FCM – Sustainable Communities Conference

Food Waste Diversion from Disposal

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Progressive Waste Solutions

BFI CANADA IESI WSI

Progressive Waste Solutions (PWS)

117 solid waste collection operations

63 transfer stations

48 material recovery facilities

30 landfill sites

5 gas-to-energy systems

Integrated Service Offering

Leading collection operations in dense urban markets

Strategically located facilities in close proximity to urban markets

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Emerging Hub and Spoke System

Organics (Wet)

District A Hauling

District A S-Station

Recyclables to Hub MRF

District B Hauling

District B S-Station

District C Hauling

District C S-Station

Landfill

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Sources of Organic Feedstock

Source	% of Total
• Residential Green Bin	42-50%
• Full Serve Restaurants	18-22%
• Quick Service Restaurants	10-13%
• Grocery Stores	10-12%
• Food Process	10-12%
• Rendering/FOG	6 – 8%

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Organics Processing Options

Traditional Aerobic Composting



Anaerobic Digestion






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Anaerobic Digestion Basics

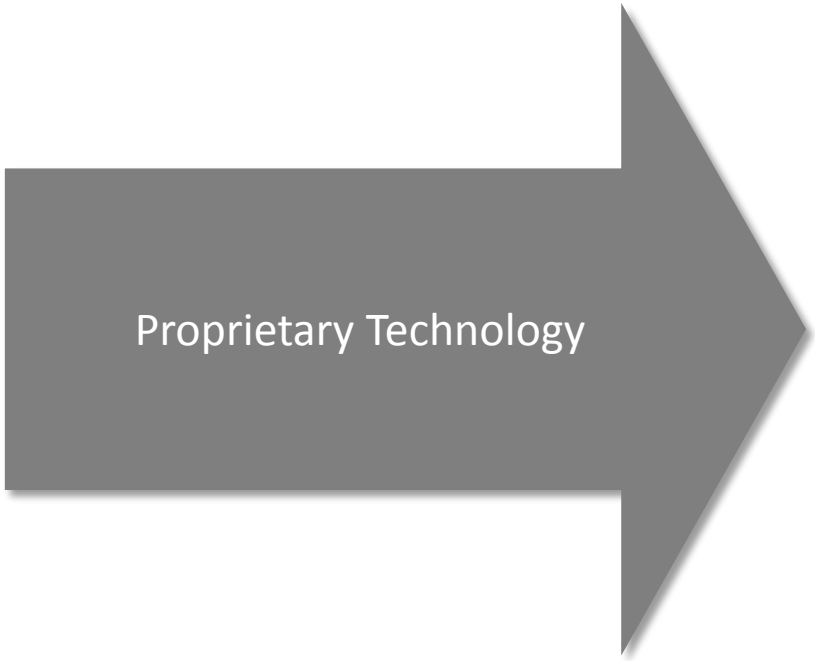
Co- Processing Opportunity

Industrial & Commercial

•Organic Waste

Municipal

•Source Separated Organics
•Wastewater Biosolids
•Yard & Garden Waste



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Food Waste Diversion *Exploding* Across Canada

- Municipal Green Bin collection planned in:
  - Calgary
  - Greater Vancouver
  - Montreal/Quebec City
  - Winnipeg
  - Remainder of Ontario

- Strong Interest from Commercial & Industrial sources
  - Restaurants/hotels
  - Grocery and wholesale
  - Food processing

- Co-Processing Opportunity
  - Economy of scale by combining Municipal/Commercial sources
    - Optimize recipe

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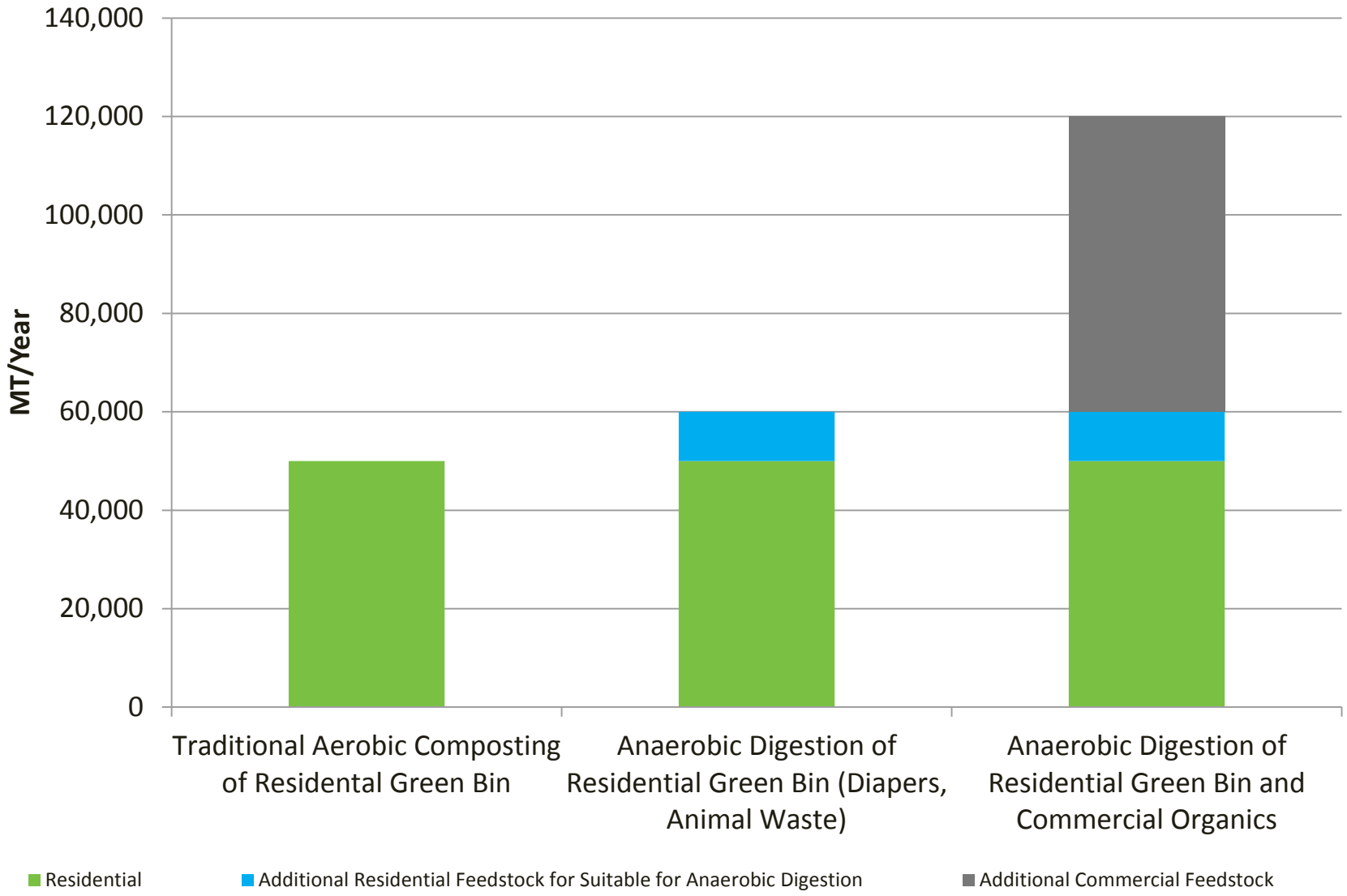
Maximizing Diversion from Landfill



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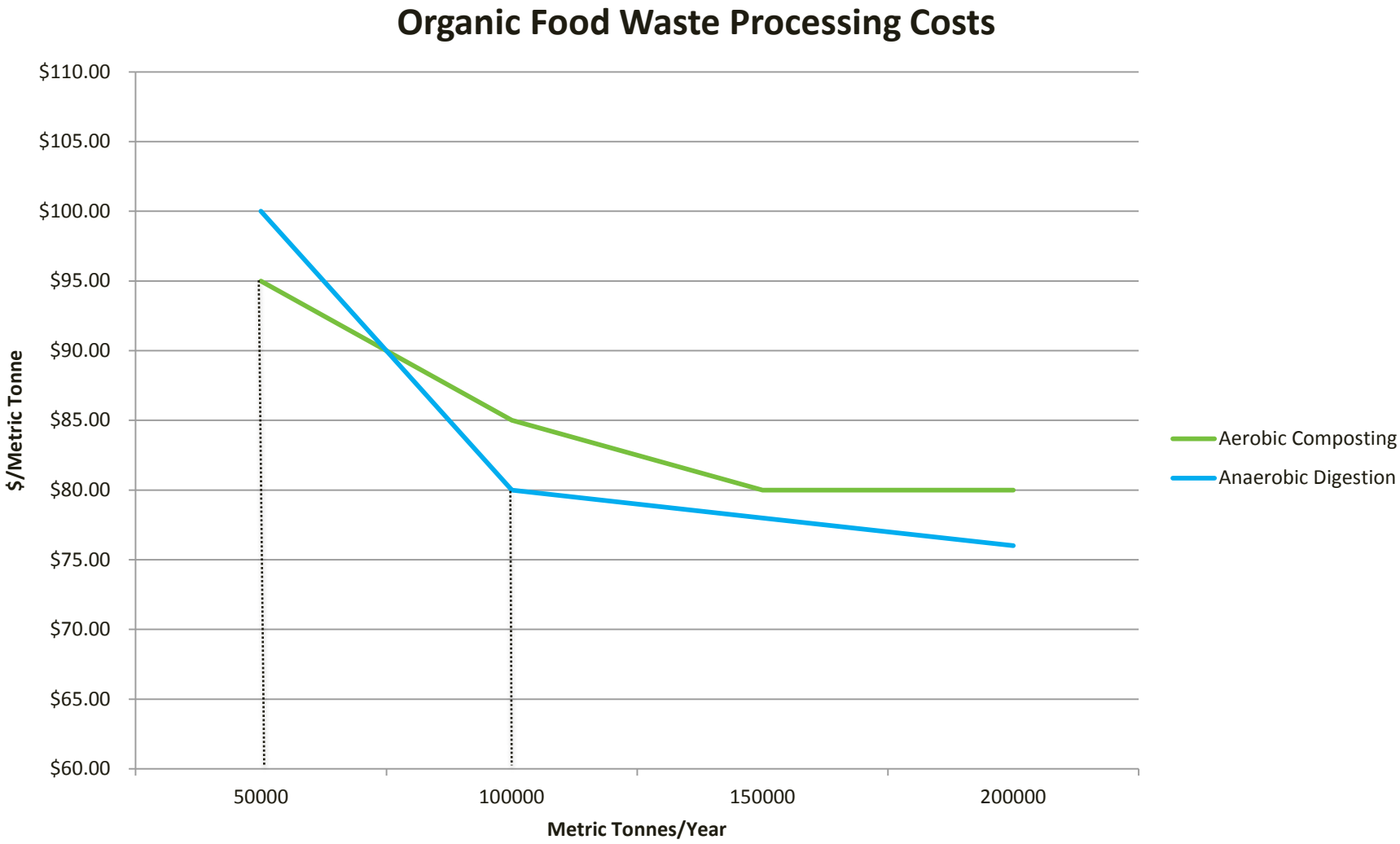
Cost Differential



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Waste Transfer/Disposal Facilities Well Positioned to Site Organic Processing

Infrastructure

- Potential to Share:
  - Bio-gas utilization
  - Wastewater treatment
  - Management/operations

Land/Permit

- AD relatively small footprint
  - Approx 4 acres
- Permit modification only

Co-Processing Opportunity

- **Co- Process** residential AND commercial sources
- **Co- Compost** AD Digestate and Yard waste
- **Co- Refine** landfill and AD biogas to Natural Gas
  - On-site fueling
  - Fleet conversion to CNG

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Processing Options: Issues and Concerns

Parameter	Aerobic Composting	Anaerobic Digestion
Timeline for Implementation	✓	✓
Public or Private Ownership	✓	✓
Size and Capacity	✓	✓✓
25 year life	✓	✓✓
Financial/Affordability	✓ (low volume)	✓✓ (larger volume)
Feedstock Flexibility	✓	✓✓✓
Performance/Reliability	✓	✓✓
High Quality End Products	✓	✓✓
Competitive Procurement Process	✓	✓
Sustainability	✓	✓✓
Environmental (e.g.: Odour, GHG reduction, waste diversion)	✓	✓✓
Technology selection	✓	✓

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The CNG Revolution !!

- **Rapid Growth of CNG Waste Vehicles**
  - 70% new Solid Waste Vehicles
    - Surrey, B.C. (50 vehicles)
    - Simcoe County, Ont. (40 vehicles)
- **Challenges**
  - $30K Extra/vehicle
  - Maintenance Facility Upgrade Required
    - Eg: explosion proof bays
    - Special Certification of Mechanics
  - Dedicated Fuel Station/Operator
- **Benefits**
  - Fuel savings
  - GHG reductions
  - Lighter/quieter vehicles
  - Potential to ‘make’ own fuel from AD or Landfill gas

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Renewable Natural Gas From AD

- Renewable Fuel From Waste
  - Typical truck = 10,000 g/yr diesel
    - 1 gal diesel = 4 M3 CNG
    - Or… 40,000 M3/yr CNG
  - 100K Tonne AD Plant = 7.5M M3/yr biogas
    - @ 65% CH4 = 5M M3/yr NG
  - Therefore…
    - 100K AD fuels waste 125 trucks

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