

Developing a Composting Program

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Getting the Ball Rolling

- You have decided to expand your diversion programs
- Organics have been selected as the low hanging fruit
- Composting is the preferred technology
- What is the process going forward?

The Process: GO

- Which organics to extract?
- From what sources and how much?
- How to collect?
- Where to take them? (site)
- How to process the organics? (technology)
- What will it cost? What is our revenue?
- REALITY CHECK
- Repeat if necessary – ITERATIONS ARE NORMAL

Supplementary Questions

- Who will own the facility?
- Who will operate the compost facility?
- What enabling local legislation is required?
- What kind of education program is needed?

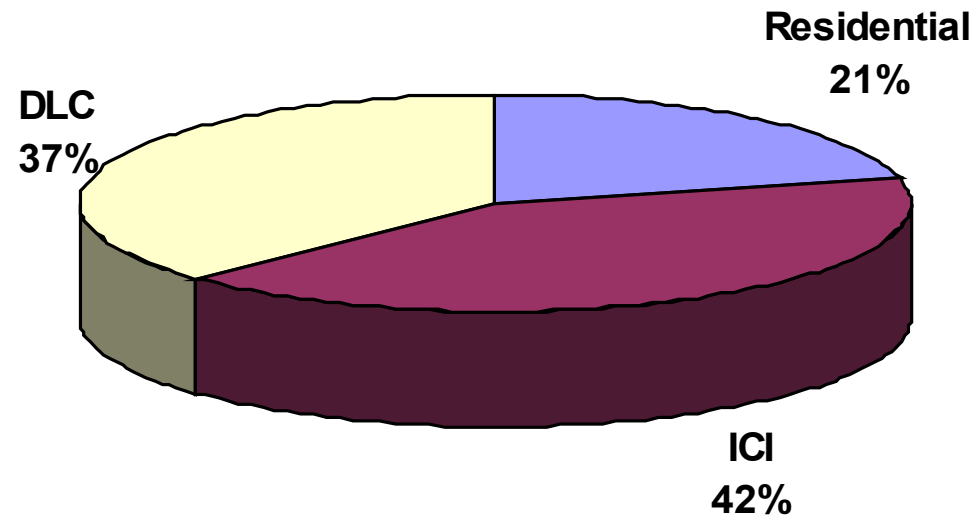
Which Organics to Extract?

- Compostable materials are the largest portion of the residual waste stream
 - Yard and garden
 - Kitchen
 - Contaminated paper
 - Clean wood
 - Biosolids
- Which are left to collect?
- Which are already managed/diverted?

Sources of Organics

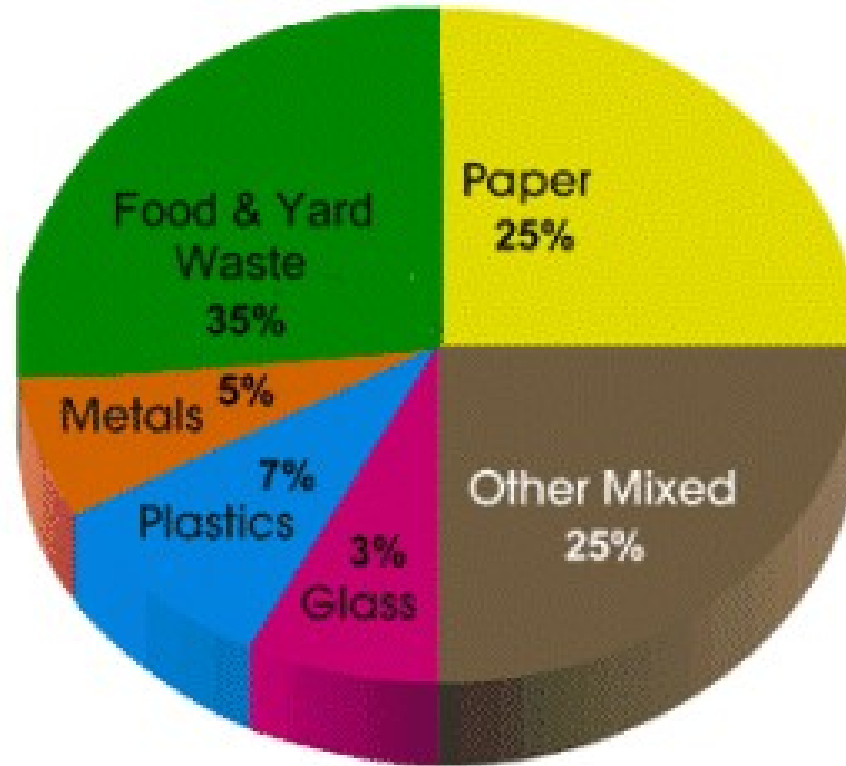
- Residential waste stream
 - Kitchen waste
 - Yard and garden
- ICI
 - Restaurants
 - Grocery stores
 - Food processing
- Other
 - WWTP Biosolids
 - ?

Residual Waste Stream Sources



Organics in the Waste Stream

Average Residential Waste Composition (% by weight)



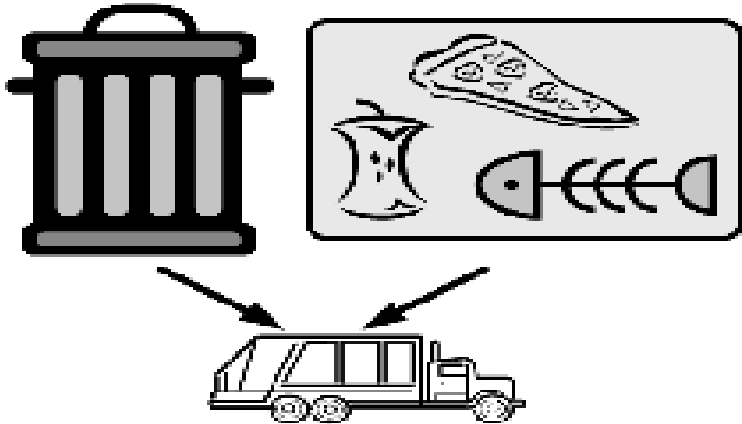
Collection Options Residential

- Residential collection
 - Determine frequency of collection
 - Select types of containers
 - Consider automated or semi-automated collection vehicles
 - Organics are heavy
 - Look at split packer trucks to reduce truck traffic and emissions
- If collection is contracted out
 - Allow haulers to bid on collection of recyclables, waste and organics in one contract

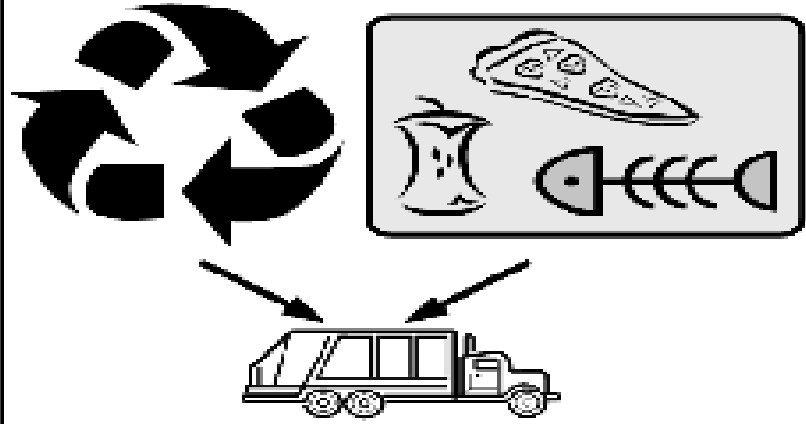
Example of Efficient Collection Arrangement

Option H (Post-2012)

Week 1



Week 2



Collection Options ICI - Multifamily

- Considerable planning and consultation needed
 - Extra space required for additional bins
 - Staff training needed
 - Education for multi family residents
 - Hygiene issues
- Contract changes or new contracts with haulers
- Are transfer stations or modification to transfer stations needed?

Technology Selection

- Technology depends on type and volume of organics
 - Food waste requires in-vessel system
 - Yard and garden materials can be windrowed
 - Yard and garden may be needed as amendment for food organics
 - Seasonal variation needs to be considered
- Technology also depends on location
 - Sensitivity of local receptors to odours
 - Availability of land

Technology types

- Static piles (not suitable for SSO)
- Turned windrows (unsuitable for SSO)
- Aerated static piles
- Covered aerated static piles
- In-vessel systems:
 - Bays, beds and tunnels
 - Containerized systems

Turned Windrows



Covered Aerated Static Pile (GORE)



Covered Aerated Static Pile (Ag-Bag)



In-Vessel Technology Examples

- Right: Edmonton Compost Facility, aeration hall



- Left: Transform Compost System



In-Vessel Technology Examples

- Below: Wright compost system



- Above: Modular container composting

In-Vessel Technology Examples (Christiansen)



In-Vessel Technology Examples

- Right: ICC



- Left: HotRot

Site Selection

- BANANA = build absolutely nothing anywhere near anyone
- Distance to receptors is critical
- Many compost plants failed because of odours
- Maintain large buffers (or massive air control)
- Good road access and minimized hauling distances
- Utilities needed (power and water)

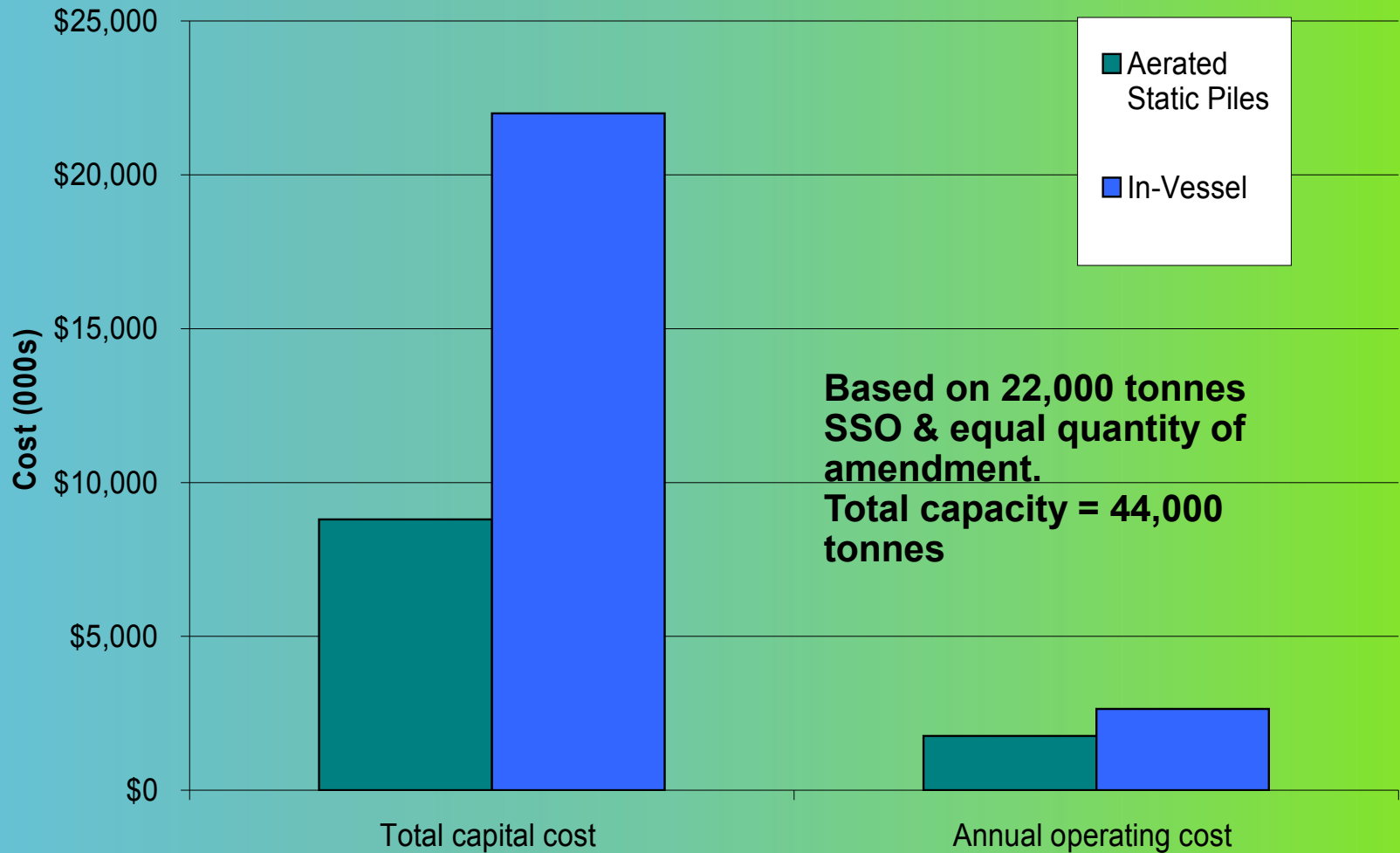
Revenues

- Conduct market study
 - Project volume of compost based on preferred technology and selected technology
 - Assess value of compost in local market
 - Confirm product finishing requirements
- Determine potential revenue from the sale of compost
 - Bulk sales
 - Bagging operations and sales
 - Agricultural purposes
 - Landscaping and home applications
 - Other uses

Costs

- Capital costs vary widely depending on selected technology
 - Open windrows lowest cost option
 - Aerated and covered static piles moderately pricey, but may be limited to 3 seasons
 - In vessel systems most costly
- Operating costs similar for most systems, but some variations depending on technology
 - Factor in additional collection costs
 - Consider costs to transport end product to market
 - Include administration and management

Cost Comparison Example



REALITY CHECK

- Can we afford this?
 - Will our residents and business pay?
- How much waste are we diverting from landfill?
- How much CO₂ are we avoiding?

- If necessary, back to **GO** and re-assess decisions on organics removal and technologies

Facility Ownership

- Municipality, or regional district owned
 - Hi degree of control over feedstock, technology and cost
- Privately owned?
 - Privately owned facilities will require long term contracts for organic feedstock
- Public Private Partnership?
 - Depends on degree of control desired and available funding

Enabling Legislation

- Feedstock supply to compost operation must be ensured
- Some regions ban certain organic wastes to force it into composting
- Collection contracts may require materials to be taken to a certain facility
- Flow control is theoretically possible, but may be challenged in the courts

Final Analysis – the Triple Bottom Line

- What are the economic benefits/costs of the proposed initiative?
 - Landfill space saved
 - Revenues vs. costs
- What are the environmental benefits?
 - Reduced landfill leachate and gas
 - GHG sequestration or avoidance
 - Soil amendment
- What are the social benefits?
 - Jobs