**EAS 3110: Carbon Reduction Challenge**

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**Introduction**

Our goals for the Challenge were to decrease carbon emissions and raise environmental awareness. To achieve this, we chose a two-pronged strategy that capitalized on partnerships with both private industry and the Georgia Tech Department of Housing:

1. Recycling industrial materials at RBC Bearings, Inc.
2. Clothing drive with Georgia Tech residence halls

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**Strategy 1: Industrial Materials Recycling**

Partnered with Hartsville, SC RBC Bearings, Inc. factory to implement materials recycling programs for the following: unsalvageable wooden pallets, salvageable wooden pallets, plastic drums, and cardboard. There previously existed no such recycling programs, with all waste collected in the same trash dumpster and sent to landfill. Detailed cost and carbon emissions reductions illustrated below, with total annual cost savings for the company predicted to equal an estimated $18,240. This strategy practically addresses the common issue of sustainable waste management concerns which plague older manufacturing facilities throughout the Southeast. (Pictured at left: standard industrial wooden pallets.)

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**Strategy 1 Total CO₂ Reductions:** $189,868.55 lbs CO₂

<table>
<thead>
<tr>
<th>Strategy 1</th>
<th>20.41 tons</th>
<th>19.5 ton CO₂e per ton recycled</th>
<th>= 39,7995 metric tons/month avoided CO₂ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salvageable Wooden Pallets</td>
<td>20.41 tons</td>
<td>1.95 ton CO₂e per ton recycled</td>
<td>= 0.5265 metric tons/month avoided CO₂ emissions</td>
</tr>
<tr>
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<td>1.95 ton CO₂e per ton recycled</td>
<td>= 33.1689 metric tons/month avoided CO₂ emissions</td>
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<tr>
<td>Plastic Drums</td>
<td>20.41 tons</td>
<td>1.95 ton CO₂e per ton recycled</td>
<td>= 1.326 metric tons/month avoided CO₂ emissions</td>
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<tr>
<td>Salvable Wooden Pallets</td>
<td>20.41 tons</td>
<td>1.95 ton CO₂e per ton recycled</td>
<td>= 1,852.5 tons CO₂e = 4084.06 pounds CO₂e</td>
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<tr>
<td>Unsvalvageable Wooden Pallets</td>
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<td>1.95 ton CO₂e per ton recycled</td>
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**Strategy 2: Clothing Drive**

**Implementation:** Collected 236.5 pounds of clothes from donation centers set up in 20 GT residence halls and an open mic night event (1 article of clothing for Admission). This clothing was then donated to Goodwill.

**Additionally:** Preventing people from buying a new article of clothing, thus preventing emissions from its manufacturing process (production and transport, not life cycle). Clothes that Goodwill cannot resell will be sent to textile recyclers (salvage stream) to further address emissions from textile waste in landfills.

** Scalability:** Participation rate of 482 pieces of clothing donated. Potential audience of entire enrolled student population of 21,500.

**Total CO₂e averted:** 4455.396 lbs CO₂e

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**The annual CO₂ emissions equivalents of 1 average American household:**

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**References:**