Materials Flow Analysis

Zeroing in on a Waste to use as a Material

1. Availability—What waste flows exist?
2. Volume—Pick wastes high in volume
3. Convertibility—Pick wastes that require low conversion inputs
   • Hierarchy of reprocessing:
     • Reuse
     • Remanufacture
     • Refabrication—This is our cutoff
     • Recycling
     • Downcycling
4. Resource Utility—Pick wastes that have a high resource value
5. Resource Flexibility—Pick wastes that become a range of resource-forms
6. Damage Mitigation—Pick Active Wastes before Passive Wastes
MFA for South Eastern Michigan

Available Materials Flows

- Damage Mitigation
- Convertability
- Utility
- Flexibility
- Volume

Cars! (for Southeast Michigan)
156,000 Cars and light Trucks are retired in the Detroit Area each year

At an average area of 1.4 sq/m per hood

with 80% utilization

...this covers 134,000 sq/m
**End of Life Scenarios**

**Scenario #1 – Dismantle & Shred**
- Transport to Yard
- Disassembly
- Equipment Share
- Labor
- Mechanical Shredding
- Transport to Arc Plant
- Electric Arc Furnace Reprocessing
- Reform (hot/cold roll, extrusion)
- Transport to Manufacture Utilization

**Scenario #2 – Dismantle and Refabricate**
- Transport to Dismantling Plant
- Demanufacture
- Equipment Share
- Labor
- Transport to Building Site
- Refabrication
- Processing Equipment
- Labor
Green Facade Solar Siphon
Passive Thermal Window Box
Questions:

1. For the wrap, we want to *inspire the audience to explore the possibilities for the form and function* of repurposed waste.
   If we want the audience to make the connection between repurposed waste and solving functional design problems, is this best done with:
   - Something functional that is also kinda pretty
   - Something beautiful that inspires you to think of what functional ways it could be employed

2. What "charismatic product" might best sell our process and the idea of waste recapture and re-fabrication?

3. If you were going to try to replicate this process with another material and a specific design problem, what parts of this process do you think are critical to have documented and explained?