Construction and Demolition Waste Management for Skagit County

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Project Overview

- The problem
- Case Studies
- Solutions
On average...

Residential → 2,400 ft.² home generates 5 tons of waste

Commercial → 5,000 ft.²- 15,000 ft.² building generates 10.95- 32.85 tons of waste
Figure 16: Self-hauled C&D Disposed Waste Sector Composition by Material Class, 2015-2016

- Paper Packaging: 1.9%
- Paper Products: 1.0%
- Plastic Packaging: 1.0%
- Plastic Products: 1.2%
- Glass: 0.5%
- Metal: 4.4%
- Organics: 2.1%
- Wood Wastes: 32.4% = 190,810 tons
- Construction Materials: 54.2% = 319,840 tons
- Consumer Products: 1.1%
- Hazardous and Special Waste: 0.0%
- Residues: 0.2%
Figure 10: Commercial Disposed Waste Sector Composition by Material Class, 2015-2016

- Paper Packaging: 8.9%
- Paper Products: 7.9%
- Plastic Packaging: 6.7%
- Plastic Products: 4.8%
- Glass: 2.1%
- Metal: 7.6%
- Organics: 26.6%
- Wood Wastes: 14.1%
- Construction Materials: 7.3%
- Consumer Products: 7.8%
- Hazardous and Special Waste: 1.7%
- Residues: 4.5%

=284,004 tons
=147,309 tons
Skagit’s Annual C&D Waste Waste Generation:

Wood wastes: 8,072 tons/ year

C&D waste: 7,941 tons/ year

Total: 16,013 tons/ year
CASE STUDIES

King County
Solution 1

- Provide large, laminated signs to promote on-site sorting
**Yes**
- Wood w/ nails, untreated
- Metal
- Concrete (under 2 ft)
- Rigid Plastics
- Asphalt (under 2 ft)
- Glass
- Masonry
- Drywall

**No**
- Sweepings
- Treated Wood
- Exterior Board
- Asbestos Insulation
- Furniture

Questions?
Call 360-416-1570
WOOD

✅ NAILS
✅ UNTREATED
❌ PAINTED
❌ TREATED

ASPHALT <2 FT CHunks
CONCRETE <2 FT CHunks
DRYWALL

✅ CLEAN/UNPAINTED NEW SCRAPS
❌ SWEEPINGS, EXTERIOR BOARD
Chicago
# C&D Recycling Worksheet

**STEP 1:** Estimate the Total Project Waste, including all materials:

<table>
<thead>
<tr>
<th>Size of Waste Containers (cubic yards)</th>
<th>Number of Waste Containers</th>
<th>Number of Containers Per Month</th>
<th>Total Waste Generated Per Month</th>
<th>Months of Project</th>
<th>Total Project Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>cy</td>
<td>(x)</td>
<td></td>
<td>cy (x)</td>
<td></td>
<td>cy</td>
</tr>
</tbody>
</table>

**STEP 2:** Estimate Amount of Recyclable Material:

<table>
<thead>
<tr>
<th>Material</th>
<th>Commercial Construction Debris (by weight)</th>
<th>Residential Construction Debris (by weight)</th>
<th>Current Project Estimate (% volume)</th>
<th>Cubic Yards (multiply % volume from total project waste from Step 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Wood Waste</td>
<td></td>
<td></td>
<td></td>
<td>cy</td>
</tr>
<tr>
<td>B. Corrugated Cardboard</td>
<td></td>
<td></td>
<td></td>
<td>cy</td>
</tr>
<tr>
<td>C. Gypsum Drywall</td>
<td></td>
<td></td>
<td></td>
<td>cy</td>
</tr>
<tr>
<td>D. Scrap Metal</td>
<td></td>
<td></td>
<td></td>
<td>cy</td>
</tr>
<tr>
<td>E. Brick</td>
<td></td>
<td></td>
<td></td>
<td>cy</td>
</tr>
<tr>
<td>F. Stone</td>
<td></td>
<td></td>
<td></td>
<td>cy</td>
</tr>
<tr>
<td>G. Asphalt Grindings</td>
<td></td>
<td></td>
<td></td>
<td>cy</td>
</tr>
<tr>
<td>H. Recyclable Material</td>
<td></td>
<td></td>
<td></td>
<td>cy</td>
</tr>
</tbody>
</table>

**STEP 3:** Estimate Cost Effectiveness of Recycling:

<table>
<thead>
<tr>
<th>Material</th>
<th>Cubic Yards (from Step 2)</th>
<th>Cost to Recycle (multiply by cubic yards)</th>
<th>Additional Costs (labor, sorting transportation)</th>
<th>Cost to Recycle (per cubic yard)</th>
</tr>
</thead>
</table>

**STEP 4:** Calculate Net Benefit or Cost:

<table>
<thead>
<tr>
<th>Material</th>
<th>Cubic Yards (from Step 2)</th>
<th>Multiply by Cost per Cubic Yard for Landfill</th>
<th>Cost for Transportation Cost to Landfill</th>
<th>Subtract Cost to Recycle</th>
<th>Net Benefit of Cost to Recycle</th>
</tr>
</thead>
</table>


Solution 2

- Education provided through permitting process
  - Available resource services and locations
  - What can and cannot be recycled
  - Economic incentives available through discounts
<table>
<thead>
<tr>
<th>Recycling/Compost</th>
<th>Location</th>
<th>Disposal</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rita Street Appliance</td>
<td>Sedro-Wooley</td>
<td>Clear Lake Compactor Site</td>
<td>Clear Lake</td>
</tr>
<tr>
<td>Skagit Appliance Recycling</td>
<td>Sedro Wooley</td>
<td>Sauk Transfer Station</td>
<td>Concrete</td>
</tr>
<tr>
<td>Skagit River Steel Recycling</td>
<td>Burlington</td>
<td>Skagit County Transfer Station</td>
<td>Mount Vernon</td>
</tr>
<tr>
<td>Lautenbach Industries</td>
<td>Mount Vernon</td>
<td>Skagit County HHW Facility</td>
<td>Mount Vernon</td>
</tr>
<tr>
<td>Pallet Services</td>
<td>Mount Vernon</td>
<td>Skagit County Small Quantity Generator</td>
<td>Mount Vernon</td>
</tr>
<tr>
<td>Skagit Soils</td>
<td>Mount Vernon</td>
<td><strong>Reuse</strong></td>
<td></td>
</tr>
<tr>
<td>Sunland Bark &amp; Topsoil</td>
<td>Anacortes</td>
<td>Skagit Building Salvage</td>
<td>Mount Vernon</td>
</tr>
<tr>
<td>Waste Management - Skagit</td>
<td>Burlington</td>
<td>Skagit Habitat for Humanity</td>
<td>Mount Vernon</td>
</tr>
<tr>
<td>Equipment, Material, Human Resources</td>
<td>Budget Expenditures</td>
<td>Totals</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>---------------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Clearly visible signage for on-site sorting</td>
<td>22 * $35.00</td>
<td>$770.00</td>
<td></td>
</tr>
<tr>
<td>Printouts of C&amp;D recycling Information for public</td>
<td>615* $2.00</td>
<td>$1,230.00</td>
<td></td>
</tr>
<tr>
<td>Total Costs</td>
<td></td>
<td>$2,000.00</td>
<td></td>
</tr>
<tr>
<td>Budget remaining</td>
<td></td>
<td>$0.00</td>
<td></td>
</tr>
</tbody>
</table>
Metrics

- Number of brochures distributed through permitting
- Rollaway container rentals
- Transfer station data
Solution 3

- Increase incentives

<table>
<thead>
<tr>
<th>City</th>
<th>Landfill rate ($/ton)</th>
<th>Recycle rate ($/ton)</th>
<th>Discount incentive ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seattle</td>
<td>$145.00</td>
<td>$75.00</td>
<td>$70.00</td>
</tr>
<tr>
<td>Portland</td>
<td>$94.00</td>
<td>$35.00</td>
<td>$59.00</td>
</tr>
<tr>
<td>San Francisco*</td>
<td>$115.00</td>
<td>$90.00</td>
<td>$25.00</td>
</tr>
<tr>
<td>Skagit County</td>
<td>$89.00</td>
<td>$74.00</td>
<td>$15.00</td>
</tr>
</tbody>
</table>
Conclusion

Solutions:

Increased education through the permitting process

On site sorting and signage

Increased incentives