

**Missouri Recycling
Association Conference
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Kansas City, MO**

**BEYOND
RECYCLING**

Composting comes to the 21st century

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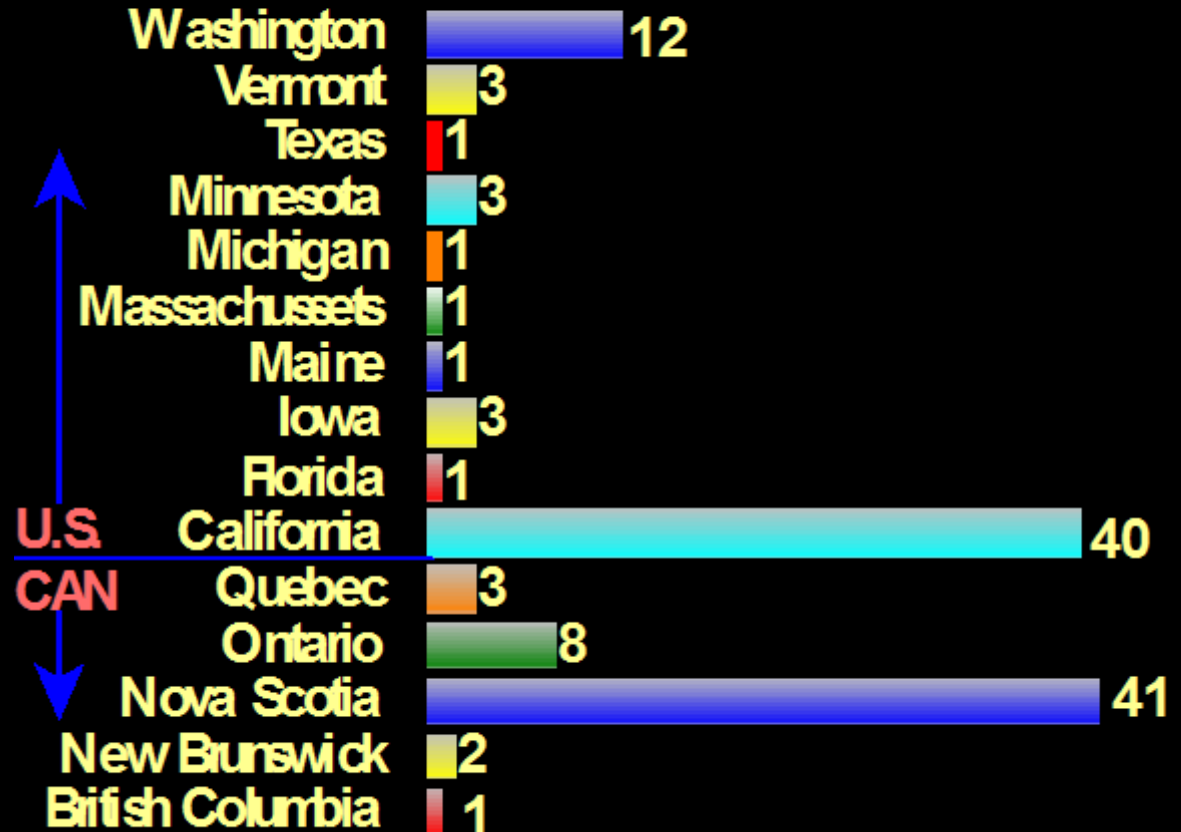
www.beyondrecycling.org; www.garyliss.com

Key point

- **In 2009, 121 communities in North America had moved beyond recycling to composting**

Cities separating food and soiled paper

NUMBER OF ORGANICS PROGRAMS BY STATE OR PROVINCE (2008)

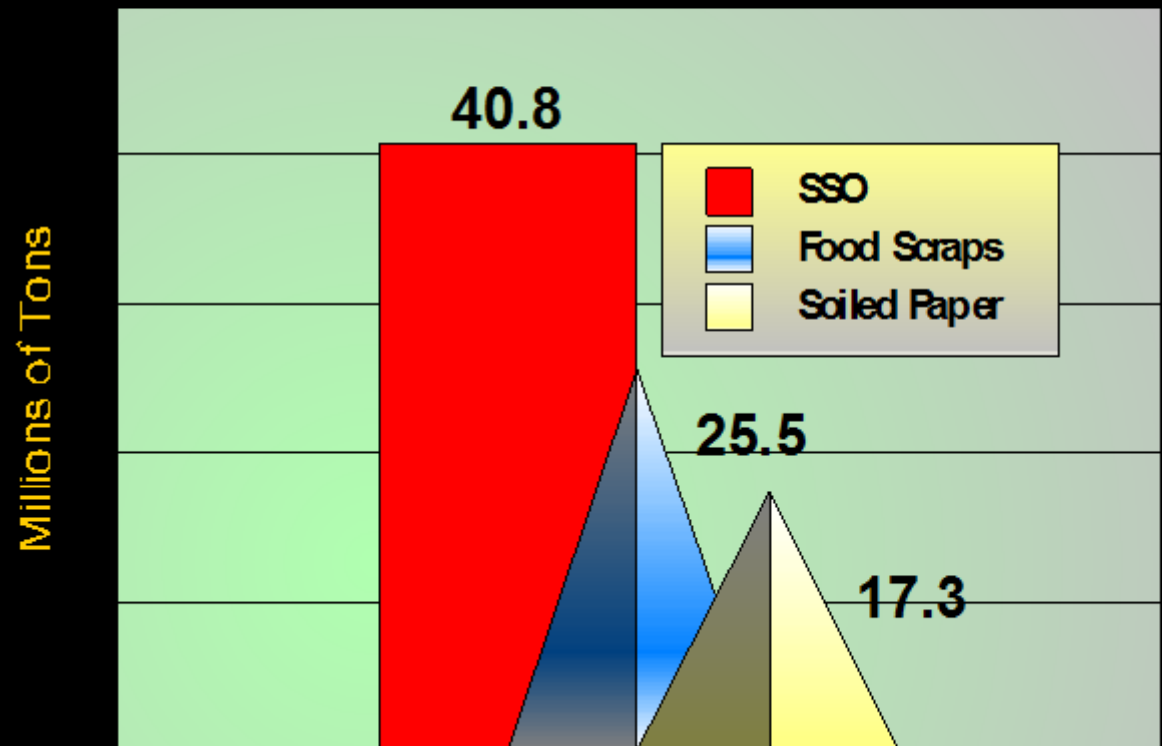


5 Most Common Reasons for Residential Organics Programs

- ⑩ **Local/state recycling goals**
- ⑩ **Response to landfill crisis, to protect groundwater, community opposed to landfill expansion or high landfill costs**
- ⑩ **Franchisee offered at no cost with contract extension**
- ⑩ **Public demanded service**
- ⑩ **Funding and technical assistance provided by regional agency**

Enormous potential

Source Separated Organic in the United States



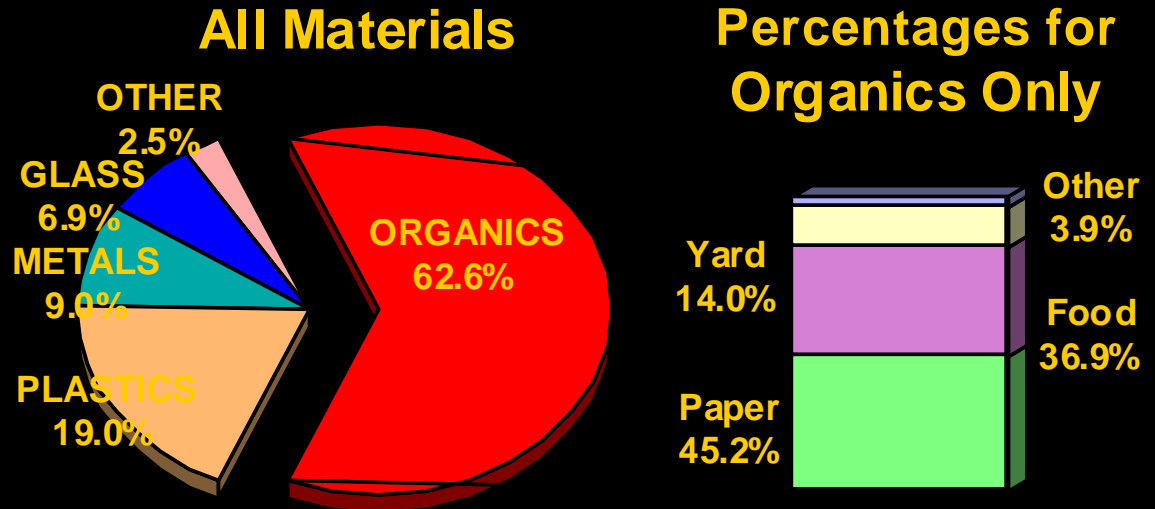
Key point

- **Expanded organics programs significantly reduce greenhouse gas emissions**

Landfill methane is from rotting organics

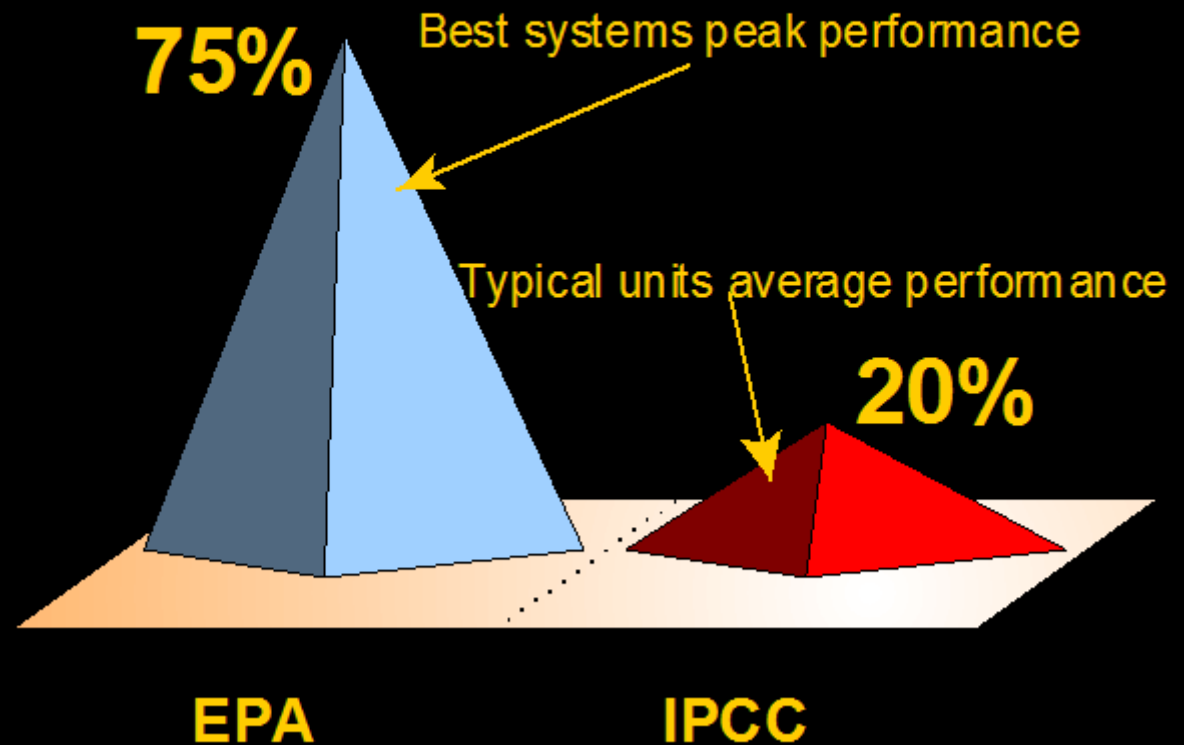
Municipal Solid Waste Composition

Disposed of in the U.S. After Recycling - 2007



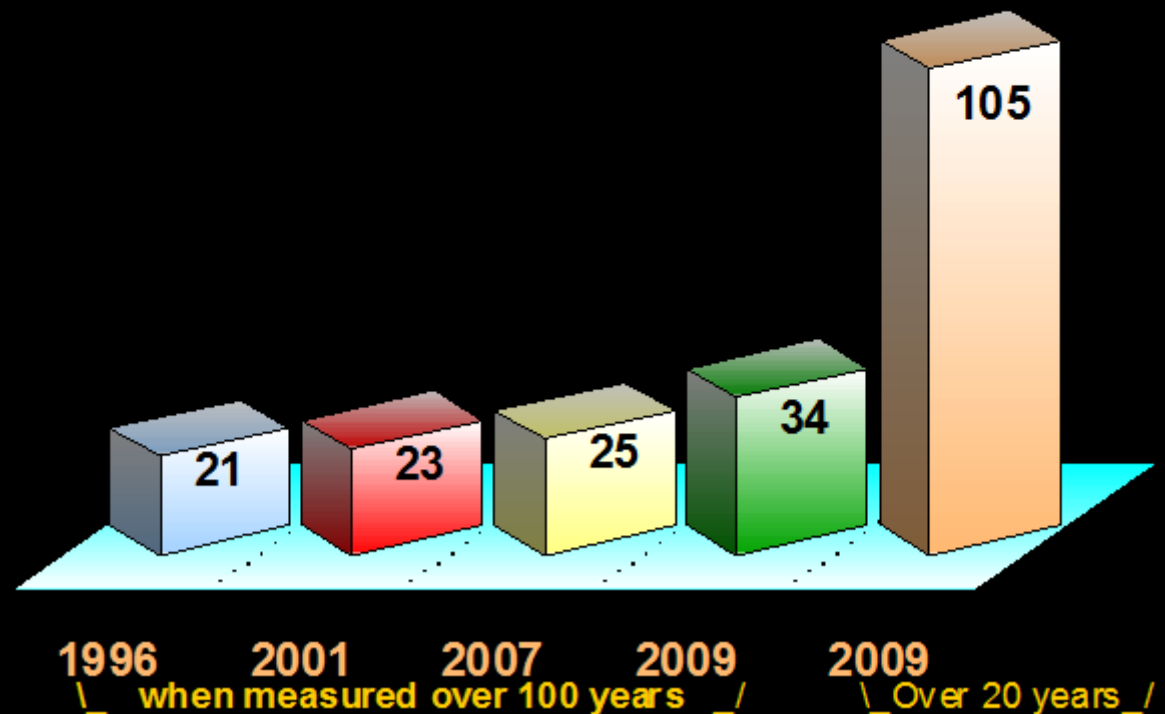
Landfills release more methane than recognized

Gas Collection Efficiency

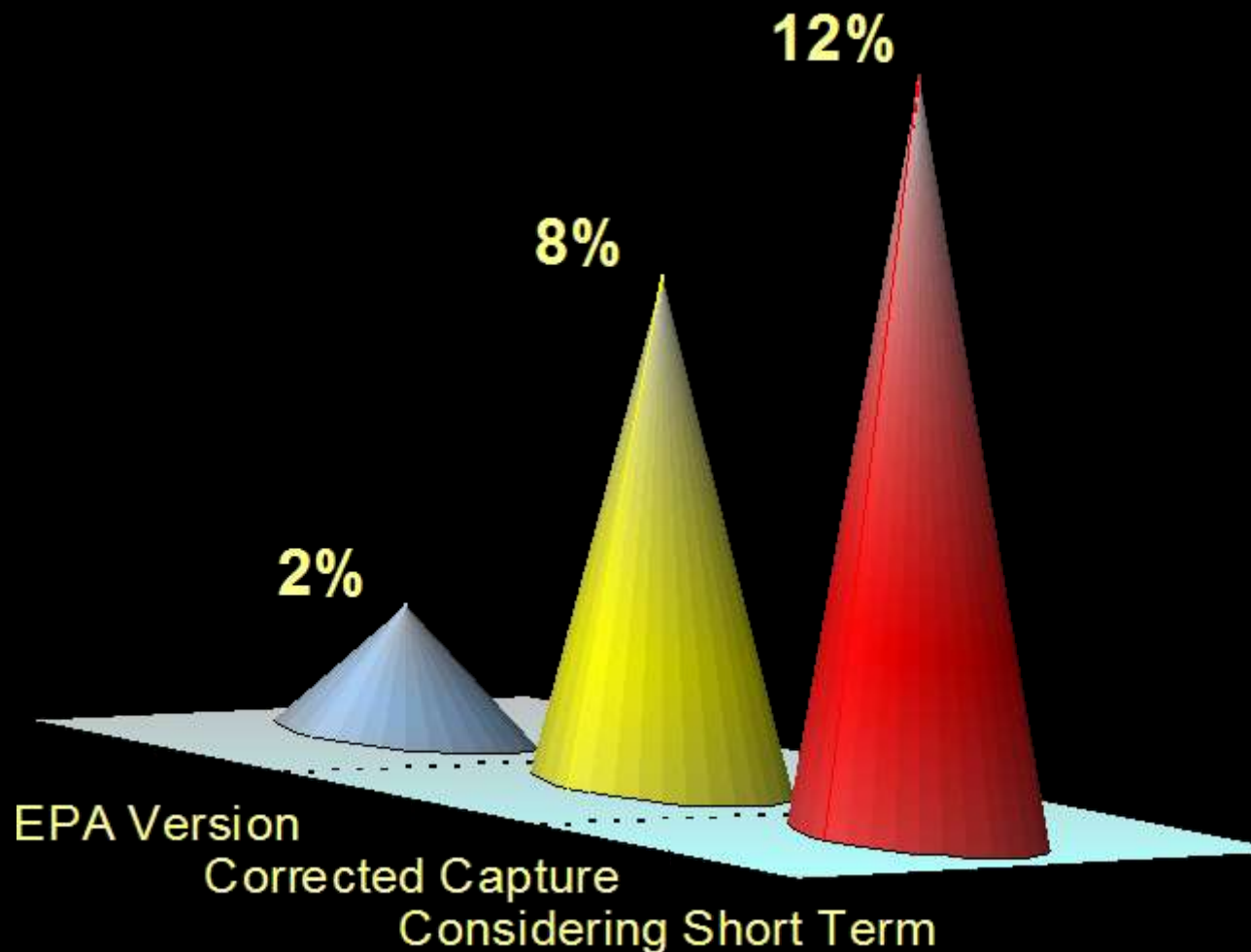


And the warming impact is much greater

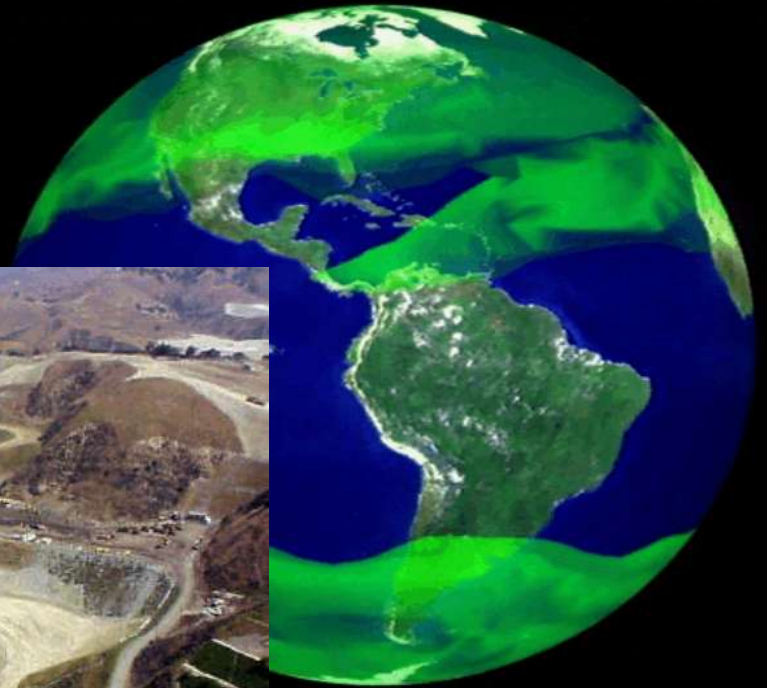
Methane's Hyper Warming Potential
Multiplied Times CO₂



Landfills' true impact on greenhouse gases



Opportunity is knocking for composters

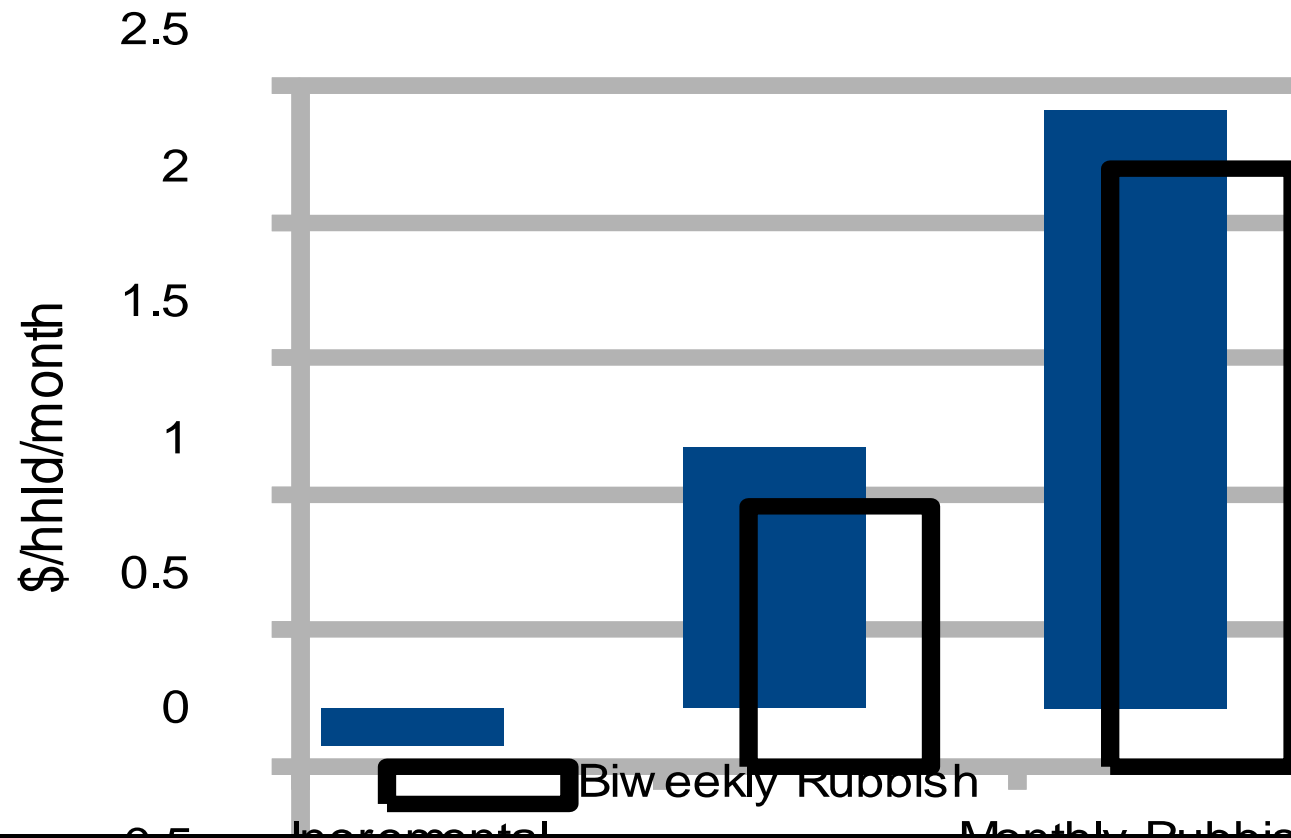


Key point

- **Reduced frequency of trash collection can offset cost of new programs and double diversion**

Powerful synergies

Net Cost of Diverting Compostables
(excluding costs to collect materials)



Processing costs – avoided (collection, landfill, GHG) costs

Key point

- **Processing food scraps may require more expensive enclosed systems**

Processing

| Aerobic | | Anaerobic Digesters |
|------------------------|----------------------|--------------------------|
| Windrows | In-Vessel | |
| • Open turned piles | • Shipping container | • Sewage Plant Digesters |
| • Static aerated piles | • Silo | • Wet Digesters |
| • Covered - Pod | • Tunnel | • Dry Digesters |
| • Covered - Fabric | • Channel | |
| | • Rotating Drum | |

Processing

- **In-vessel and enclosed digester processing systems are more expensive than windrow systems:**
 - **Windrows: \$25-40/ton**
 - **In-vessel: \$80-90/ton**
 - **Digester: \$120-150/ton**
- **Most yard trimmings are composted in windrow systems**

Processing

- **Most programs collecting yard trimmings and food scraps are composted in windrow systems**

Processing

- **Some have started with adding up to 25% food scraps to windrows permitted for yard trimmings only. Permits in CA generally allow for “de minimus” amounts up to 10%**

Processing

- Many programs with both yard trimmings and food scraps compost in Covered Windrows (using “bags” or “pods”)
- As more food scraps require composting, will need higher technology systems as proportion of food scraps will increase beyond what permits allow

Covered windrows



Processing

- **Generally Worthwhile To Upgrade Compost Quality Where Feasible**
- **Higher Quality gets Higher Prices that More than pay for themselves**

Key point

- **Markets 1st - Need more composting facilities permitted to accept food waste**

Key point

Consider during a program's development:

- **Landfill/Trash Bans**
- **Less-than-weekly Trash Collection**
- **Incremental or full expansion**
- **Education and Outreach**
- **Collection Infrastructure: Trucks and Carts**

Alameda County Billboards



WHO YA' CALLING GARBAGE?

FOOD SCRAP RECYCLING.
MAKE IT SECOND NATURE.
WWW.STOPWASTE.ORG

This billboard features three banana peels on the left. A green speech bubble points from the peels to the text. On the right, a green trash bin is overflowing with various food scraps. The background is white.



HEY, YOU DONE WITH THAT?

FOOD SCRAP RECYCLING. MAKE IT SECOND NATURE. WWW.STOPWASTE.ORG

This billboard features a red apple core on the left. A green speech bubble points from the core to the text. On the right, a green trash bin is overflowing with various food scraps. The background is white.



WHEN FOOD SCRAPS DREAM



FOOD SCRAP RECYCLING. MAKE IT SECOND NATURE.

WWW.STOPWASTE.ORG



**I CALL DIBS
ON THE BOX
AND CRUST.**



FOOD SCRAP RECYCLING. MAKE IT SECOND NATURE. WWW.STOPWASTE.ORG

Alameda County Transit Ads



Alameda County Transit Ads



HEY,
YOU DONE
WITH THAT?

FOOD SCRAP RECYCLING.
MAKE IT SECOND NATURE.
WWW.STOPWASTE.ORG



WHEN GOOD
VEGGIES GO BAD,
I'M HERE FOR YOU.

FOOD SCRAP RECYCLING.
MAKE IT SECOND NATURE.
WWW.STOPWASTE.ORG



¿QUÉ TE PASA
CALABAZA?

ESAS SOBRRAS NO SOBRRAN.
RECICLA, ES LO MÁS NATURAL.
WWW.STOPWASTE.ORG



COME NOVEMBER,
YOU'RE MINE,
JACK.

FOOD SCRAP RECYCLING.
MAKE IT SECOND NATURE.
WWW.STOPWASTE.ORG



IT'S BACK TO
THE FARM FOR YOU,
OLD TIMER.

COMPLETE THE CYCLE, RECYCLE YOUR FOOD SCRAPS. WWW.STOPWASTE.ORG



LEFTOVER,
BUT NOT
UNLOVED.

FOOD SCRAP RECYCLING. MAKE IT SECOND NATURE. WWW.STOPWASTE.ORG



HONEY, YOU MAY
BE WILTED.
BUT YOU'RE STILL WANTED.

FOOD SCRAP RECYCLING. MAKE IT SECOND NATURE. WWW.STOPWASTE.ORG



I'LL TAKE
WHAT'S BEHIND
DOOR #2!

RECYCLE YOUR FOOD SCRAPS WHEN YOU CLEAN OUT YOUR FRIDGE. WWW.STOPWASTE.ORG

Findings

- **About 1/3 collect food scraps separately and about 1/2 collect them with yard trimmings**
- **Some have banned organic materials from trash or landfills**
- **Most collect on a weekly basis**

Findings

- **Food scraps usually collected separately in cold climates where yard trimmings are not collected year-round**
- **Food scraps collected together with residential yard trimmings in warmer climates**
- **Also depends on type of composting system**

Findings

- **Food Scraps are generally processed in lower technology systems in rural areas and higher technology (e.g., in-vessel) in denser urban areas**
- **Often low technology rural composting facilities serve urban areas and GHG to ship there are minimal compared to GHG saved**

Findings

- **Key for site-specific analysis:**
 - **Trade-off between higher transportation costs to rural lower cost windrows vs. lower transportation costs but much higher processing costs for in-vessel urban systems.**
 - **Land costs may be critical factor**

Findings

- **Keeping yard trimmings separate from food scraps enables communities to keep using lower cost windrow composting systems for yard trimmings, and only paying higher prices for in-vessel systems for urban food scraps programs.**

Typical Equipment - Kitchen Container



Typically 1-2 gallons

Typical Equipment - Food Scraps Only Container



Typical Food only container is 12-15 gallons

Typical Equipment - Compostable Bags



Jury still out on use of compostable bags. Not always possible to get compliance to use only those.

Typical Equipment - Three cart set-out



Compostables carts are 60-90 gallons

Typical Equipment - Split body truck



Different Collection Strategies for Collection of Source Separated Organics

| Material Streams | | | Frequency |
|------------------|--|---------------------------------|-------------------|
| I | Wet (Food, soiled paper and other contamination) | ↔*Dry (Recyclables and rubbish) | Weekly |
| II | Rubbish | Recyclables ↔ Organics** | Weekly |
| III | Rubbish | | Biweekly |
| | | Recyclables ↔ Organics** | Weekly |
| IV | Rubbish | ↔ Recyclables | Biweekly |
| | | | Organics** Weekly |
| V | Rubbish | ↔ Recyclables ↔ Organics** | Biweekly |

Less than Weekly Trash Collection

- **OK to do if food scraps are collected weekly, by themselves or with yard trimmings**
- **Key influence of climate is on whether yard trimmings are collected year-round or not**
- **Climate is not a factor in whether trash is collected less frequently than weekly**

Commercial Food Scraps

- ⑩ **If commercial food scraps are kept clean, they could be digested at wastewater treatment plants, if excess capacity in anaerobic digesters**
- ⑩ **Some communities start food scraps programs by collecting from restaurants, grocers and other food scrap generators if composting capacity available**

Commercial Food Scraps

- ⑩ **MA has helped connect grocers with local farms to use food scraps as compost**
- ⑩ **Some large businesses, colleges and institutions are composting food scraps on-site**
- ⑩ **Composting capacity often enables venues and special events to conduct Zero Waste events**

To read *Beyond Recycling* report

www.beyondrecycling.org/pdf_files/FinalReport.pdf

To exchange information with colleagues

Join on-line forum at

www.beyondrecycling.org

For more information

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