GUIDEBOOK

FOR MUNICIPALITIES TO CREATE & IMPLEMENT DECONSTRUCTION & BUILDING MATERIAL REUSE (BMR) INFRASTRUCTURE

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INSTITUTION

University of Wisconsin, Parkside Campus

Masters of Science

Sustainable Management Program

CAPSTONE PROJECT BENEFICIARY

Build Reuse

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SLIDE DESIGN

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Build Reuse / buildreuse.org/about-deconstruction

Photo Credit: FreePik / freepik.com/free-photo/wood-bars_1969946.htm#query=stacked%20wood%20panks&position=33&from_view=search&track=ais

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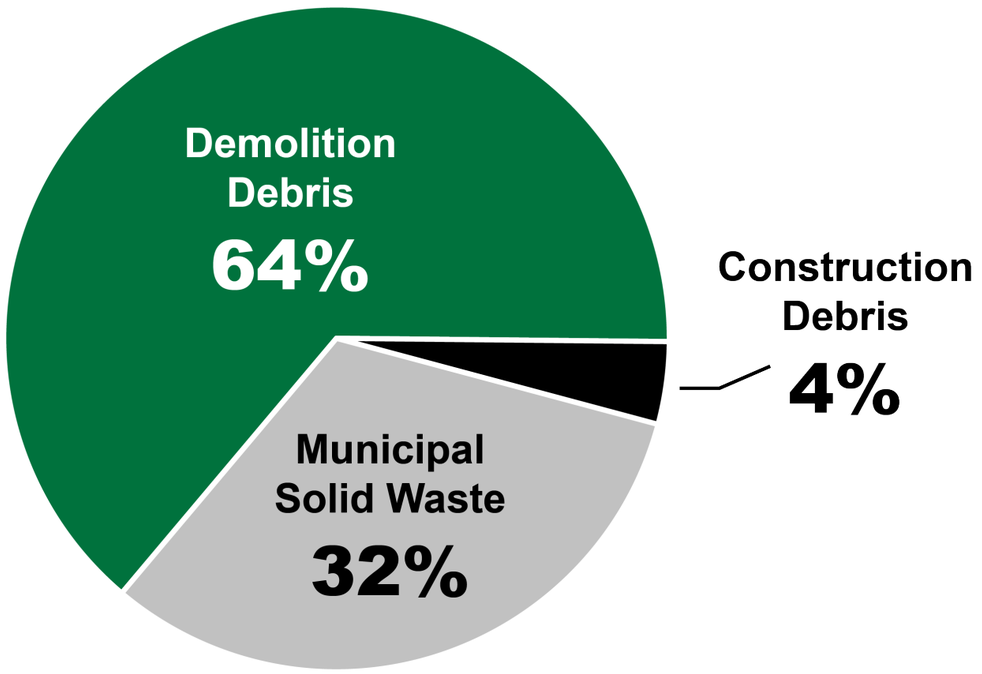
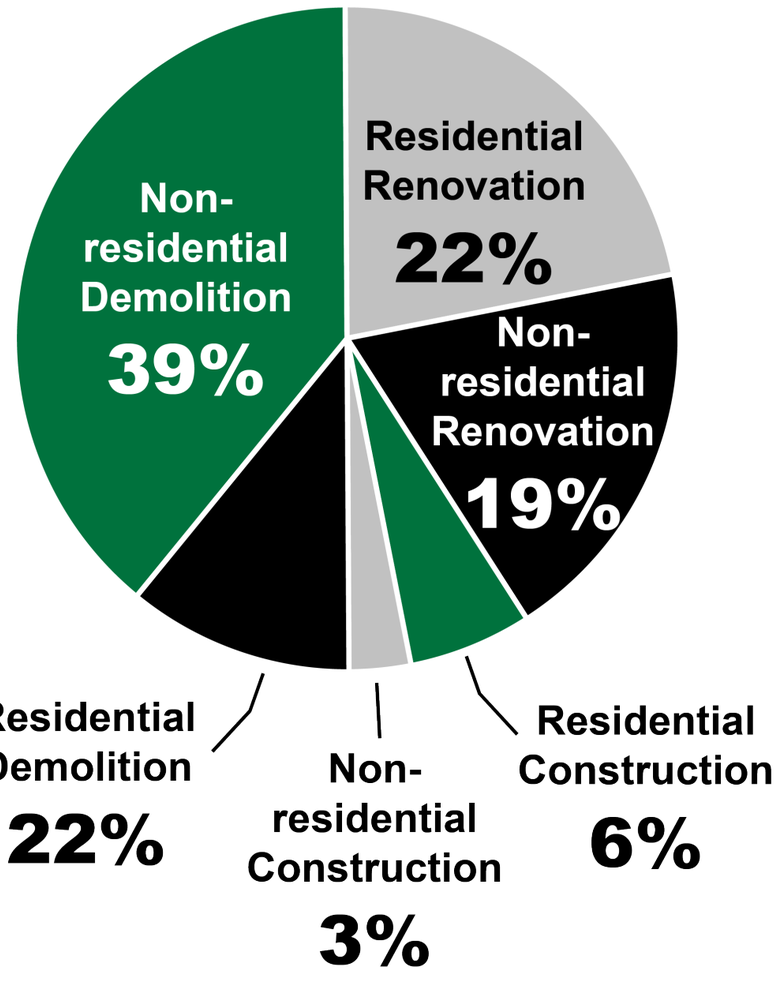
“There is no such thing as waste, only resources in the wrong place.” (Braungart & McDonough, 2002)

IDENTIFYING THE PROBLEM & RETHINKING THE WASTE HIERARCHY

US Waste Generation by Sector & Activity



C&D Debris Generated by Each Building Sector



Credit: Ellen MacArthur Foundation & Google (2019), emf.thirdlight.com/link/v6gyhiosoqs7-s9k2oe/@/preview/1?o

IMPACT OF TAKE / MAKE / WASTE MODEL

Resource extraction: The construction industry is the largest user of natural resources with 101 billion tons of global material extracted annually.

Emissions Creation: The Built Environment generates 40% of annual global CO2 emissions.

Waste Generation and Management: 600 million tons of Construction & Demolition debris were generated in the US in 2018. For comparison, 292.4 million tons of municipal solid waste was generated in 2018.

Credit: CRTKL (2021), buildreuse.org/community-highlights/new-report-on-material-reuse-in-commercial-projects; Architecture 2030 (n.d,), architecture2030.org/why-the-building-sector; EPA (n.d), epa.gov/facts-and-figures-about-materials-waste-and-recycling/construction-and-demolition-debris-material

CONSTRUCTION GROWTH PROJECTIONS

Between Now and 2060, Across the world the equivalent of the City of Paris will be built every week.

Over the next 40 years total building stock is estimated to double, while nearly 1/3 of our present building stock will come down.

We will consume three planet's worth of resources by 2050

Credit: Ellen MacArthur Foundation (n.d.), ellenmacarthurfoundation.org/topics/built-environment/overview; Build Reuse (n.d.), buildreuse.org/about; Gensler Research Institute (2019), drive.google.com/file/d/1vlCfT-3vxAcXrZbIshCLyhYZkDdisgnH/view?usp=share_link https://www.allforreuse.org/resources;
Image: cdrecycling.org

THE CONSTRUCTION WASTESTREAM

An FCRBE study found only **1%** of building items were reused. This **=** economic loss & high cost.

Heavies account for most of this, **67.5%** is concrete, and **17.8 IS ASPHALT**

Annual construction waste is expected to reach **2.2 Billion TONS** globally by 2025

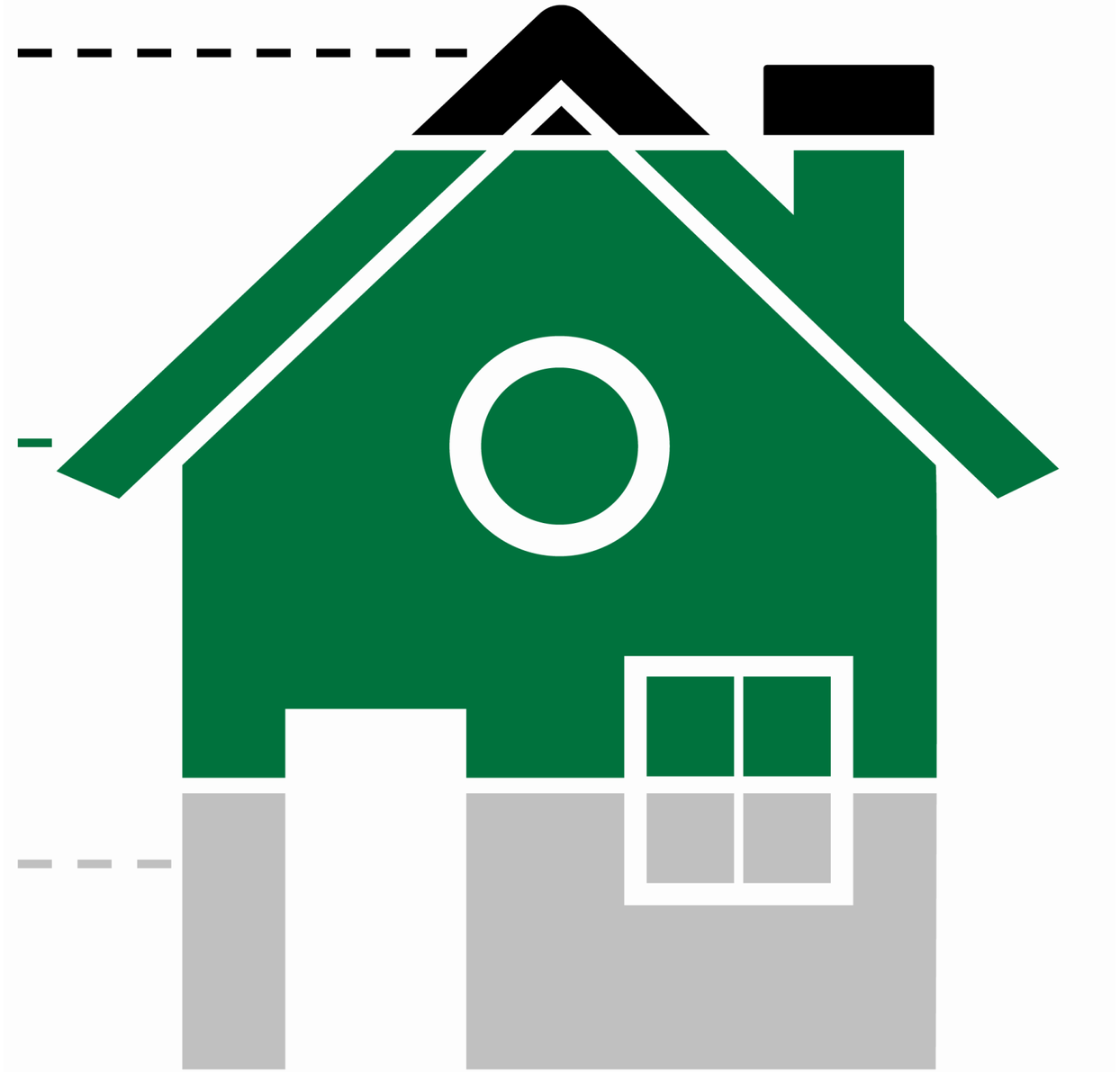
Credit: FCRBE, n.d.; EPA (2020), epa.gov/sites/default/files/2021-01/documents/2018_ff_fact_sheet_dec_2020_fnl_508.pdf; CRTKL (2021), buildreuse.org/community-highlights/new-report-on-material-reuse-in-commercial-projects
Image: cdrecycling.org

THERE IS A TREMENDOUS OPPORTUNITY TO CAPTURE VALUE

5-15%
OF MATERIALS CANNOT BE REUSED OR RECYCLED

UP TO 70%
OF MATERIALS CAN BE RECYCLED

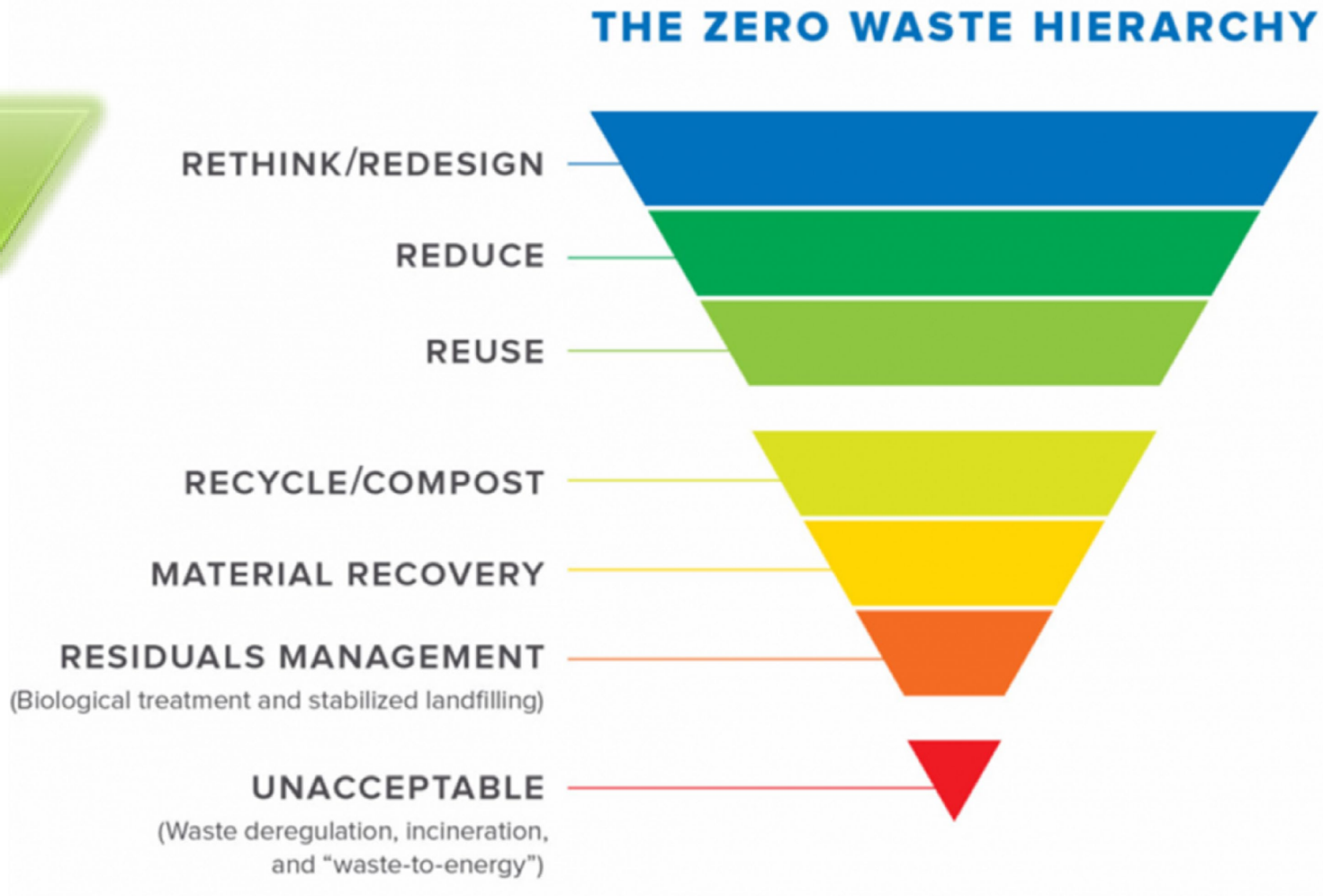
UP TO 25%
OF MATERIALS CAN BE REUSED



Credit: Delta Institute (2018), delta-institute.org/publication/deconstruction-go-guide

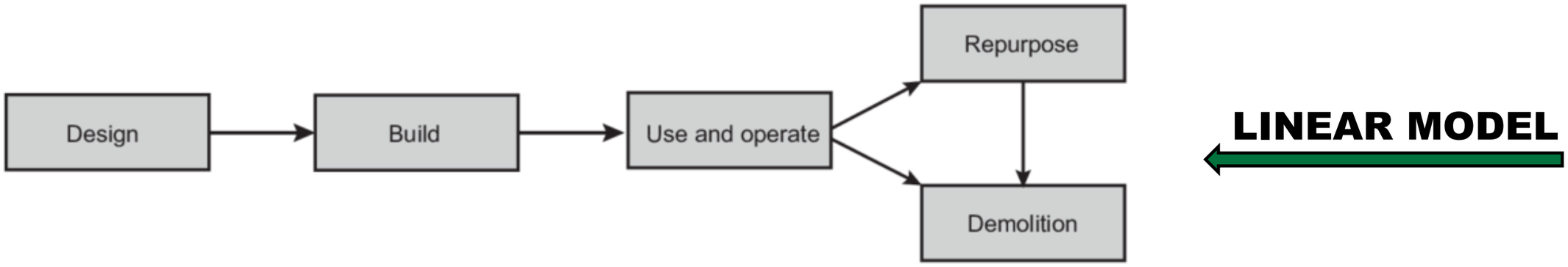
Most homes contain materials that have financial value in the reuse market.

THE WASTE HIERARCHY HAS TO CHANGE



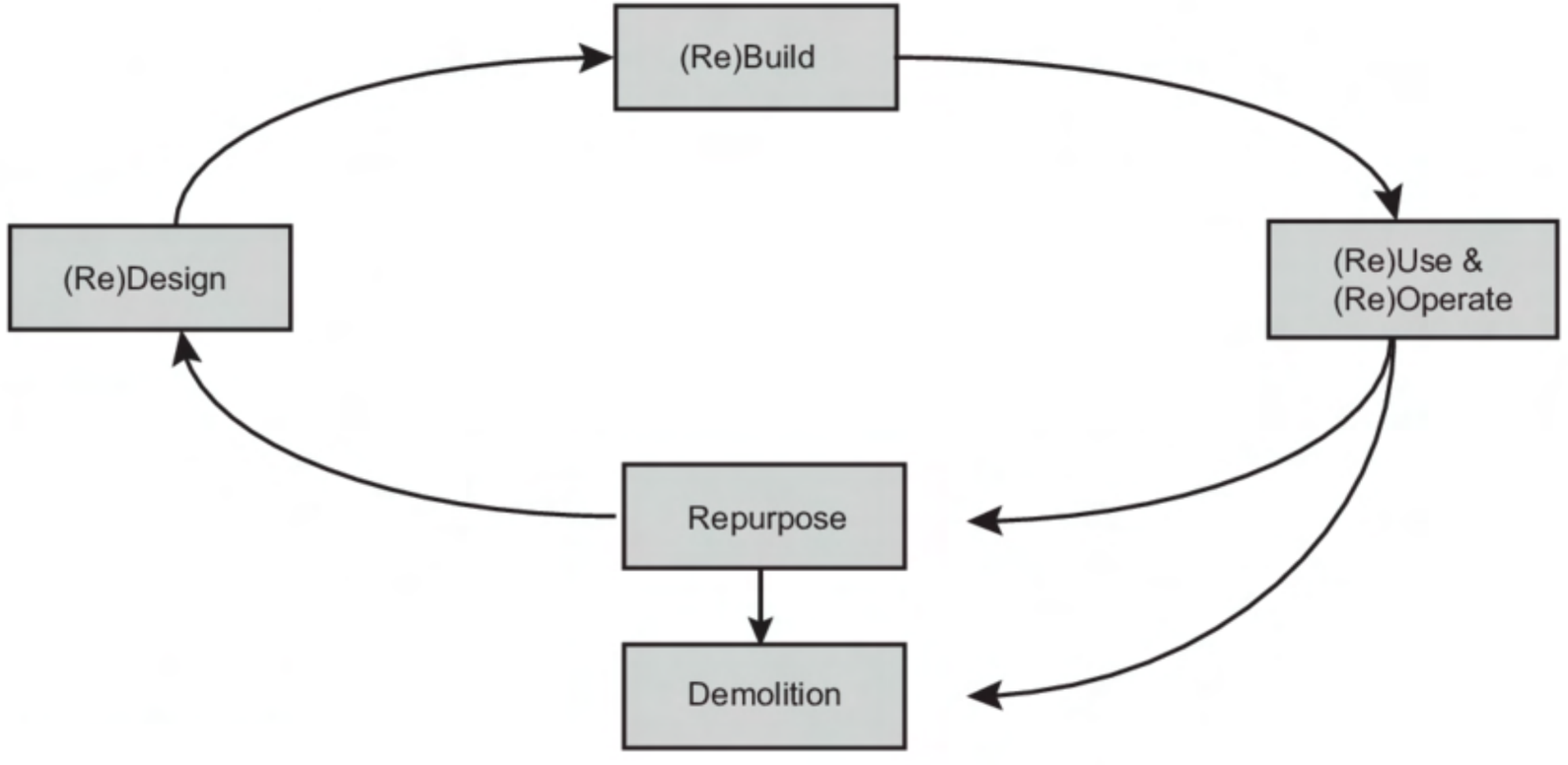
Credit: EPA (n.d.), epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy; Clean Air Baltimore Coalition (n.d.), cleanairbmore.org/zerowaste

THIS INDUSTRY NEEDS TO SHIFT FROM A LINEAR TO A CIRCULAR MODEL



LINEAR MODEL

CIRCULAR MODEL



Credit: Peters M, et al. (2016), bamb2020.eu/news/publication-materials-passports

WHY REUSE?

A circular economy could reduce global CO2 emissions from building materials by 38% in 2050 (EMF, n.d.)

TRIPLE BOTTOM LINE OPPORTUNITY OF COMMERCIAL DECONSTRUCTION

ENVIRONMENTAL

- Resource Conservation
- Carbon Reduction
- Decreased Landfill Volume

ECONOMIC

- Reduced Tipping Fees
- Strengthened Local Economy & Job Creation
- Materials Kept at Highest Value

SOCIAL

- Green Workforce Training
- Creation of Local Jobs
- Respect for History of Communities

Credit: Ellen MacArthur Foundation (n.d.), ellenmacarthurfoundation.org/topics/built-environment/overview
Image Credit: Ellen MacArthur Foundation & Google (2019), emf.thirdlight.com/link/v6gyhiosoqs7-s9k2oe/@/preview/1?o

KEY DEFINITIONS

- **Deconstruction:** The systematic dismantling and removal of a structure or its parts in the reverse order of construction, for maximum value through the salvage and harvest of components, primarily for reuse in their original purpose and secondarily for recycling
- **Demolition:** The efficient tearing down of a structure or its parts to clear the site as quickly as possible, resulting in debris suitable for some bulk, mixed commodity recycling and disposal
- **Salvage**: Removal of disassembled building materials for the purpose of reuse refurbishing or recycling.
- **Selective Deconstruction:** Disassembly of part of a building or attached structure, targeted materials, finishes, or systems, leaving part of a building standing
- **Strip-Out:** Harvesting a buildings most valuable and easily removable components, typically limited to finish materials, equipment, kitchen cabinets, doors, plumbing fixtures, lighting and bathroom fixtures.
- **Surplus:** Products purchased for construction but never used, often new and in box.

Credit: Ellen MacArthur Foundation & Google (2019), emf.thirdlight.com/link/v6gyhiosoqs7-s9k2oe/@/preview/1?o

EXAMPLES OF SURPLUS & SALVAGE


REUSE


REUSE

REUSE


SURPLUS


SALVAGE

Photo Credit: Leopardo Companies, Inc.

OPPORTUNITY: SURPLUS

- Surplus – another feedstock into the materials reuse stream
- Isn’t the same as salvage
- Product purchased for construction but never installed
- New not Used!!
- Materials Data available
- New in Box

CLICK ON THE IMAGE TO GO TO THE LINK

Photo Credit: San Francisco Department of Environment (2022)

San Francisco Surplus Building Products Reduction & Distribution Study

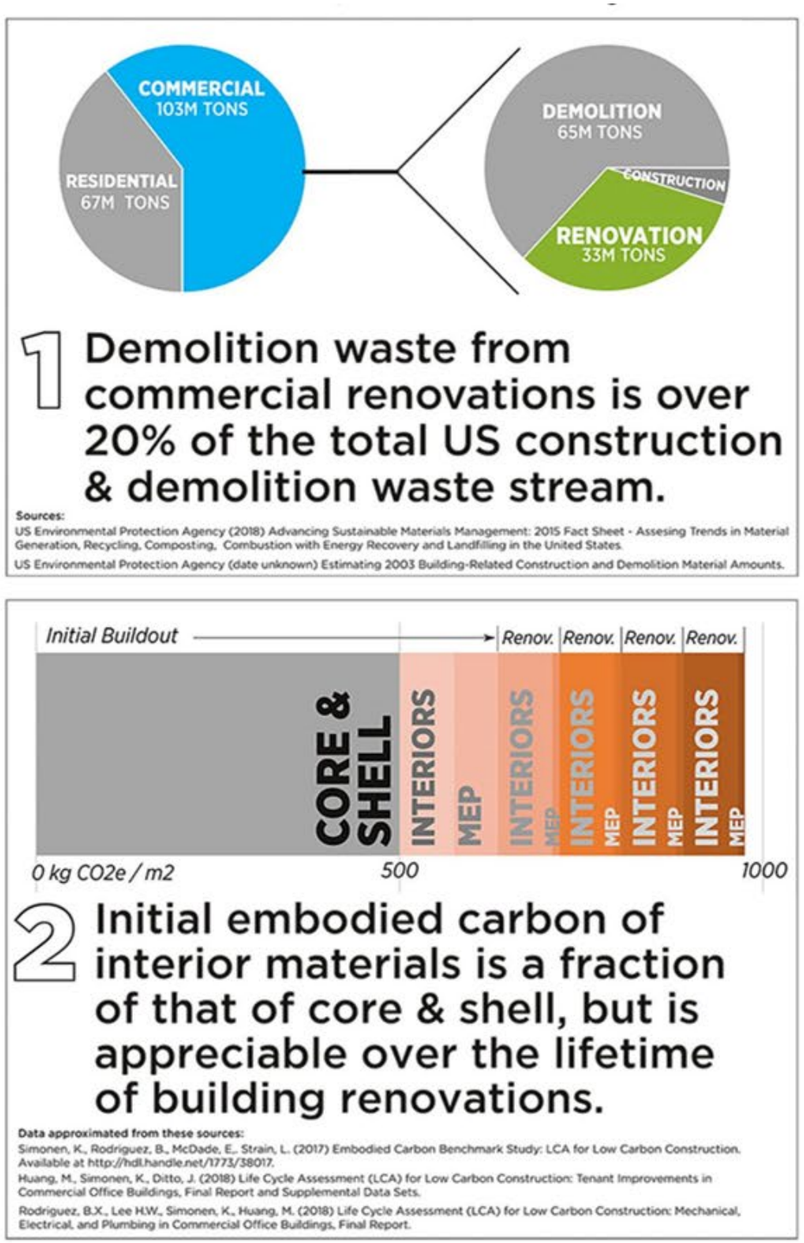
SF Environment
Our home. Our city. Our planet.
A Department of the City and County of San Francisco

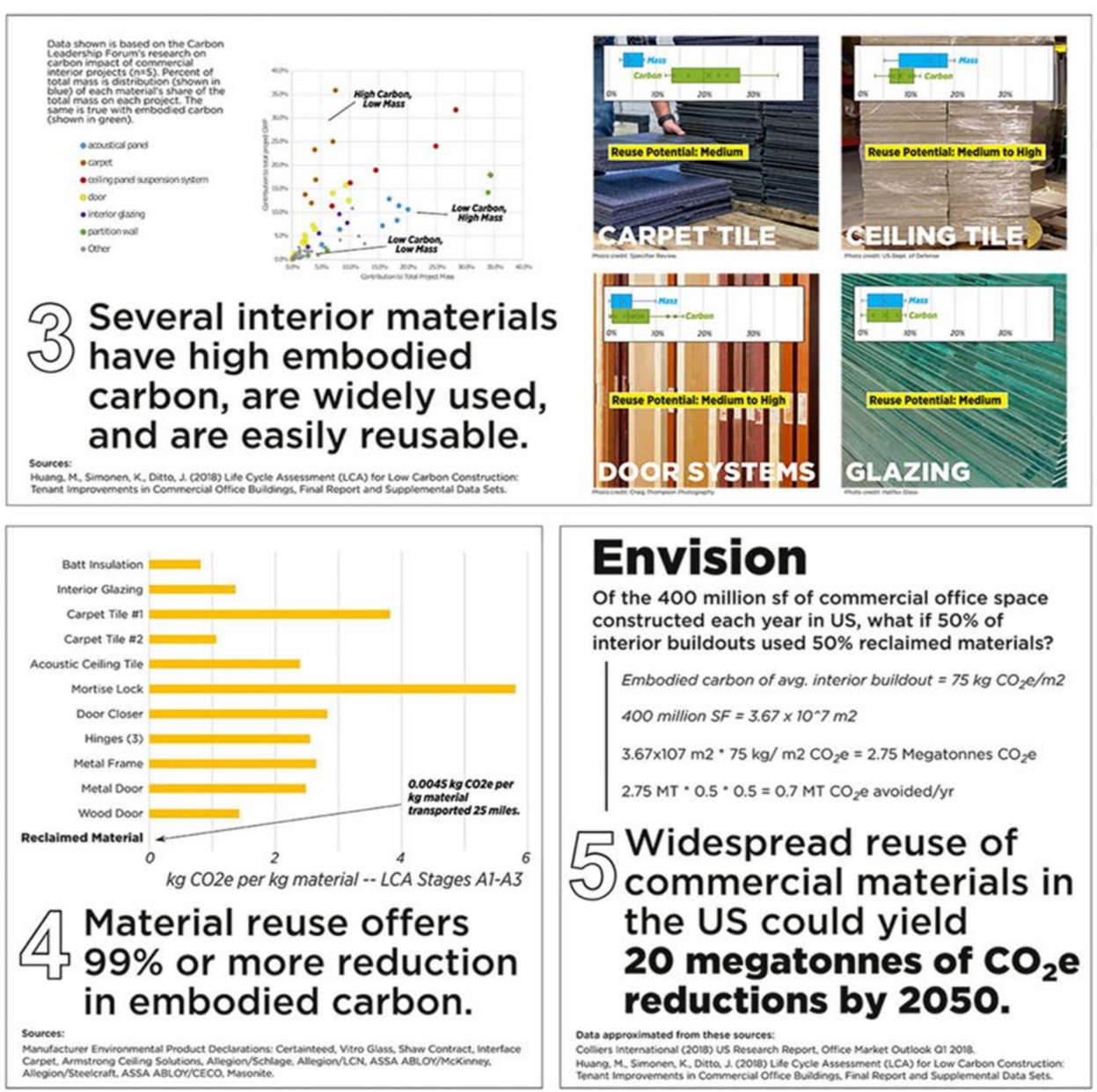
BUILDING MATERIAL REUSE:

The Overlooked Solution to Carbon Reduction

CLICK ON THE IMAGE TO GO TO THE LINK

Materials from commercial interiors are voluminous, standardized, frequently landfilled, have substantial embodied carbon, and are readily reusable.





Credit: Andrew Ellsworth, Doors Unhinged; allforreuse.org/resources

Image: Yuri Arcurs People Images, freepik.com/premium-photo/when-your-office-feels-like-playground-shot-young-man-woman-sitting-top-building-construction-site-giving-each-other-high-five_27211602.htm#query=construction%20workers%20high%20five&position=14&from_view=search&track=sph

CHALLENGES TO BUILDING MATERIALS REUSE

- Current project schedules and contracts do not value deconstruction or reuse
- Not enough stability in reuse market to make sure materials are there when needed
- Inundation of certain commodities, lack of others
- Quality/Warranty/Hazardous Unknowns
- Cheap landfill costs in parts of country
- Manufacturer takeback programs challenging
- Current stock not designed for disassembly
- Regional variations in recycling & diversion options
- Storage – Actual facilities to hold until needed
- Cultural stigma valuing new over reuse

DECONSTRUCTION

Photo Credits: Build Reuse (n.d.), buildreuse.org/about-deconstruction
Delta Institute (2018), delta-institute.org/publication/deconstruction-go-guide

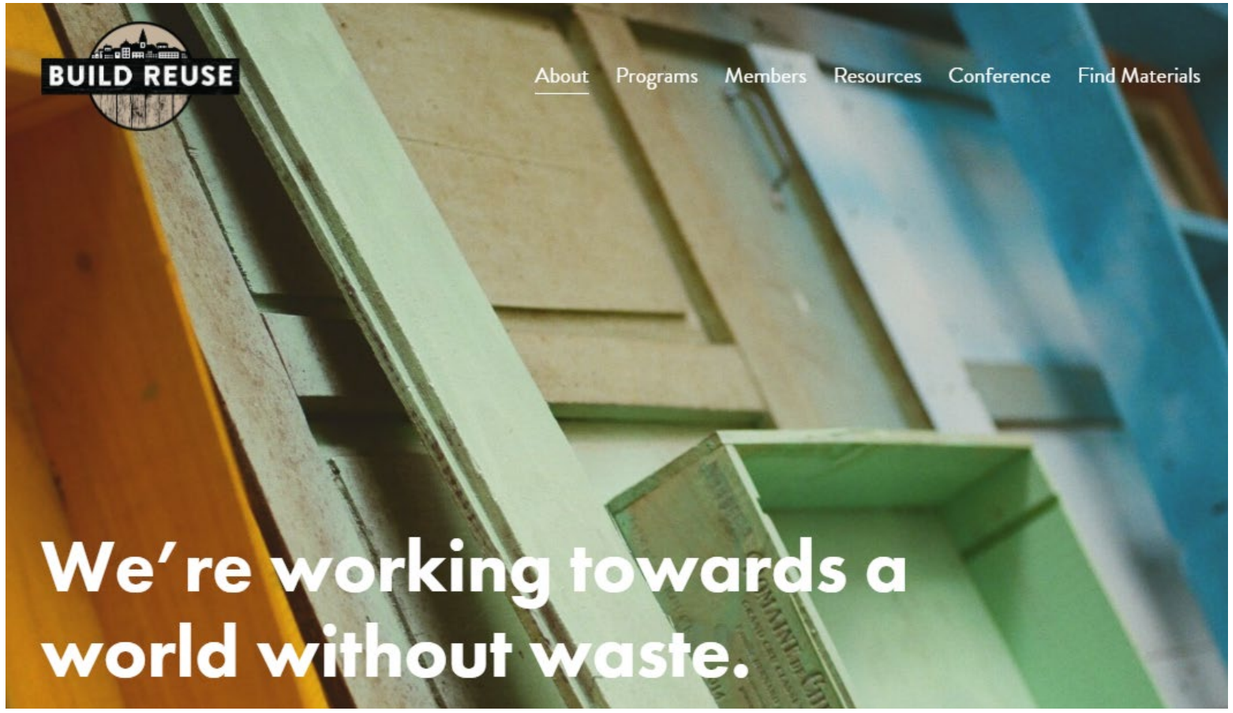
TYPES OF BUILDING MATERIAL REUSE (BMR)

ADAPTIVE REUSE WITH COMPONENT REUSE

REUSING WHAT IS AVAILABLE AT THE SITE

REUSING CONSTRUCTION MATERIALS FROM ELSEWHERE

SECONDARY USE OF NON-CONSTRUCTION MATERIALS



Credit: Build Reuse (n.d.), buildreuse.org/about

MATERIALS RECOVERY THROUGH DECONSTRUCTION

SPECTRUM OF DECONSTRUCTION

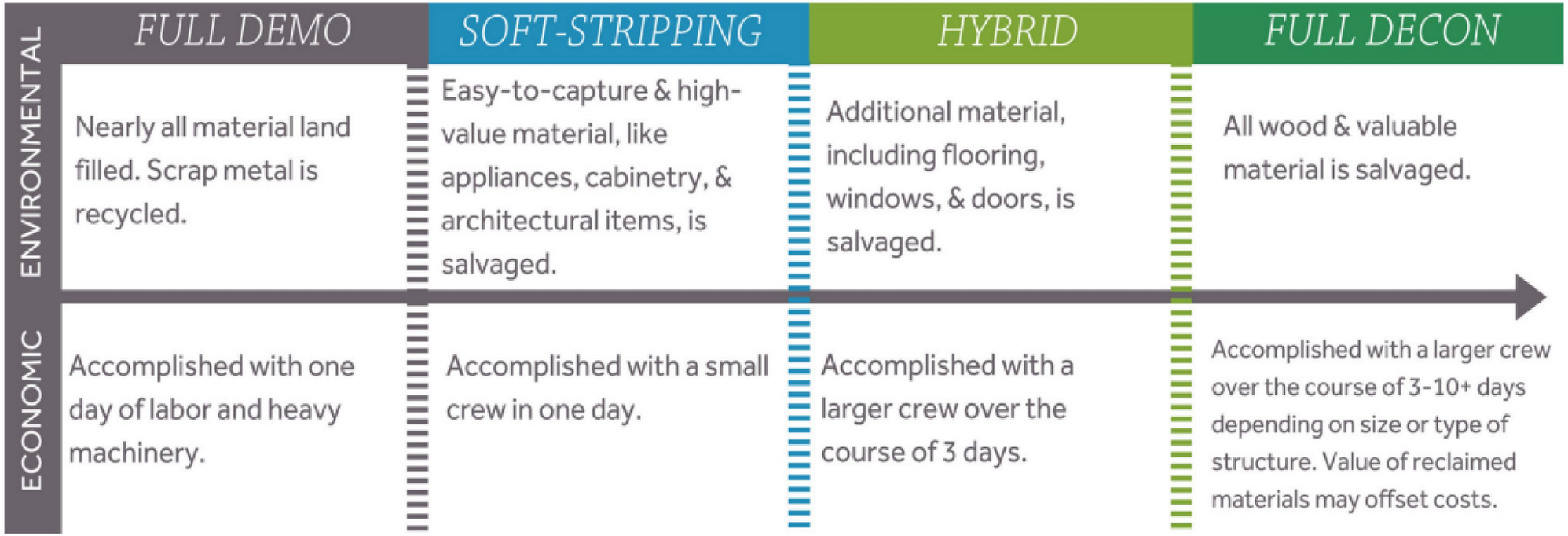
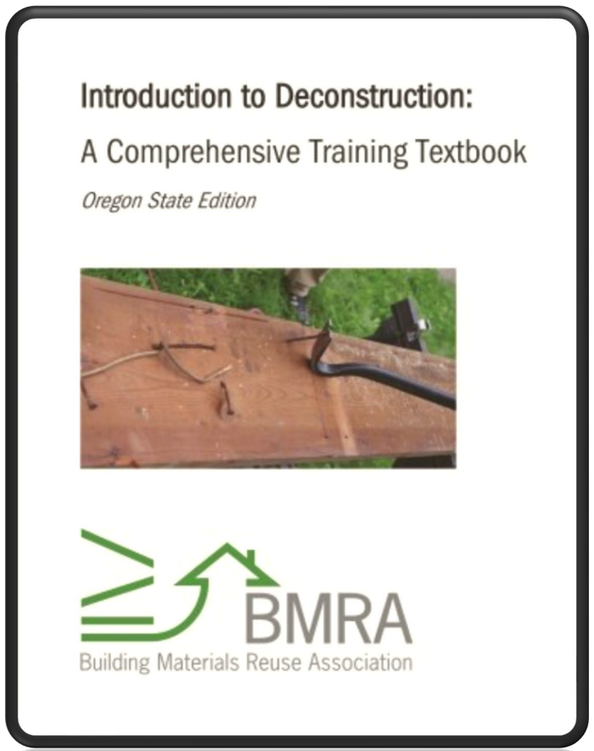


Figure 2: A variety of approaches can be used in accomplishing deconstruction and demolition tasks.

> ***"Deconstruction is a new term to describe an old process—the selective dismantling or removal of materials from buildings prior to or instead of conventional demolition."***
>
> *U.S. Environmental Protection Agency*

Image Credit: Delta Institute (2018), delta-institute.org/publication/deconstruction-go-guide; US EPA, sustainableconsumption.usdn.org/initiatives-list/encouraging-and-mandating-building-deconstruction

DECONSTRUCTION CONTRACTOR TRAINING & EDUCATIONAL RESOURCES



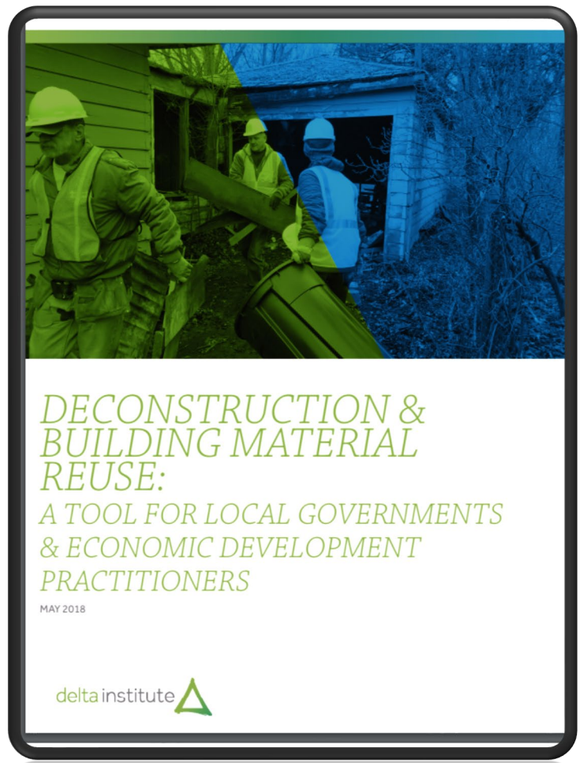
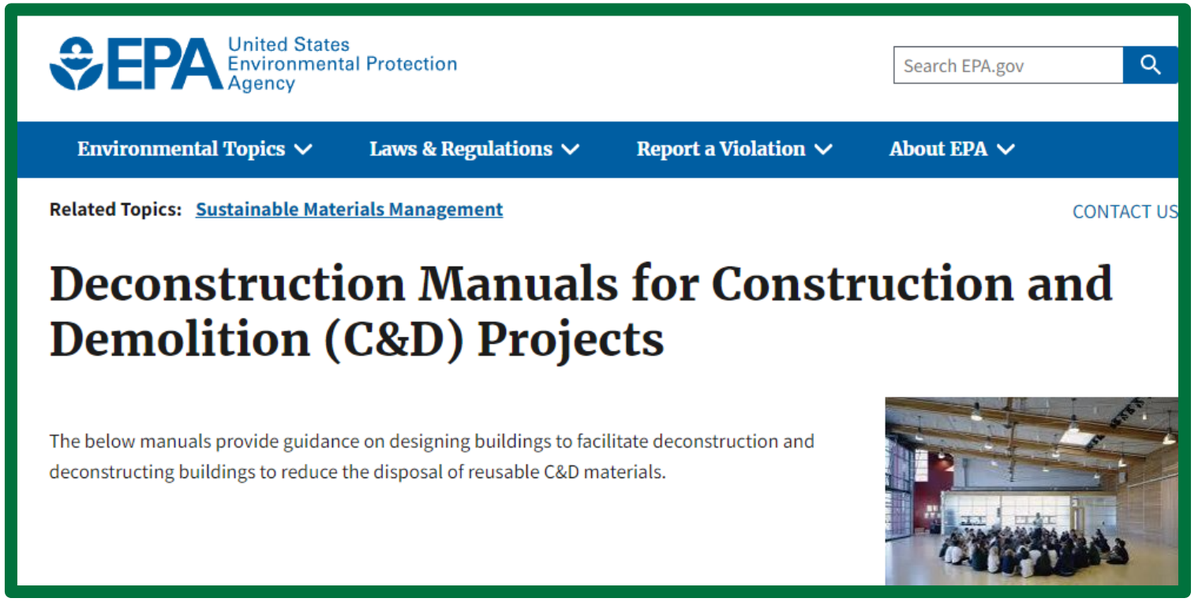


Image Credits: CRTKL (2021); Ellen MacArthur Foundation & Google (2019); Delta Institute (2018), delta-institute.org/wp-content/uploads/2018/05/Deconstruction-Go-Guide-6-13-18-.pdf; Build Reuse (n.d.), buildreuse.org/training

DECONSTRUCTION RESOURCES



Credit: Build Reuse (n.d.), buildreuse.org/registryoftrainers; EPA (n.d,), epa.gov/smm/deconstruction-manuals-construction-and-demolition-cd-projects

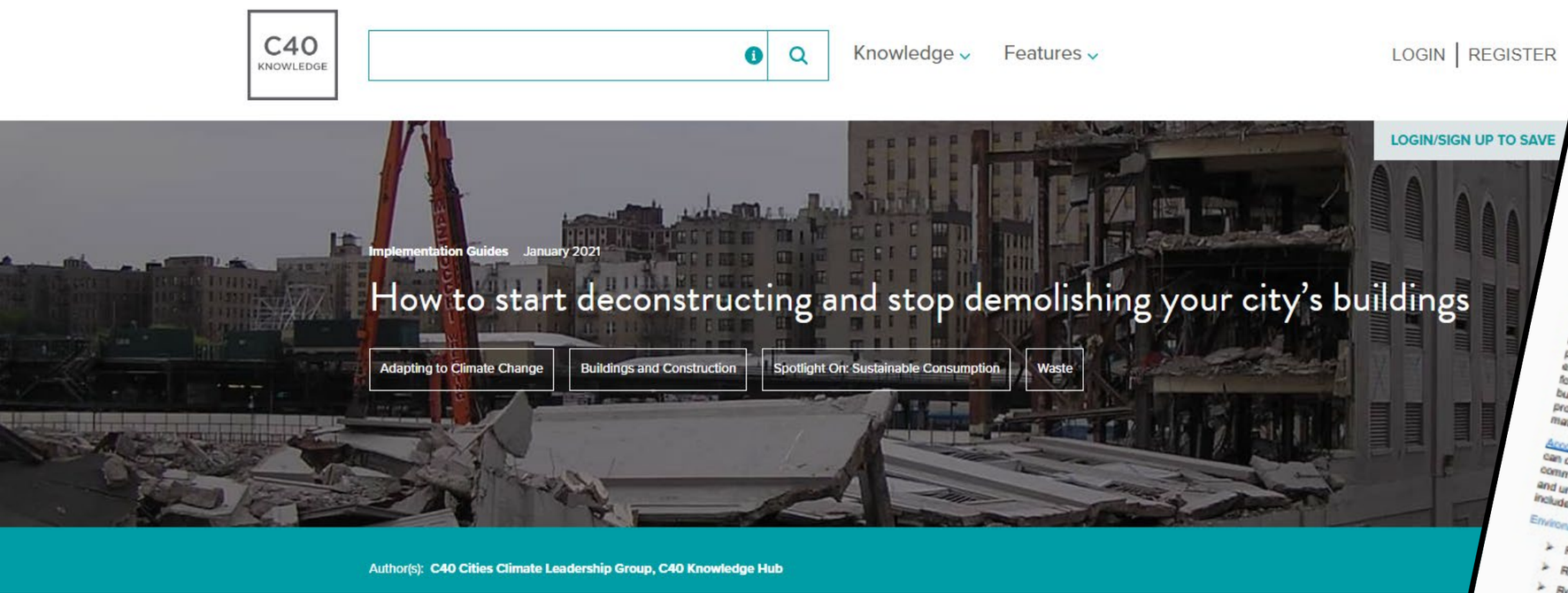
DECONSTRUCTION & WORKFORCE DEVELOPMENT

Compared to mechanical demolition, deconstruction is labor intensive, requiring requires a team of individuals with specialized knowledge. **Mechanical demolition of a 1,400 square-foot house requires a crew of 2-3 workers, as opposed to 6-8 if that same structure were deconstructed**.

Deconstruction also feeds a larger reuse economy, indirectly supporting jobs in material warehousing, retail and sales, and material manufacturing.

Many Build Reuse member organizations are dedicated to using deconstruction as a tool for workforce development, especially for women, people of color, and people impacted by the justice system or with other barriers to employment.

POLICY TOOLS TO ADVANCE BMR: CODES, GRANTS, ORDINANCES, ASSESSMENTS, & SPECIFICATIONS




POLICY BRIEF

FROM DEMOLITION TO DECONSTRUCTION: CITY SALVAGE AND REUSE POLICIES

AUGUST 2019

Cities around the nation are currently facing growing numbers of old, inefficient, and deteriorating structures in their communities. Owners of these buildings often turn to demolition because of the impractical costs of renovation. However, frequently these older homes are made of quality or historic materials that go to waste because demolition sends them straight into a landfill.

Deconstruction is a process that can salvage waste from demolition while simultaneously contributing to a city's overall sustainability goals. The deconstruction process involves taking apart an existing building element by element in the reverse order of its construction to preserve or recycle as much of the materials as possible. Those salvaged materials can then be transformed into profitable resources, sold for future construction projects or to repair and restore similar homes that remain.

BENEFITS OF DECONSTRUCTION

Deconstruction benefits more than just the environment – the process can help protect public health by reducing the airborne toxic pollutants associated with demolition, create employment and new economic opportunity, foster the creation and expansion of small businesses that handle salvaged materials, and provide local and affordable access to building materials in the event of a disaster.

According to the Delta Institute, deconstruction can offer several environmental, economic, and community benefits for cities with high vacancy and unemployment rates. Those benefits include:

Environmental Benefits

- Reduced toxic dust from job site
- Reduced heavy metal leaching into soil
- Reduced waste to landfills
- Reduced consumption of new material

Economic Benefits

- Jobs from removing structures
- Resale of affordable building materials
- Sale of value-added products

Social Benefits

- Removal of blight
- Workforce development partnerships
- Workforce training and contractor training
- Local reclaimed materials that can be used in the restoration and preservation of historic structures.

DECONSTRUCTION IN CITY POLICY

Because cities are usually responsible for issuing demolition permits and for oversight of the demolition process, the city has the power to construct and implement a deconstruction policy. A deconstruction policy defines minimum requirements for covered buildings to be deconstructed rather than demolished through the standard procedure. These policies can be the responsibility of different city departments, like an office of historic preservation or an office of sustainability, but as with any good policy, it is important all relevant departments be involved in

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Image Credit: USGBC (2019), usgbc.org/sites/default/files/Deconstruction-Brief_Final.pdf;
C40 Cities (2021), https://www.c40knowledgehub.org/s/article/How-to-start-deconstructing-and-stop-demolishing-your-citys-buildings?language=en_US

CODE LANGUAGE SUPPORTING REUSE IN NEW CONSTRUCTION

WASHINGTON STATE – RECLAIMED WOOD CAN BE USED IN STRUCTURAL APPLICATIONS

- "Used sawn lumber identified with a grade mark, in good condition and devoid of areas of decay shall be assumed to meet the requirements of section 602.1.1 or comply with the following…"

WASHINGTON STATE LEGISLATURE

Section R602—Wood wall framing.

R602.1.1.1 Used sawn lumber. Used sawn lumbe
meet the requirements of Section 602.1.1 or shall
1. Dimensional lumber not identified with a
assumed to be spruce-pine-fir stud grade and shal

OREGON RESIDENTIAL SPECIALTY CODE

R104.9 Approved materials and equipment. Materials, *equipment* and devices *approved* by the *building official* shall be constructed and installed in accordance with such approval.

R104.9.1 Used materials and equipment. Used materials, *equipment* and devices shall not be reused unless *approved* by the *building official.* Used or salvaged dimensional lumber shall be permitted to be used in accordance with all of the following:

1. Used or salvaged dimensional lumber shall be in generally good condition and free of any obvious areas of decay.
2. Where used or salvaged dimensional lumber is identified by a grade mark or where a certificate of inspection is provided from a lumber grading or inspection agency *approved* by an accreditation body that complies with DOC PS 20, structural properties for the used or salvaged lumber shall be as determined by the *approved* agency in accordance with the grade stamp or certificate provided.

Exception: In lieu of the grade mark or certificate described in Item 2, used or salvaged dimensional lumber not bearing a grade stamp or provided with a certificate shall be assumed to be Douglas Fir-Larch No. 2 grade and shall have structural properties assigned in accordance with current adopted standards.

Credit: Washington State Legislature (n.d.), apps.leg.wa.gov/wac/default.aspx?cite=51-51-0602; ICC Digital Code (n.d.), codes.iccsafe.org/content/ORRSC2017

GRANT PROGRAMS

HENNEPIN COUNTY

Building reuse grants

Commercial deconstruction

Hennepin County has funding available for building projects that use deconstruction techniques instead of standard demolition to remove materials from the destruction, alteration, or renovation of a building. Property owners and developers of commercial properties can receive up to $10,000 to help offset the additional time and labor costs associated with deconstruction.

CalRecycle

Reuse Grant Program

Apply for a MassDEP Reduce, Reuse, Repair Micro-Grant

This program provides grants of up to $5,000 to for-profit and non-profit organizations, regional authorities, and eligible municipalities for short-term waste reduction projects.

Atlanta Receives EPA Grant for Deconstruction Pilot Program

Credit: Ramsey County (n.d.), file:///C:/Users/shafp/Downloads/Deconstruction-Grants.pdf; Hennepin County n.d., hennepin.us/building-reuse; Calrecycle (n.d.), calrecycle.ca.gov/climate/grantsloans/reuse; Massachusetts DEP (n.d.), Build Reuse (n.d.), mass.gov/how-to/apply-for-a-massdep-reduce-reuse-repair-micro-grant

SALVAGE ASSESSMENTS

Deconstruction Rapid Assessment Tool

EPA United States Environmental Protection Agency

2b. Damage & Deterioration

The Damage & Deterioration section is intended to provide an indication of the condition of materials in the structure. If, for example, there are large portions of the roof missing and clear exposure to the elements or missing windows, the chances of materials being damaged and/or deteriorated is increased, thereby making deconstruction unlikely. This is very important in understanding whether deconstruction will be a viable option. For projects in which the structure was recently occupied and in habitable condition, this section may have diminished relevance.

DAMAGE & DETERIORATION						
Major cracking of brick, wood rotting:					Yes	No
Broken or missing windows:					Yes	No
Missing brick and siding:					Yes	No
Roof damage:	Small open hole	Large open hole(s)	Portion of roof missing		Significant portion or entire roof missing	
Evidence of major fire damage:	1 *(little)*	2	3		4	5 *(lots)*
Evidence of major water damage:	1 *(little)*	2	3		4	5 *(lots)*
Are gutters/downspout operable to control water?					Yes	No

2c. Materials Inventory

The materials inventory includes the types and quantities of building elements commonly found in residential structures. This information is intended to provide estimates of effort required to deconstruct and potential revenue from deconstructed materials.

MATERIALS INVENTORY							
Roof type:		Flat	Pitched				
Siding type:	Brick	1 *(little)*	2	3	4	5 *(lots)*	
	Wood	1 *(little)*	2	3	4	5 *(lots)*	
	Stone	1 *(little)*	2	3	4	5 *(lots)*	
	Vinyl/Synthetic	1 *(little)*	2	3	4	5 *(lots)*	
	Aluminum	1 *(little)*	2	3	4	5 *(lots)*	
	Other:	1 *(little)*	2	3	4	5 *(lots)*	
Wood flooring *(number of rooms)* :		1	2	3	4	Specify:	
Have additional layers of flooring been adhered to the wood in the past?		Yes	No				
Are dimensional ceiling or floor joists observed? *(can be viewed from basement or attic)*		Yes	No				
Dimensional lumber larger than 4x4:		Yes	No				
Are walls plaster or drywall? *(total should equal 100%)*	Plaster		Partly (< 25%)	Some (25-50%)	Mostly (50-99%)	All (100%)	
	Drywall		Partly (< 25%)	Some (25-50%)	Mostly (50-99%)	All (100%)	
	Crown moulding	None	Some	A Lot			
	Casing around doors and windows *(number of rooms)*	1	2	3	4	Specify:	
	Baseboard moulding *(number of rooms)*	1	2	3	4	Specify:	
	Chair railing moulding *(number of rooms)*	1	2	3	4	Specify:	
Foundation:		Monolithic concrete	Concrete block	Combination, specify:			
Basement:		Yes	No	Partial			

BUILDING MATERIAL SALVAGE ASSESSMENT

Names of Inspectors	
Date of Inspection	
Address	

FINAL ASSESSMENT AND JUSTIFICATION

BUILDING AND SITE SPECIFIC DETAILS			
YEAR BUILT		# STORIES	
HOME SQUARE FOOT		# BEDROOMS	
GOOD STAGING AREA		# BATHROOMS	

SITE HAZARDS				
HAZARDS	NONE	SOME	LOTS	NOTE:
EXTERIOR TRASH				
TREES AND FOLIAGE				
OTHER:				

PERCEIVABLE BUILDING HAZARDS				
HAZARD	NONE	SOME	LOTS	Notes:
ROOF DAMAGE				
WATER DAMAGE				
FIRE DAMAGE				
ASBESTOS				
LEAD PAINT				
INTERIOR TRASH				
OTHER				

SALVAGEABLE MATERIALS					
WOOD USE	OLD GROWTH	MID CENTURY	RECLAIMED	PAINT GLUE	Other
FLOORING					
FRAMING [x]					
floor JOISTS [X]					
SUBFLOORING [x]					
Roof TRUSSES [x]					
Siding [x]					
OTHER?					

OTHER SALVAGEABLE FEATURES

delta institute

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Before you demolish... should you deconstruct?

Seattle Department of Construction & Inspections

Salvage Assessment

Project Number _____ ☐ Whole Building Removal (demolition) ☐ Alterations ☐ Nonresidential Project ☐ Residential Project

Project Address _____

Owner/Contact Name _____ Phone _____

Salvage Verifier (if required) _____
Contact Name *Company* *Phone*

A **salvage assessment** is required for all whole building demolition projects and projects that involve alterations valued at more than $75,000 and/or where the area of work is greater than 750 square feet.

☐ By checking this box, I have determined **I do not need to fill out this form** because:

- the project does not impact an existing building, such as construction of a new detached accessory dwelling unit or backyard cottage,
- the permit value is less than $75,000, or
- the area of work is less than 750 square feet.

This exception does not apply to demolition permits.

This form must be filled out by:

The Owner or Owner's Representative when...	The project scope involves additions or alterations
	Material removed from a project is going to be reused on-site or at an alternate project site - Project #/Address
A Salvage Verifier when...	The project includes whole building removal (Demolition)

A salvage verifier is a person meeting one of the following criteria:

1. An established salvage and reuse retail company
2. A licensed contractor specializing in deconstruction
3. A demolition company with knowledge of local and current salvage retail markets

- A list of possible salvage verifiers may be found through resources such as The Northwest Building Salvage Network: http://nbsnseattle.org/
- A salvage verifier may use this or an alternate form
- ONLY a salvage verifier may check off this box if there is nothing of value to salvage ☐

Salvage Assessment Matrix

Use the matrix below to identify all building materials impacted by demolition that could be salvaged and reused ON or OFF-SITE instead of being sent to a landfill or recycled.

Building	Specific Material	Quantity	Notes
Cabinets	Solid Wood (with back panel)		
	Other (with back panel)		
Carpet	Tile		
	Roll		
Doors	Interior		
	Exterior		
	Garage		
Flooring	Solid Floor		

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Image Credits: Seattle Department of Construction & Inspections: (n.d.), seattle.gov/Documents/Departments/SDCI/Forms/SalvageAssessment.pdf; Delta Institute (2018), delta-institute.org/publication/deconstruction-go-guide; EPA (n.d.), https://www.epa.gov/sites/default/files/2015-07/documents/drat-instructions.pdf

DECONSTRUCTION SPECIFICATIONS

BMRA Model Guide Specification: Deconstruction of Buildings

Download

The purpose of this Model Guide Specification is to provide the building industry with a consistent set of technical requirements for deconstructing buildings as the Owner's directed method of building removal, based on the best knowledge and practices available within the industry.

BMRA Model Guide Specification:
Section 02 42 13.13 Deconstruction of Buildings

Background.

The Building Material Reuse Association (BMRA) is a non-profit educational organization whose mission is to advance the recovery, reuse, and recycling of building materials in such a way to reduce the consumption of new resources, reduce landfill waste, create a value-added market and increase cost-effectiveness, expand job opportunities and workforce development skills, and promote the sustainability of communities and the environment through resource preservation. As part of its mission, the BMRA is developing a library of technical documents to assist deconstruction - related practitioners and the building industry as a whole.

Image Credit: Stop Waste, (n.d.), stopwaste.org/resource/bmra-model-guide-specification-deconstruction-buildings

ORDINANCES & POLICIES EXAMPLES

CLICK HERE TO READ MORE

KING COUNTY, WA

Green Building & Sustainable Development (CD)

2013

Method / Mechanism

Starting in 2013, all projects are required to take materials from construction sites to either single commodity recycling facilities, commingled processing facilities, or transfer stations reducing materials sent to the landfill.

Documentation may be used in conjunction with LEED or Built Green certification reporting.

Non-Compliance

Code citation Up to 60 days of civil penalties followed by legal prosecution

MILWAUKEE, WI

Deconstruction Ordinance

2018

Method / Mechanism

Homes built before 1930 that are one to four residential units must be deconstructed.

Non-Compliance

Penalties include forfeitures of up to $3,000 (up to

$20,000 for improper use of heavy machinery), issuance of citations, removal of a contractor from the list of certified deconstruction contractors, or revocation of a contractor's certification as a certified deconstruction contractor.

Image Credit: Delta Institute (2018), delta-institute.org/publication/deconstruction-go-guide

POLICY MECHANISMS

POLICY TOOLS:

- Deposit Programs
- CD&D Waste Diversion Programs
- Salvage Assessment & Commitment
- Deconstruction & Waste Plan
- Achievement of Green Building Programs or Municipal Plans
- Certified haulers and transfer stations
- Deconstruction policies
- By-Laws
- City Owned infrastructure facilitation
- Permit Expediting

NON-COMPLIANCE MEASURES:

- Certificate of Final Occupancy Not Awarded
- Penalty Fines
- Civil Actions –including Jail Time, misdemeanor prosecution
- Fines Per ton
- Doubled Tipping Fees
- Suspension of demolition
- Permit rejection
- Code citation
- Removal of certified contractors from list

Image Credit: Delta Institute (2018), delta-institute.org/publication/deconstruction-go-guide

AN EXAMPLE: SAN ANTONIO REUSE FRAMEWORK

WHY DECONSTRUCTION?

Construction and demolition waste is the largest single-stream source of refuse in the United States - more than double the amount thrown into household trash bins.*

The Deconstruction & Circular Economy Program aims to recapture building materials that are traditionally lost to the landfill and redirect them back into our communities for reuse. The program is developing interdisciplinary, community-focused policies and partnerships to advance this work.

****Source: Environmental Protection Agency (EPA) 2017 report***

- **Place Based Policies** –Deconstruction ordinance, changes to city project requirements, training requirements, historic preservation + repair first lens
- **Reuse pathways** – Material Innovation Center, Affordable Housing Programs
- **Workforce**: Community + Trades Training, workforce development partnerships,
- **Engagement** – Digital and in person engagement, events, videos, neighborhood association “tours”
- **Networks & Partnerships** – Peer exchanges, engaging with entire stakeholder ecosystem, strengthening partnerships between city departments
- **Data** – combining existing datasets, embedding equity and environmental justice, commissioning locally-specific reports to address data blind spots

Credit: SA Reuse (n.d.), sareuse.com/deconstruction

“MATERIAL RESCUE AND REUSE EPITOMIZES CLIMATE ACTION FOR THE BUILDING INDUSTRY, HONORING EMBODIED CARBON AND UPENDING THE PREVAILING LINEAR TAKE-MAKE-WASTE PATTERN.”

Eden Brukman
Sr. Green Building Coordinator
SF Environment

Credit: San Francisco Department of the Environment (2022), sfenvironment.org/construction-demolition-requirements#:~:text=Under%20the%20ordinance%2C%20C%26D%20debris,in%20a%20designated%20trash%20bin
Image: G Point Studio, freepik.com/free-photo/construction-worker_11206741.htm#query=construction%20workers%20wood%20plank&position=1&from_view=search&track=sph

CONSTRUCTION & DEMOLITION DEBRIS RECOVERY LAW

Credit: San Francisco Department of the Environment (2022)

EFFECTIVE JANUARY 1, 2022 REQUIREMENTS OVERVIEW

San Francisco Ordinance No. 144-21 and Public Works Code Section 725 add new construction and demolition (C&D) debris recovery requirements for C&D transporters, processing facilities, and projects. Under the ordinance, C&D debris material removed from a project in San Francisco must be recycled or reused. No C&D debris can be transported to or disposed of in a landfill or incinerator or put in a designated trash bin.

SF Environment
Our home. Our city. Our planet.
A Department of the City and County of San Francisco

MATERIAL EXCHANGE PLATFORMS

MATERIALS EXCHANGES CAN BE FACILITATED BY CITIES IN A FEW WAYS:

- Encouraging and supporting reuse resale facilities. A physical location within the municipality speeds the ease of exchange and keeps local resources and workforce local
- Helping to facilitate the creation of building material reuse infrastructure locally via policy or other measures.
- Sharing resources with project teams to use digital materials exchanges to further facilitate the transfer of goods and continue to capture the environmental benefit of reuse.

CLICK ON THE LOGO TO GO TO THE EXCHANGE

REUSEWOOD.ORG
North America's Wood Reuse & Recycling Directory

ReCapturit

BuildingEase.com

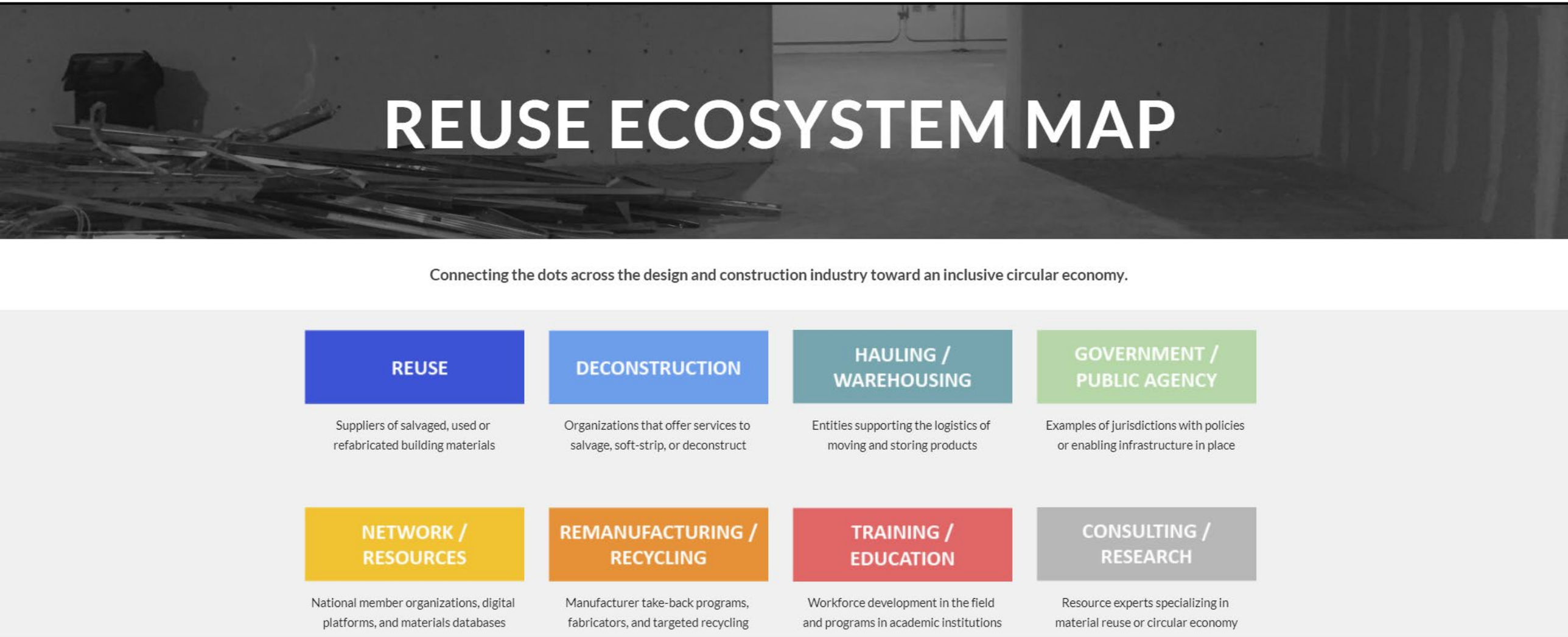
Globechain

Rheaply

MaterialsXchange

materials marketplace

ALL FOR REUSE: REUSE ECOSYSTEM MAP



Credit: allforreuse.org/ecosystem-map

MORE TOOLS FOR MUNICIPALITIES

CLICK ON THE LINK TO GO TO THE RESOURCE

[C40 Implementation Guide: How to Start Deconstruction & Stop Demolishing our Cities Buildings]

[Delivering the Circular Economy: A Toolkit for Policymakers]

[Deconstruction & Building Material Reuse: A Tool for Local Governments & Economic Development Practitioners]

[City Policy Framework for Dramatically Reduced Embodied Carbon]

[USDN Toolkit: Encouraging and Mandating Building Deconstruction]

[Accelerating the Circular Economy through Commercial Deconstruction & Reuse]

[Boston Deconstruction and Material Reuse Roadmap]

VIDEOS

Credit: sareuse.com

SAN ANTONIO: A TALE OF TWO HOMES

FACILITATING THE CIRCULATION OF RECLAIMED BUILDING ELEMENTS IN NORTHWESTERN EUROPE

Credit: rawpixel.com, freepik.com/free-photo/team-unity-friends-meeting-partnership-concept_2861400.htm#query=collaboration%20hands&position=24&from_view=search&track=sph

COLLABORATION

- Owners
- Architects
- Interior Designers
- Demolition Subcontractors
- Deconstruction/Selective Demolition Subs
- Installing subcontractors
- Waste Haulers
- Governments/Cities/Municipalities
- Manufacturers
- Reuse vendors and resalers
- Testing and Certification Agencies
- Workforce Development/Equity Professionals

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QUESTIONS / COMMENTS?

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