Meeting Goals

2. Q&A
3. Discussion of Next Steps
Solid Waste and Recycling Issues Study
Overview

- How can the County attain a 75% recycling goal?
- What are the construction costs associated with the needed Facilities?
- Will retaining public ownership of Alpha 250 facilitate the County’s meeting the recycling goal or provide other benefits for solid waste disposal?
- Investigate solid waste disposal issues and options such as flow control, governance and contractual structures for collaborative solid waste management.
Solid Waste and Recycling Issues Study Project Details

- Task 1 – Project Kickoff Meeting
- Task 2 – Review Existing Documentation
- Task 3 – Establish Solid Waste Composition
- Task 4 – Estimate Solid Waste Quantity
- Task 5 – Identify Alternatives / Options for Improvement to Achieve Recycling Goals
- Task 6 – Evaluate Site Requirements
- INTERIM GOVERNANCE WORKSHOP
- Task 7 – Identify Alternatives / Options for the Future of Solid Waste Management in Broward County
- Task 8 – Prepare Conceptual Level Cost Estimate
- Task 9 – Prepare Technical Memorandum
- Task 11 – Working Group, Mayor’s Group and Broward League of Cities Workshops
- Task 12 – Prepare Final Report
Results and Recommendations

- County and Working Group should retain public ownership of the North Alpha 250 Site.
- Cities should extend existing solid waste contracts or negotiate termination for convenience clauses.
- Implement an Independent District Governance Structure. Attain consensus amongst all parties.
- Implement policies mandating recycling to achieve the 75% Recycling Goal.
- Select a scenario, or portion of a scenario, that moves toward achieving the 75% Recycling Goal.
- Perform a detailed NPV analysis, siting and feasibility study for the selected scenario, including a detailed construction cost estimate.
How to Achieve the 75% Recycling Goal
Identifying Recycling Opportunities

Estimated Composition of Waste Disposed in Broward County

- Recyclable Paper & Containers: 16%
- Other Materials: 16%
- C&D Debris: 30%
- Bulky Waste: 11%
- Compostable Paper: 5%
- Food: 8%
- Yard Trash: 9%
- Other Potential Recyclables: 5%

County Recycling Rate

- Currently Recycled: 34%
- 75% Goal
Policies Required to Meet 75% Recycling Goal

- Enact mandatory C&D debris, bulky waste and yard trash processing prior to disposal
- Enact mandatory multi-family and commercial recycling
- Require minimum recycling standards for solid waste processing facilities
Facilities Required to Meet 75% Recycling Goal

Assuming mandatory recycling policies are implemented, the implementation of some combination of six types of solid waste processing facilities are recommended to meet the 75% Recycling Goal:

1. Materials Recycling Facility
2. Combined Bulky Waste / Yard Trash / C&D Facility
3. Yard Trash Facility (stand alone)
4. Mixed Waste Processing Facility
5. Organics Processing Facility (excludes yard trash)
6. Waste-to-Energy Facility (expanding WSB or construct new facility)
Recyclables are a Commodity

Estimated Value of Single Stream Materials

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$115</td>
</tr>
<tr>
<td>2011</td>
<td>$152</td>
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<tr>
<td>2012</td>
<td>$112</td>
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<td>2013</td>
<td>$102</td>
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<td>2014</td>
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<td>2015</td>
<td>$80</td>
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<tr>
<td>2016</td>
<td>$81</td>
</tr>
<tr>
<td>2017</td>
<td>$98</td>
</tr>
<tr>
<td>2018</td>
<td>$71</td>
</tr>
</tbody>
</table>

Source: Based on SS recyclables composition studies conducted by KCI and commodity pricing as published by RecyclingMarkets.net.
Recycling Scenarios

Three scenarios were developed noting the different strategies needed to process the mixed residential and commercial waste that is *not* source-separated and processed by the Common Element Facilities.

**Scenario A** - Mixed waste would be processed at a MWP Facility. Recyclables would be recovered and marketed and wet organics would be recovered and processed. Residuals would go to WTE.

**Scenario B** - Mixed waste would be processed at a MWP Facility. Recyclables would be recovered and marketed; residuals would go to WTE.

**Scenario C** - Mixed waste would go to WTE.
Scenario A
Schematic

- **BW/YT & C&D Processing:**
  - Mandatory Processing
  - Minimum Recycling Rates
  - 1,443,000 Tons Mixed BW/YT & C&D
  - 981,000 Tons Mixed Waste
  - 109,000 Tons BW/YT & C&D

- **Source-Separated Recyclables:**
  - Enhanced Residential
  - Mandatory MF & Comm
  - 408,000 Tons SS Recyclables

- **Mixed Waste Processing:**
  - Mandatory Processing
  - Minimum Recycling Rates
  - 580k tons residuals

- **Waste to Energy:**
  - Residuals from MWP"F
  - 148k tons organics

- **Organics Processing**
- **Yard Trash Processing**

- **Landfill**
  - 233k tons YT

- **Recycled Materials**
  - 630k tons recovered materials

- **Recovered Materials**
  - 734,000 Tons Recyclables Outside of County System

- **MRF(s)**
  - 723k tons residuals

- **MWP"F(s)**
  - 110k tons recyclables
  - Metals

- **WTE(s)**
  - Metals
Scenario B
Schematic

Source-Separated Recyclables:
- Enhanced Residential
- Mandatory MF & Comm

BW/YT & C&D Processing:
- Mandatory Processing
- Minimum Recycling Rates

Mixed Waste Processing:
- Mandatory Processing
- Minimum Recycling Rates

Waste to Energy:
- Residuals from MWPF

Landfill

Yard Trash Processing

Recovered Materials

3,675,000 Tons Generated

1,443,000 Tons Mixed BW/YT & C&D

109,000 Tons BW/YT & C&D

981,000 Tons Mixed Waste

408,000 Tons SS Recyclables

734,000 Tons Recyclables Outside of County System

871k tons residuals

630k tons recovered materials

233k tons YT

580k tons residuals

871k tons residuals

110k tons recyclables

Metals

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Scenario C
Schematic

- BW/YT & C&D Processing:
  - Mandatory Processing
  - Minimum Recycling Rates
- Source-Separated Recyclables:
  - Enhanced Residential
  - Mandatory MF & Comm

- Yard Trash Processing

- Waste to Energy: Flow Control to WTE

- Landfill

- BW&YTF(s)
  - 630k tons recovered materials
  - 233k tons YT
  - 580k tons residuals

- MRF(s)
  - Residue

- Recyclables

- 734,000 Tons Recyclables Outside of County System

- 3,675,000 Tons Generated
  - 1,443,000 Tons Mixed BW/YT & C&D

- 109,000 Tons BW/YT & C&D
  - 981,000 Tons Mixed Waste

- 408,000 Tons SS Recyclables

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Conceptual Level Cost Estimate
# Estimated Facility Construction Cost Per-Ton Per-Day Throughput

<table>
<thead>
<tr>
<th>Facility</th>
<th>Cost per Ton/Day (2020 dollars)</th>
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</thead>
<tbody>
<tr>
<td>Single Stream MRF</td>
<td>$60,000</td>
</tr>
<tr>
<td>Mixed Bulky Waste/Yard Trash/C&amp;D</td>
<td>$22,000</td>
</tr>
<tr>
<td>Yard Trash</td>
<td>$11,000</td>
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<tr>
<td>Mixed Waste Processing Facility</td>
<td>$41,000</td>
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<tr>
<td>Waste-to-Energy Expansion (Wheelabrator Owned Facility)</td>
<td>$240,000</td>
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<tr>
<td>Implementation of New System-Owned Waste-to-Energy Facility</td>
<td>$300,000</td>
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</tbody>
</table>
### Estimated System Scenario Construction Costs

<table>
<thead>
<tr>
<th>Scenario</th>
<th>2025 Est. Facility Cost (2020 dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SCENARIO A</strong></td>
<td></td>
</tr>
<tr>
<td>Assuming 4th WTE Unit @ South Broward OR</td>
<td>$329,000,000</td>
</tr>
<tr>
<td>Assuming New WTE Facility</td>
<td>$1,004,000,000</td>
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<tr>
<td><strong>SCENARIO B</strong></td>
<td></td>
</tr>
<tr>
<td>Assuming 4th WTE Unit @ South Broward OR</td>
<td>$457,000,000</td>
</tr>
<tr>
<td>Assuming New WTE Facility</td>
<td>$1,222,000,000</td>
</tr>
<tr>
<td><strong>SCENARIO C</strong></td>
<td></td>
</tr>
<tr>
<td>Assuming 4th WTE Unit @ South Broward OR</td>
<td>$285,000,000</td>
</tr>
<tr>
<td>Assuming New WTE Facility</td>
<td>$1,050,000,000</td>
</tr>
</tbody>
</table>
Conceptual Level Cost Estimate

Conceptual Construction Cost Estimates *Do Not Include:*

- Annual Operating Fees
- Operations and Maintenance
- Pass-Through Costs
- Residue Transport and Disposal
- Metals Recovered Transport
- Purchase of Land
- Financing, Engineering, Legal
- Permitting and Procurement
- Revenue Generation Opportunities
Construction Cost
Recommended Next Steps

Review and evaluate the financial impact of the different alternatives proposed and decide which scenario, or portion of a scenario, should be selected.

Once a scenario is selected, it is recommended that a detailed NPV analysis, siting and feasibility study for the selected scenario, including a detailed construction cost estimate, is developed.
Retain North Alpha 250 Site In Public Ownership
North Alpha 250 Site Evaluation

To Meet the 75% Recycling Goal, the Implementation of Six Facilities were Recommended:

- Materials Recycling Facility
- Combined Bulky Waste / Yard trash / C&D Facility
- Yard Trash Facility (Stand Alone)
- Mixed Waste Processing Facility
- Organics Processing Facility (Excludes Yard Trash)
- Waste-to-Energy Facility (Expanding WSB or Construct New Facility)
North Alpha 250 Site Evaluation

The Alpha 250 Site was evaluated to determine if any of the six facilities required to meet the 75% Recycling Goal could be constructed on the Site.

The following criteria were reviewed:

- Current zoning and land use
- Available buildable area and site shape
- Utilities
  - Electrical
  - Water and Wastewater
- Traffic impacts
- Social and political acceptance
County and Working Group should retain public ownership of the North Alpha 250 Site as it could be developed for solid waste processing use.

Recommend conducting a detailed siting analysis to confirm preliminary findings based upon selected scenario.
Alternatives and Options for the Future Structure of Solid Waste Management in Broward County
Alternatives and Options for the Future Structure of Solid Waste Management in Broward County

In collaboration with the Working Group, key regulatory requirements, frameworks, and policy issues associated with solid waste management in Broward County were reviewed.

Create a collective governance structure to dictate the policies needed to implement the regional solid waste system

Create legal and economic flow control

Implement a regional solid waste system
Alternatives and Options for the Future of Solid Waste Management in Broward County

The Arcadis Team recommends the implementation of an Independent Special District form of Governance.

The Arcadis Team recommends the implementation of policies to achieve:

- Legal and Economic Flow Control
- Increased Recycling Rates
Summary and Recommended Next Steps

- County and Working Group should retain public ownership of the North Alpha 250 Site.
- Cities to extend existing solid waste contracts or negotiate termination for convenience clauses.
- Implement an Independent District Governance Structure.
- Select a scenario, or portion of a scenario, that moves toward achieving the 75% Recycling Goal.
- Perform a detailed NPV analysis, siting and feasibility study for the selected scenario, including a detailed construction cost estimate.
- Implement proposed policies mandating recycling to assist in achieving the 75% Recycling Goal.
Open Discussion

- 75% Recycling Goal
- Construction Cost Estimate
- Alpha 250
- Governance and Ownership