



LIFECYCLE BUILDING CENTER – REPURPOSING SALVAGED BUILDING MATERIALS



AGENDA

- C&D WASTE / REUSE CENTER **CONTEXT**
- DECONSTRUCTION **INCENTIVES / RESOURCES**
- PERKINS+WILL **CASE STUDY**
- LIFECYCLE BUILDING CENTER **INTRODUCTION**
- LBC **PROJECTS**
- LBC **IMPACT**

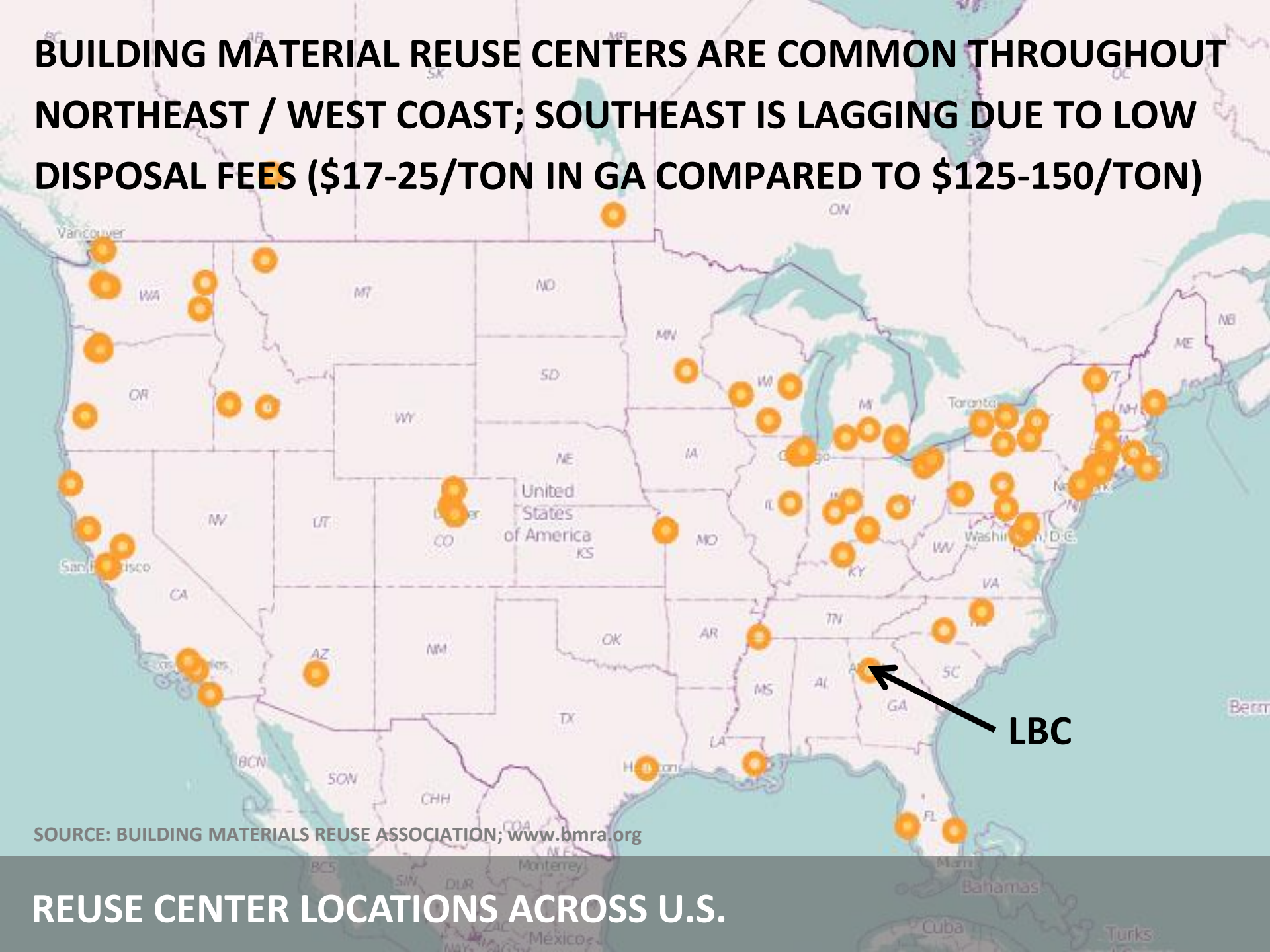


**170 MILLION TONS OF C&D WASTE IS
GENERATED ACROSS U.S. EACH YEAR
(3 MILLION TONS IN GEORGIA),
25% OF WHICH IS REUSABLE**



CONSTRUCTION & DEMOLITION WASTE

**BUILDING MATERIAL REUSE CENTERS ARE COMMON THROUGHOUT
NORTHEAST / WEST COAST; SOUTHEAST IS LAGGING DUE TO LOW
DISPOSAL FEES (\$17-25/TON IN GA COMPARED TO \$125-150/TON)**



SOURCE: BUILDING MATERIALS REUSE ASSOCIATION; www.bmra.org

REUSE CENTER LOCATIONS ACROSS U.S.



300 DAILY VISITORS; 7,000,000 POUNDS DIVERTED FROM LANDFILLS ANNUALLY (8 TONS PER DAY)



REBUILDING CENTER – PORTLAND



4,000,000 POUNDS DIVERTED FROM LANDFILLS IN 2013 ALONE
CEC EFFICIENCY RETROFITS HAVE COLLECTIVELY:

- SAVED NY STATE \$180 MILLION IN ENERGY COSTS
- REDUCED ANNUAL ENERGY USE BY 675 BILLION BTUS



BIG! NYC / COMMUNITY ENVIRONMENTAL CENTER – NYC



**OVER 10,000,000 POUNDS DIVERTED &
\$2 MILLION IN COMMUNITY SAVINGS SINCE 2009**



REBUILDING EXCHANGE - CHICAGO



DECONSTRUCTION / MATERIAL REUSE POLICY INCENTIVES

Seattle www.seattle.gov/dpd/permits/greenpermitting/residential_deconstruction/default.asp

Provides early site access for deconstruction projects

Demo permit issued independently from construction permit

Minimum reuse = 20% building materials (excludes asphalt / brick / concrete)

Requires Waste Diversion Plan & Waste Diversion Report

Vancouver <http://vancouver.ca/commsvcs/developmentservices/subreq/pdf/DeconstructionBrochure.pdf>

Provides access to reduced disposal costs for non-diverted items

Boulder www.bouldercolorado.gov/files/PDS/green_points/attachment_c_decon_plan_const_waste_recycling_edits1_09.pdf

City offers free Deconstruction Assessment

Material inventory

List of deconstruction professionals

Points awarded to projects exceeding 65% material diversion

Build it Green (NYC) www.bignyc.org/news/bignyc-deconstruction-policy-recommendations

DECONSTRUCTION / MATERIAL REUSE POLICY INCENTIVES

Construction & Demolition (C&D) Diversion Ordinance Guide

www.calrecycle.ca.gov/LGCentral/Library/CandDModel/Default.htm

Requirements for all 'Covered Demolition' projects (exceeding size threshold):

Waste Management Plan / WMP Compliance Official

Minimum 50% diversion (CA Green Building Standards Code), 75% preferred

Refundable deposit based upon project size

All C&D waste must be weighed

Optional fine structure for code violations

On-site sale of recovered materials permitted

Model Deconstruction Policy www.pca.state.mn.us/index.php/view-document.html?gid=4489

Deconstruction consultation on all renovation / demo projects

Exceptions: Unsafe structures

Low quantity/quality of recoverable materials

Recovered material report required

PROJECT SPECIFICATIONS

Construction Waste Management Plan

www.calrecycle.ca.gov/ConDemo/Specs/SampleSpec.doc

Submittals include:

- List of reuse centers receiving material
- Description of material donation/sale process
- List of materials not to be diverted with explanation
- Total material reuse estimate by weight
- Time estimate for removal of reusable materials

Lump sum bonus for every 5% diverted above 75%

Allows for on-site sales auctions / material pickup

Quality Assurance:

- C&D Quality Manager
- Waste Management Meeting
- Orientation / Training
- Recovered material protection (including theft)

C&D Site Management Plan indicating:

- Material processing areas
- Material storage / disposal areas

Requires material cleaning



PROJECT SPECIFICATIONS

Building Deconstruction Specification

http://your.kingcounty.gov/solidwaste/greenbuilding/documents/Sect024293_deconstruction_spec.pdf

Submittals include:

- Deconstruction Plan** (materials to be salvaged, removal methods & destination)
- Deconstruction Schedule / Sequencing**
- Existing Conditions Survey** (document material conditions prior to removal)
- Salvaged Material Inventory** (document recovered materials)

Pre-Deconstruction Conference:

- Building Inspection / Structural Load Limitations** (engineering survey)
- Verify availability of materials / personnel / equipment / facilities**
- Protection of existing construction to remain** (if applicable)
- Review methods of material removal & staging areas**

During Deconstruction:

- Fire protection facilities remain throughout deconstruction**
- Weather protection required for salvaged materials**
- Temporary shoring / bracing to prevent uncontrolled movement / collapse**
- Material removal techniques to optimize worker / material / building protection**

DECONSTRUCTION TRAINING RESOURCES

National Training Programs

The ReUse Institute (Oakland, CA) <http://deconstructiontraining.org/>

ReUse Consulting (Bellingham, WA) www.reuseconsulting.com/

Deconstruction Guide www.deconstructioninstitute.com/files/learn_center/45762865_guidebook.pdf

Deconstruction Training Manual www.calrecycle.ca.gov/Publications/ConDemo/43301027.pdf

ECSM Training Manual www.ecsm.org/programs/The%20Deconstruction%20Craft%20final.pdf

WARM Deconstruction Training Videos www.youtube.com/user/willyindahizzy

Building a Deconstruction Company www.ilsr.org/recycling/decon/BuildingACompany.pdf



DECONSTRUCTION / MATERIAL REUSE BENEFITS

LEED v4: MATERIALS & RESOURCES

- | | |
|-----------------|--|
| Required | MRp2 - Construction & Demo Waste Mgmt.
- Report waste streams |
| 4 points | MRc1 - Building Life Cycle Impact
- Option 3: Reuse 25-75% surface area |
| 1 points | MRc3 - Building Product Disclosure & Sourcing
- Option 2: 25% of cost of installed products |
| 2 points | MRc5 - Construction & Demo Waste Mgmt.
- 1 pt: 50% min. diversion
- 2 pts: 75% min. diversion |

Potential tax benefits
(for owner if materials donated)

Community benefit
(non profits need low-cost materials)





PERKINS+WILL CASE STUDY



CAN WE DONATE THIS TO NONPROFITS?

Exit Lights

Available: 32 +/-



Carpet Tile 1

Quantity: 8,700 sf
75% Reuse 6,500 sf
25% Spoils
7 Pallets



Mahogany Doors

3'-0" x 8'-8" x 1-3/4"
Solid Core
Mahogany Veneer
Machined Mortise

Quantity: 150



3.1.3

Work Counter

Donated: Georgia Organics



0.0

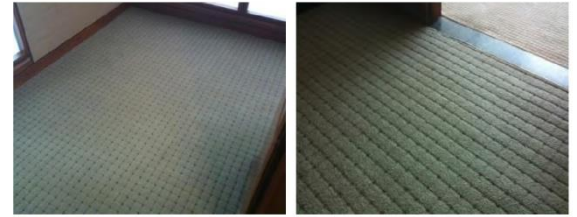
Lavatory/Faucet

@ Handicap Restrooms 5th & 3rd
Floors
(2) Total



Carpet 2

Broadloom
Quantity: 1,400 sf



Hinges

Brass
4-1/2"
Quantity: 600



0.0

Large Bowl Pendant

@ 5th Floor



2x2 Light Fixtures

Fluorescent
Parabolic
Available: 124 +/-



5.1

Base and Wall Cabinets

8'-2-1/2" Long



2.7.2

Open Wall Cabinets

10' Long
Available



INVENTORY

CABINETS / LIGHTING / CARPET



TOTAL: 3,045 LBS. / \$23,689

GEORGIA ORGANICS

FILING CABINETS / MAILROOM CABINET



TOTAL: 1,860 LBS. / \$4,252

ATLANTA BALLET

CASEWORK / PLUMBING FIXTURES / RUGS



TOTAL: 13,630 LBS. / \$75,090

CAMP TWIN LAKES

CARPET TILE (2400 SY, AS-NEW: \$72,000)



TOTAL: 15,626 LBS. / \$133,944

HABITAT FOR HUMANITY RESTORE

CASEWORK (5,500 LBS., AS NEW: \$16,000)



TOTAL: 15,626 LBS. / \$133,944

HABITAT FOR HUMANITY RESTORE

MATERIAL PROCEEDS FUNDED NEW HABITAT HOUSE



TOTAL: 15,626 LBS. / \$133,944

HABITAT FOR HUMANITY RESTORE

CEILING TILE



TOTAL: 8,774 LBS. / \$9,606

REFUGE WEST CHURCH

CASEWORK / SOUND ABSORPTION PANELS



TOTAL: 3,261 LBS. / \$15,983

ATLANTA CHARTER MIDDLE SCHOOL



TOTAL: 1,984 LBS. / \$8,200

WALL / BASE CABINETS



HORIZON THEATRE

COUNTERTOPS



TOTAL: 1,984 LBS. / \$8,200

HORIZON THEATRE

BROADLOOM CARPET / PADDING



TOTAL: 1,984 LBS. / \$8,200

HORIZON THEATRE

CASEWORK



TOTAL: 11,466 LBS. / \$64,975

SOUTHFACE

CASEWORK



TOTAL: 11,466 LBS. / \$64,975

SOUTHFACE



WORKSTATIONS



TOTAL: 4,508 LBS. / \$24,000

USGBC-GA

SALVAGED CHERRY WOOD TRIM



TOTAL: 2,200 LBS.

WOOD REUSE

P+W ATLANTA BOARDROOM CONFERENCE TABLE



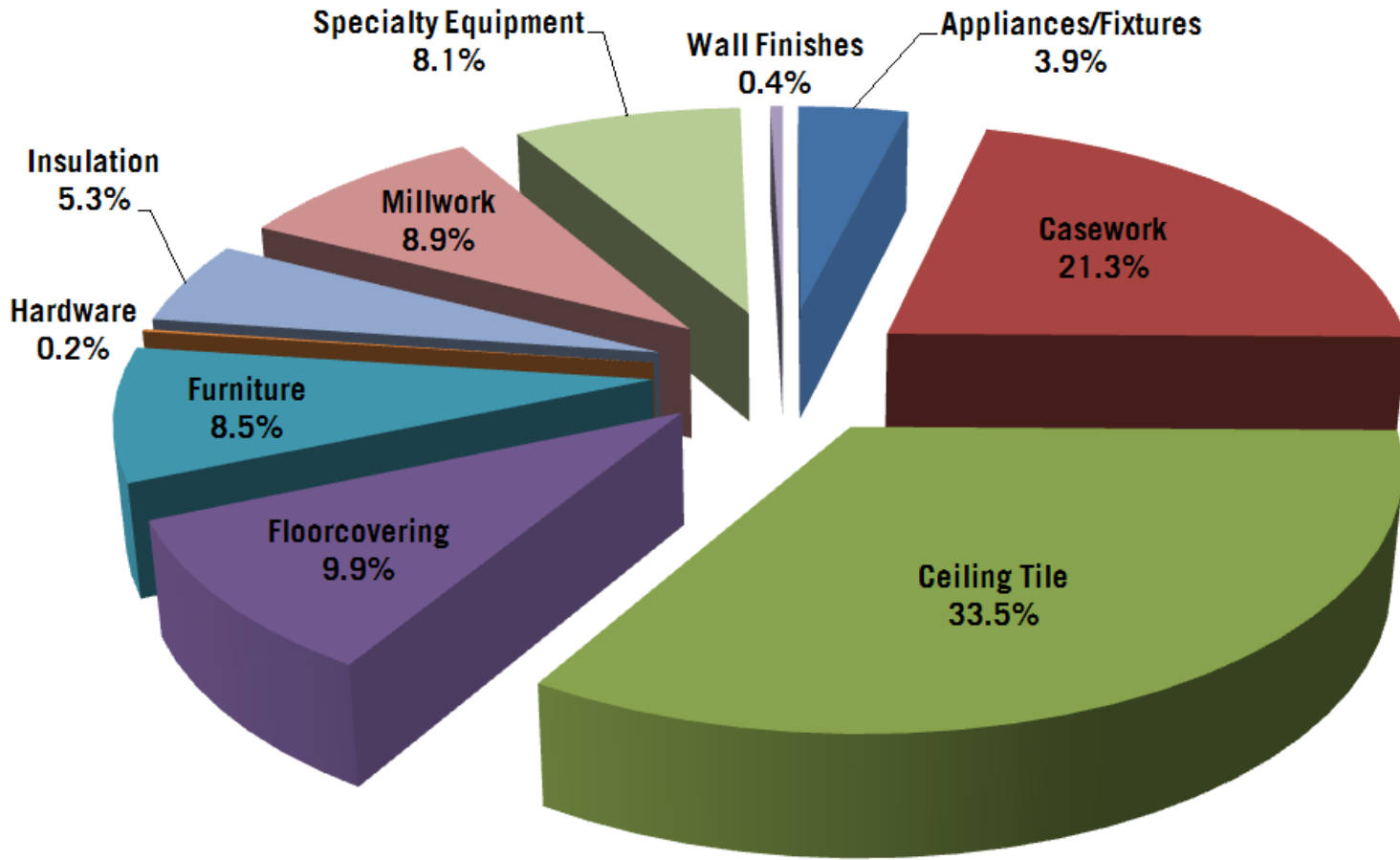
TOTAL: 2,200 LBS.

WOOD REUSE



TOTAL TIME (DEMO TO LAST DONATION) = 4 MONTHS

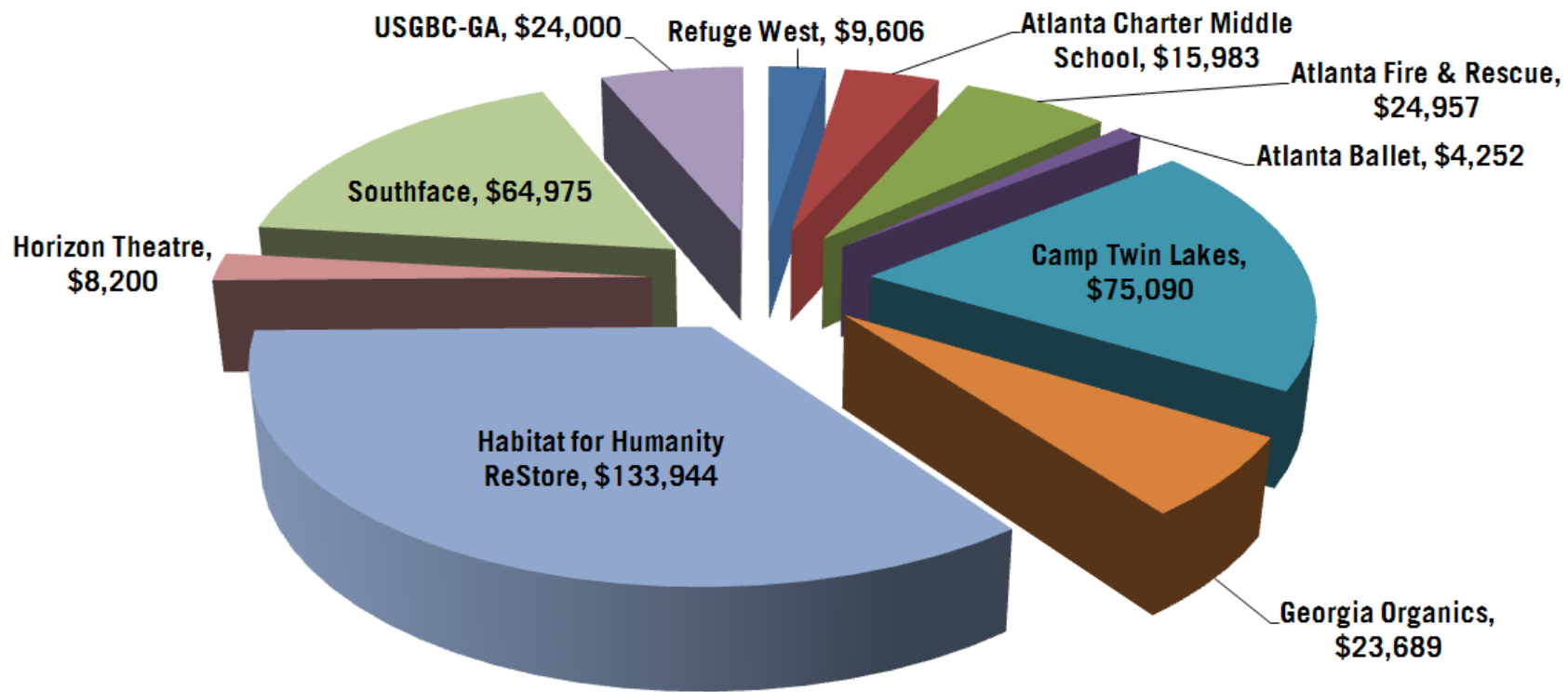
MATERIAL STAGING



Total amount to nonprofits: 73,400 lbs.

125,521 LBS.

TOTAL REPURPOSED MATERIAL BY WEIGHT



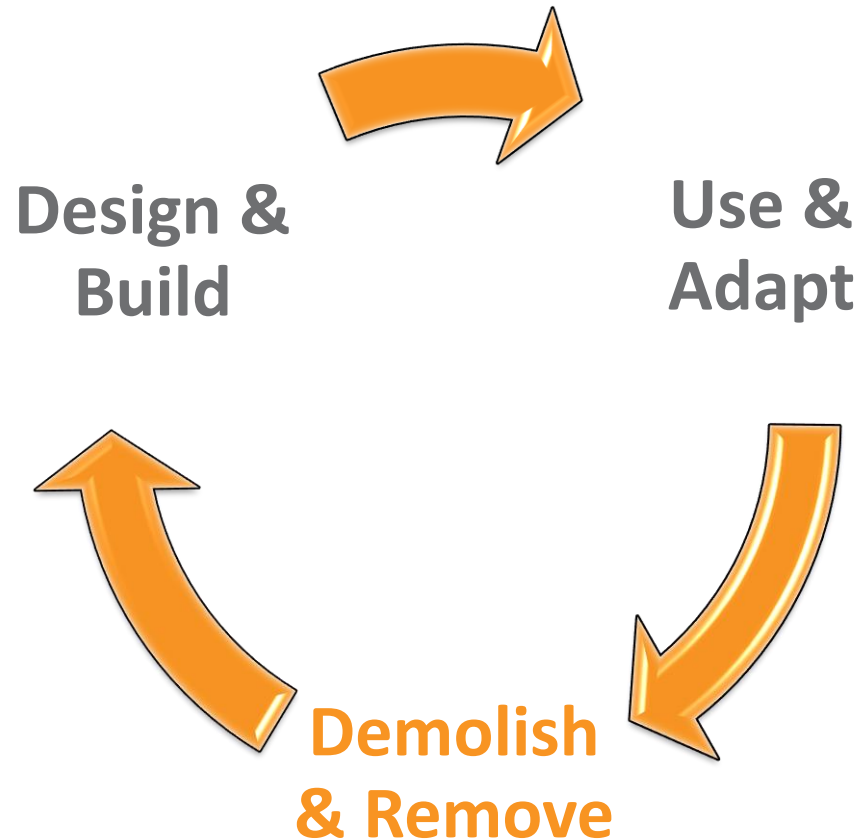
Total donation to nonprofits: \$384,696

The mission of the Lifecycle Building Center is to make the **life cycle use of the built environment increasingly efficient and sustainable.**

This mission is enacted in three ways:

- Through the operation of a retail building **material reuse center** as a workable and self-sufficient alternative to material disposal
- By using proceeds from material sales to fund grassroots **community outreach programs** that enhance resource efficiency in the built environment
- By empowering the community through improved access to the **educational resources** needed to effectively raise market demand for green building goods and services

LIFECYCLE USE OF BUILT ENVIRONMENT (SIMPLIFIED)



Proposed **LBC community outreach programs**

- Free material to nonprofits and schools (**Online Material Database**)
- Home Performance Loan Program
- Access to green building educational resources / training
- Connect consumers with green building products and services
- Urban Forestry Collaborative to benefit CoA Tree Fund
- Community Shop Space
- Solar Retrofit Funding
- Collaborative Construction Training (trade skills)
- Water Saving Initiatives



Online Material Database

The screenshot displays the website's navigation and a product listing. At the top, three main navigation paths are highlighted: 'Quick Search & Browse', 'View LBC's Inventory Online', and 'Donate Materials to the LBC'. A 'Request Materials for your Project' link is also present. Below these are icons for 'SHOP', 'DONATE', and 'REQUEST MATERIALS'. The website header includes the Lifecycle Building Center logo and navigation links for 'Login', 'Register', 'About', and 'Contact'.

The main content area features a search bar and a 'Flooring > TJI Joists' breadcrumb. A 'CATEGORIES' sidebar lists various material types. The 'TJI JOISTS' product listing includes a photo of the joists, a description of their use for sound stages, size and quantity information, pricing, and a 'PURCHASE' button. A 'CONTACT LBC' button is also visible.

Quick Search & Browse

View LBC's Inventory Online

Donate Materials to the LBC

Request Materials for your Project

Login Register About Contact

LIFECYCLE BUILDING CENTER OF GREATER ATLANTA

SHOP DONATE REQUEST MATERIALS

Search

Flooring > TJI Joists

TJI JOISTS

Detailed Inventory Info & Online Purchase

TJI Joists: Light use for sound stage during 4 weeks of filming.

Size: 12" & 16" tall wood joists, ranging from 2 - 2 1/2" wide

Quantity Available: 380

Price: \$1.20 per lineal foot for 12", \$1.80 per lineal foot for 16"

Condition: Excellent

20% of stock available free for nonprofits

PURCHASE

CONTACT LBC

Share +



Reclaimed building materials – supply/demand sources

General Public

- Homeowners / do-it-yourselfers
- Landlords / Facility Managers
- Businesses
- Municipalities

Design/Build Community

- Architects
- Builders
- Remodelers
- General Contractors
- Other Trades

Nonprofit Community (free)

- Civic Groups
- Church Groups
- Arts Community
- Schools
- Home Repair programs

Direct **job creation** through LBC Operations

- Mature reuse centers provide between **20-30 direct jobs** in the communities they serve
- Large scale **partnerships** with waste haulers, demolition contractors, landfill owners and related professionals would **provide an additional 1-3 full time and 1-3 part-time positions** as well as peripheral jobs within partner organizations

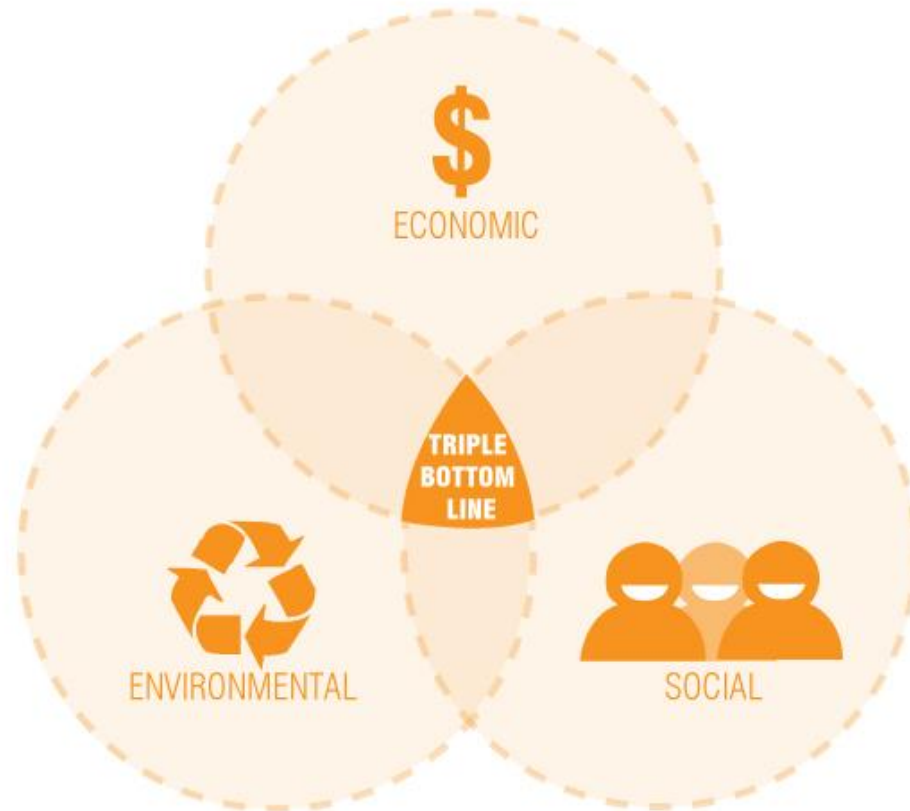
Additional job creation opportunities

- Deconstruction of a house creates **three to seven jobs for every one job created during residential demolition** (Source: The Rebuilding Center in Portland, Oregon)
- For-profit **deconstruction ventures** will become more prevalent as consumer demand for reclaimed material increases and demolition businesses subsidize labor costs by donating lower value materials captured while harvesting higher value materials which sell readily
- Non-violent **community service placements** within the reuse operation will gain skills such as customer service, time management, problem solving, safety, teamwork, material handling, organizational and other relevant skills/references needed for future job hunting
- Community Shop Space will provide for the development of **rudimentary woodworking skills** including shop safety, design concepts, maintenance and management.
- Outreach Programs encouraging do-it-yourself **home maintenance / performance improvements** will expose participants to rudimentary construction skills and building science concepts that could assist with future employment



- CONSUMERS SAVE 50-75% ON BUILDING MATERIALS
- DECONSTRUCTION CREATES MORE JOBS THAN DEMOLITION

- TAX WRITE-OFFS TO MATERIAL DONORS
- PROFIT REINVESTED IN HOME PERFORMANCE / ENERGY SAVINGS



- AVOID RESOURCE DEPLETION
- REDUCE LANDFILL EMISSIONS / AIR POLLUTANTS
- IMPROVED HOME PERFORMANCE AVOIDS ENERGY CONSUMPTION

- FREE MATERIALS TO NONPROFITS
- JOB SKILLS GAINED BY VOLUNTEERS & TRAINEES
- REUSE FACILITY DRAWS RESOURCES TO LOW-INCOME COMMUNITY

TRIPLE BOTTOM LINE APPROACH



LBC PROJECTS - CDC



LBC PROJECTS - GRANT PARK



LBC PROJECTS - KENNESAW





 Taking it FULL CIRCLE: 
the LIFECYCLE of an LBC PROJECT



During **first 2 years** of LBC Operations:

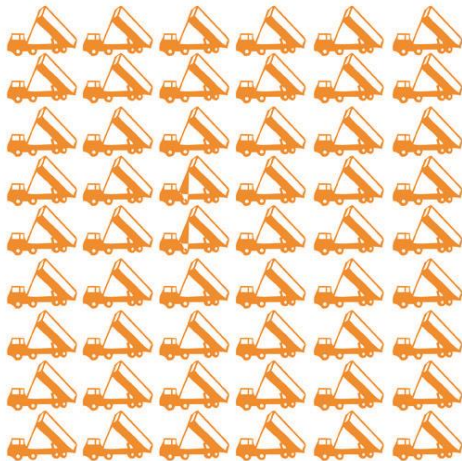
- Donated over \$500,000 of salvaged materials to numerous nonprofits and schools, including **Atlanta Community Food Bank, MedShare, Habitat for Humanity, MODA, WonderRoot, Sustainable Atlanta, Truly Living Well Urban Farm,** and **Perkerson Elementary**
- Over **400,000 pounds of material diverted** from landfills

VOLUME OF MATERIAL DIVERTED FROM LANDFILLS

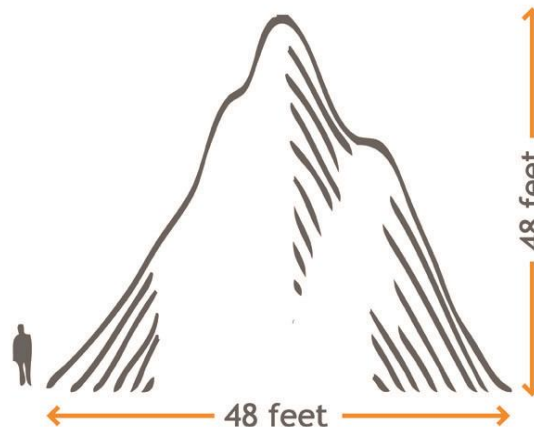
DURING THE FIRST 21 MONTHS OF OPERATIONS,
THE LBC DIVERTED OVER

28,929 CUBIC FEET (375,000 lbs)
OF MATERIAL FROM LANDFILLS

ENOUGH TO FILL 54 DUMPTRUCKS



≡ A MOUNTAIN OF MATERIAL!



approx weight conversion based on 350 lbs = 1 cubic yard
source: www.wastediversion.org



During **first 2 years** of LBC Operations:

- Over **\$130K in material sales** (\$85K in 2013 alone)
- Completed **55 deconstruction projects** and provided over **75 waste audits** to organizations and homeowners within the Metro Atlanta region
- Recruited a corps of **over 600 volunteers**
- Hired **2 full-time staff members, 2 part-time staff members, and 3 interns**
- Provided reclaimed materials to several renovation and construction projects, including the **Nature Conservancy, North Decatur Presbyterian** and **Palookaville Fine Foods**
- Diverted reusable materials from projects with **Emory University, Georgia Power, Fort McPherson, Georgia Tech, Woodward Academy, IHG, Tyler Perry Studios, City of Decatur**, and several residential demolition projects
- Gathered over **900 Facebook followers** and a **newsletter readership of 1,500 people**





LIFECYCLE BUILDING CENTER OF GREATER ATLANTA

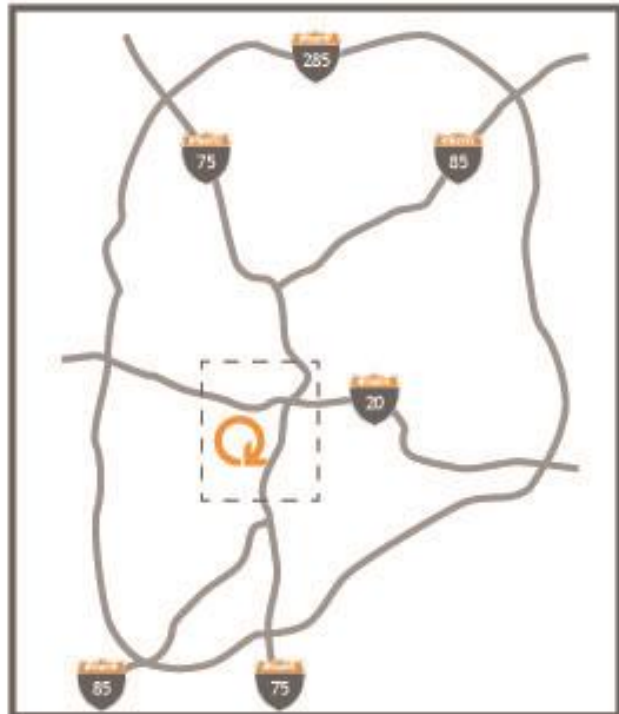
LBC WAREHOUSE
1116 MURPHY AVE SW
ATLANTA, GA 30310
Parking & Entrance @ REAR

- Off I-75/85:
- ▶ EXIT 244: University Ave
 - ▶ LEFT on Metropolitan Ave
 - ▶ RIGHT on Dill Ave
 - ▶ RIGHT on Murphy Ave

OPEN

TUESDAY 10am-6pm
FRIDAY 10am-6pm
SATURDAY 10am-4pm

- Off I-20:
- ▶ EXIT 55B: Lee St
 - ▶ LEFT on R.D.A. Blvd
 - ▶ RIGHT on Murphy Ave



LBC WAREHOUSE



1116 MURPHY AVE

FORT McPHERSON

OAKLAND CITY

WEST END

CENTENNIAL OLYMPIC PARK

FIVE POINTS

ATLANTA UNIVERSITY CENTER

RALPH DAVID ABERNATHY BLVD

LEE ST

MURPHY AVE

SYLVAN RD

DILL AVE

UNIVERSITY AVE

METROPOLITAN AVE

ATLANTA BELTLINE



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