste collected separately (no yard trimmings)
 - 130 kg/inhabitant
 - 300 kg/household
 - 660 lb/household
- Total organics (food waste + garden waste):
 - 150 kg/inhabitant
 - 350 kg/household
 - 771 lb/household



Italy – Best Performing Counties (total organics, food and garden waste)



Source: ARS ambiente, 2013

ISSO Collection System

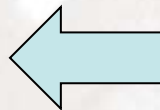


2. Small curbside bin just for food waste
Organics collection 1-3 per week; trash typically biweekly (to achieve high capture rates)

1. Vented kitchen pail and certified compostable bags are used to collect food scraps



3. Small collection vehicles (w/o compaction) haul the organics to transfer stations



4. Processing (composting and/or anaerobic digestion).

Conclusion: Planning for SSO

- What is the main goal?
 - Food waste is the cornerstone
 - Solid waste master plan, re-thinking all waste streams
- Pilot project
- Logistics and tools
- Measure participation and capture rates

Thank You

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