



CLIMATE, CULTURE AND COMMUNITY:

**HOW REUSING BUILDINGS
PRESERVES HISTORIC SPACES AND
LOWERS OUR CARBON FOOTPRINT**

**MASSDEP DECONSTRUCTION
WORKGROUP**

MEETING #4

JUNE 7, 2023



HOUSEKEEPING

This meeting is being recorded

Using zoom/chat

Ground rules

HOW THIS GOT STARTED

2030 Solid Waste Master Plan

Reduce & Reuse Working Group

Reduce & Reuse Action Plan

December 2021

Deconstruction Working Group

September 2022 Kick-Off

MEET THE PLANNING TEAM



Christine Beling
US EPA Region 1



Susan Cascino
City of Boston



Mike Elliott
MassDEP C&D Lead



Dave Giese
Deconstruction Works



Pam Howland
Old Window Workshop Cooperative



Abbey Massaro
Center for Ecotechnology



Kathi Mirza
MassDEP



Brooke Nash
MassDEP



Michael Orbank: STO Building Group,
Carbon Leadership Forum Boston



WHY FOCUS ON DECONSTRUCTION AND REUSE?

- Address disposal capacity shortfall- in state and in the northeast
- Meet aggressive waste reduction goals in MassDEP's 2030 SWMP:
 - **Specifically for C&D: Reduce disposal of C&D materials by 260K tons by 2030, more than double current C&D recycling tonnage.**
- Divert materials from waste stream, capture env'l and economic value, drive market dev't and expand job opportunities.
- Reduce GHG emissions:
 - **Embodied carbon: As buildings become more energy efficient, embodied carbon becomes a greater proportion of total carbon emissions.**

We need to improve the way we are managing these materials.

GOALS FOR THIS DECONSTRUCTION WORKGROUP

- ❑ Increase awareness about our waste disposal crisis
- ❑ Grow the Reuse Industry in MA for valuable building materials
- ❑ Connect stakeholders and share ideas
- ❑ Align with MassDEP's R&R Action Plan
- ❑ Reduce climate impacts
- ❑ Enable Job Training and Workforce Development
- ❑ Support Diversity, Equity, and Inclusion



*Basic Operating Principle:
Work for the greater good, collaborate, include all stakeholders*



PREVIOUS MEETINGS

- ***Demystifying Deconstruction***, September 2022
- ***Inspiration and Practice: Taking Buildings Apart***, December 2022
- ***Reuse Markets for Building Materials***, March 2023

Recordings and presentations from previous meetings can be found [at this link.](#)

DECONSTRUCTION

A Zero Waste Boston Initiative

Susan Cascino



CITY OF BOSTON

How to get building reuse done–

“Create a path. Don’t fight, help.”

Heidi Swank, Ex Director of Rethos in St.Paul Minnesota a non-profit promoting building reuse and deconstruction

“Once government drafts a path, the private sector will use it as a way to create new businesses. Then change starts happening quickly.”

Gina McCarthy, former EPA administrator, said during her talk Fighting For The Environment

Climate, Culture & Community: How Reusing Buildings Preserves Historic Spaces and Lowers Our Carbon Footprint

Today's Speakers

- **Alison Frazee**, Boston Preservation Alliance
- **Jennifer Doherty**, MA Historical Commission
- **Erin McDade**, Architecture 2030–CARE Tool
- **Alyssa Frystak**, Place Economics

A historical map of Boston, Massachusetts, showing street names and property boundaries. The map is oriented with North at the top. The central part of the image is obscured by a dark green rectangular banner containing the organization's name and tagline. The map features various street names such as WENON, ST, and others. The map is rendered in a sepia or reddish-brown color scheme.

BOSTON PRESERVATION ALLIANCE

Protecting places · Promoting Vibrancy · Preserving Character

Preservation and the Planet

**The greenest building is the one that
already exists**

Building reuse IS climate action!

**NOAH- Naturally Occurring Affordable
Housing**

A LIFETIME'S WORTH OF WASTE

BUILDING DECONSTRUCTION INSTITUTE
www.reuseconsulting.com



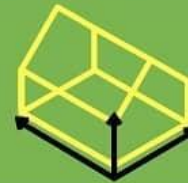
The EPA states that Americans produce an average of **4.5-5.0** pounds of waste a day

This adds up to about **135000** pounds of waste in 75+ years, or one average lifetime



The average American home is 2,400 square feet and weighs about **56** pounds per square foot

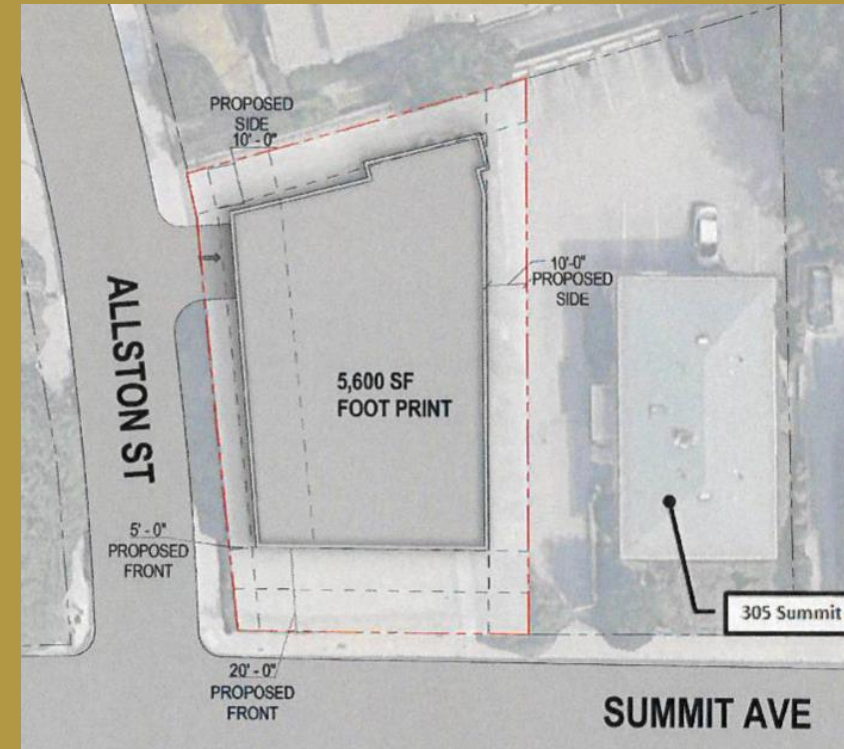
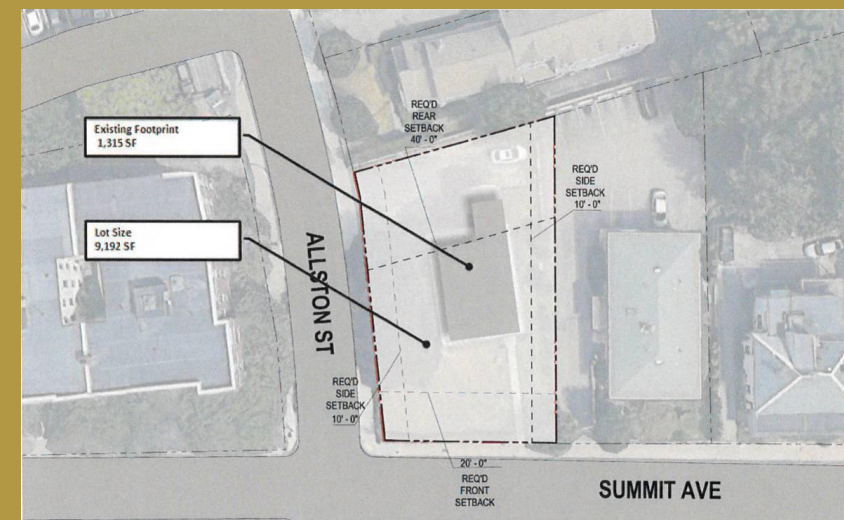
This adds up to about **135000** pounds per home



**DEMOLITION OF ONE AMERICAN
HOME IS EQUIVALENT TO A
LIFETIME'S WORTH OF WASTE**

Consider Building Deconstruction and ReUse to support an impactful circular and sustainable system





Partners

City of Boston- Environment Department- Zero Waste Team

MassDEP Deconstruction Working Group

CLF Boston Reuse Working Group

RecyclingWorks in Massachusetts

All For Reuse- Reuse Ecosystem Map
(<https://www.allforreuse.org/ecosystem-map>)

A historical map of Boston, Massachusetts, with a semi-transparent red overlay. The map shows a grid of streets and numerous property lots, many of which are labeled with names and addresses. The text is centered over the map.

www.bostonpreservation.org

Facebook: @bostonpreservationalliance

Instagram: @bostonpreservationalliance

Twitter: @BOSpreservation

LinkedIn: Boston Preservation Alliance

Alison Frazee

afrazee@bostonpreservation.org

Demolition Delay and Historic Rehabilitation Tax Credits



The John Perkins House, Wenham, demolished 2011



WILLIAM FRANCIS GALVIN
SECRETARY OF THE COMMONWEALTH
CHAIRMAN, MASSACHUSETTS HISTORICAL COMMISSION

Massachusetts Historical Commission
Jennifer B. Doherty
Local Government Programs Coordinator
June 15, 2023

What is demolition delay?



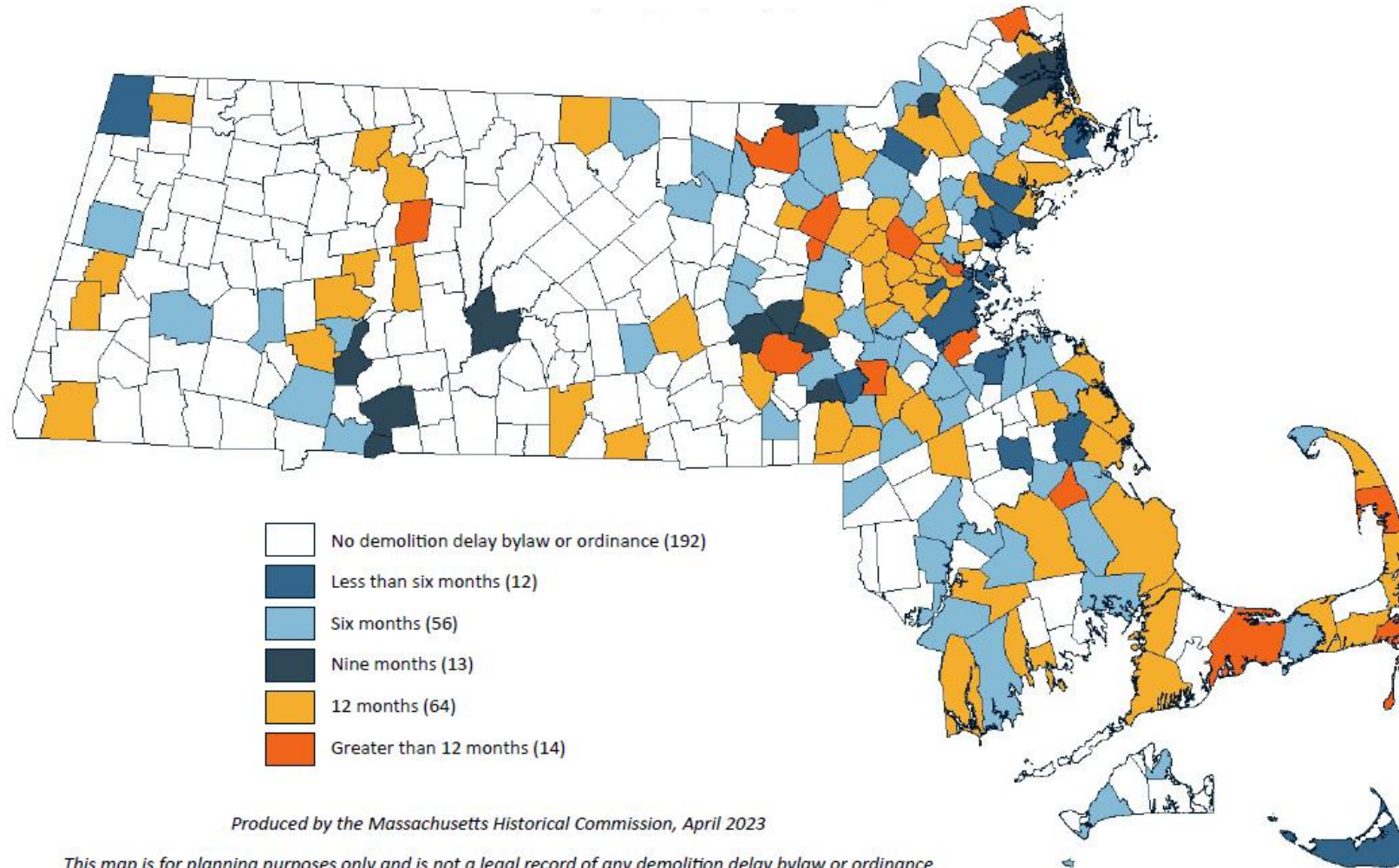
Exactly that – a delay!

- Demolition delay does not prevent demolition
- It allows for a pause in the demolition process to consider alternatives
 - It is what a community (and the applicant) make it
- It is one of many tools a community should have in its preservation toolbox
- The local historical commission can choose to delay – but will they always?



The 1805 House in Dudley was demolished in 2005 after a demolition delay.

Communities with Demolition Delay



Produced by the Massachusetts Historical Commission, April 2023

This map is for planning purposes only and is not a legal record of any demolition delay bylaw or ordinance

Base map from MassGIS

How is demolition delay adopted?

- Under the Home Rule amendment of the state constitution
 - There is no enabling legislation, like there is for local historic districts (MGL Chapter 40C)
- MHC has a sample bylaw/ordinance
- Usually adopted as a general bylaw/ordinance following the usual local legislative process
- Demolition delay does not apply in local historic districts
 - Local historic district commissions can deny a proposed demolition

Hopkinton amended their demolition delay bylaw at 2019 Annual Town Meeting, extending their delay from six to 18 months

ARTICLE 47: Historic Preservation Bylaw Amendment: To see if the Town will vote to amend Chapter 125, Historic Preservation, of the General Bylaws, as follows:

1. By deleting the word “six” from §125-3.A(7), and inserting, in place thereof, the numeral “18,” so that §125-3.A(7) will read as follows:

If the Commission determines the structure is worthy of classification as a preferably preserved significant structure, no further demolition permits may be applied for or issued with respect to such structure, for a period of 18 months from the date of such written determination.

2. By deleting the word “six” from §125-3.A(8), and inserting, in place thereof, the numeral “18,” so that §125-3.A(8) will read as follows:

During such 18-month period, the Commission will invite the applicant (and the owner of record, if different from the applicant) to participate in an investigation of alternatives to demolition. If acceptable alternatives are agreed upon by the Commission and the applicant, the Commission will file a copy of said agreement with the Building Inspector and Town Clerk and the applicant may apply for necessary permits to begin work. Work shall only be done in accordance with the terms of the agreement unless and until new permit applications are filed and processed hereunder.

3. By deleting the word “six” from §125-3.A(9), and inserting, in place thereof, the numeral “18,” so that §125-3.A(9) will read as follows:

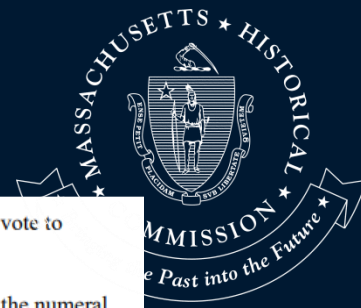
If the Commission is satisfied that there is no feasible alternative to demolition, the Commission may so advise the applicant, the Building Inspector, and the Town Clerk in writing, at any time during this 18-month period, and the Building Inspector may issue a permit to demolish the structure in accordance with all applicable codes and regulations.

And

4. By inserting a new §125-6.C, as follows:

C. Any amendment to this Chapter that extends a period of demolition delay shall apply to any demolition delay period pending at the time that the amendment takes effect pursuant to *M.G.L. c.40, §32*.

Pass any vote or take any action thereto





The Demolition Delay Process

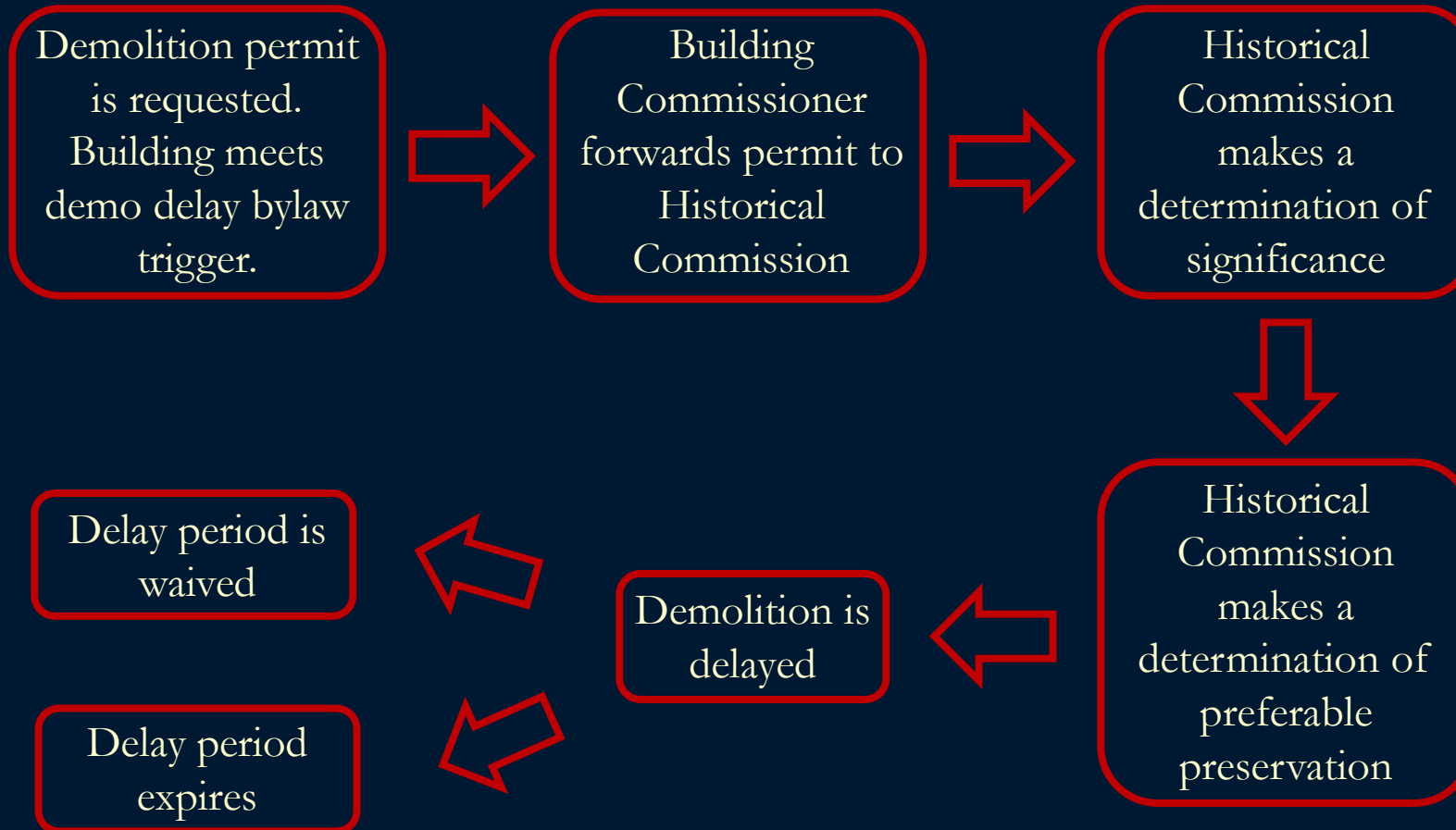
- Most common is a two-decision process – significance and preferably preserved
- Trigger or threshold for review established locally; MHC recommends 50 years
- If at any point the historical commission says “no,” the building commissioner can issue a demolition permit
 - And demolition can proceed the day after the delay expires
- Enforcement provisions in bylaw
 - \$300/day fine until violation is rectified
 - No-build order for a period of time
- Building commissioner can require emergency demolitions without review

B. Anyone who engages in Demolition in violation of this By-Law may be subject to a fine of not more than three hundred (\$300) dollars. Each day the violation exists shall constitute a separate offense until a faithful restoration of the demolished Regulated Building or Structure or architectural element is completed or unless otherwise agreed to by the Commission.

C. No building permit shall be issued with respect to any premises upon which Demolition has occurred in violation of this By-Law for a period of three (3) years after the date of such violation. As used herein, "premises" refers to the parcel of land upon which the Regulated Building or Structure (or architectural element thereof) was located and all adjoining parcels of land under common ownership or control.

Hingham's bylaw includes both a daily fine and a no-build provision

The Demolition Delay Process



A Demolition was Delayed – Now What?



Demolition delay is what the local historical commission (and the applicant) make it!

- This is their opportunity to work with the applicant to find alternatives to demolition
 - Are they willing to rework their proposal?
 - Are they willing to sell the property to a different owner?
 - Can the lot be subdivided in a way to preserve the historic structure?
- Is the building so significant that it should be protected with a local historic district?

But ultimately, demolition delay is only a delay – the house can legally be demolished the day after the delay expires



The demolition of this 1830s house in Hanover was delayed by the local historical commission in 2021. They are working with the property owners and North Bennet Street School to dismantle and reassemble the building elsewhere.

During the work, it was discovered that the house likely dates to the mid or late 18th century.

Historic Rehabilitation Tax Credits



After damage from the 2011 tornado closed the Elias Brookings School in Springfield, it sat vacant for many years. Using state and federal historic rehabilitation tax credits, it was rehabilitated into affordable housing.

Massachusetts Historic Rehabilitation Tax Credit Program



- Administered by the MHC under 830 CMR 63.38R.1
- Annual credit cap of \$55 million is regularly hit – high demand
- Still considered by the Legislature and Governor to be a Pilot Program, which will expire in 2027
- The property must be “income producing”
- The property must be listed in or eligible for listing in the National Register of Historic Places
- The rehabilitation must be “substantial”



Building 16 at the South Boston Naval Annex used state and federal historic tax credits to rehabilitate the building and continue its use as a manufacturing facility.

Massachusetts Historic Rehabilitation Tax Credit Program



- All work must meet the Secretary of the Interior's Standards for Rehabilitation
 - Demolition of contributing buildings does **not** meet the Standards
- Nine criteria in the Regulations that are used to evaluate applications
 - Affordable Housing, Preservation, Potential for Loss, Statement of Need, Geographic Distribution, Feasibility, Public Support, State of Utility, and Economic Impact
- Up to 20% of the Qualified Rehabilitation Expenditures

The Convent of the Sisters of Notre Dame de Lourdes in Holyoke was converted to housing using tax credits.



Federal Historic Tax Incentives

- Administered by the National Park Service
- No annual cap
- 20% of Qualified Rehabilitation Expenditures
- The property must be “income producing”
- The property must be listed in the National Register of Historic Places or be listed within 30 months of completion
- The rehabilitation must be “substantial”



The Arcade Building in Westborough was rehabilitated with both tax credits. Storefronts were refurbished with operable awning and the missing parapet was restored based on historic photographs.



Demolition Delay and Historic Rehabilitation Tax Credits

Thank you for coming!

For more information or additional questions:

Jennifer.Doherty@sec.state.ma.us

(617) 807-0685



WILLIAM FRANCIS GALVIN
SECRETARY OF THE COMMONWEALTH
CHAIRMAN, MASSACHUSETTS HISTORICAL COMMISSION

Massachusetts Historical Commission

Jennifer B. Doherty

Local Government Programs Coordinator

June 15, 2023



CARBON **A**VOIDED **R**ETROFIT **E**STIMATOR

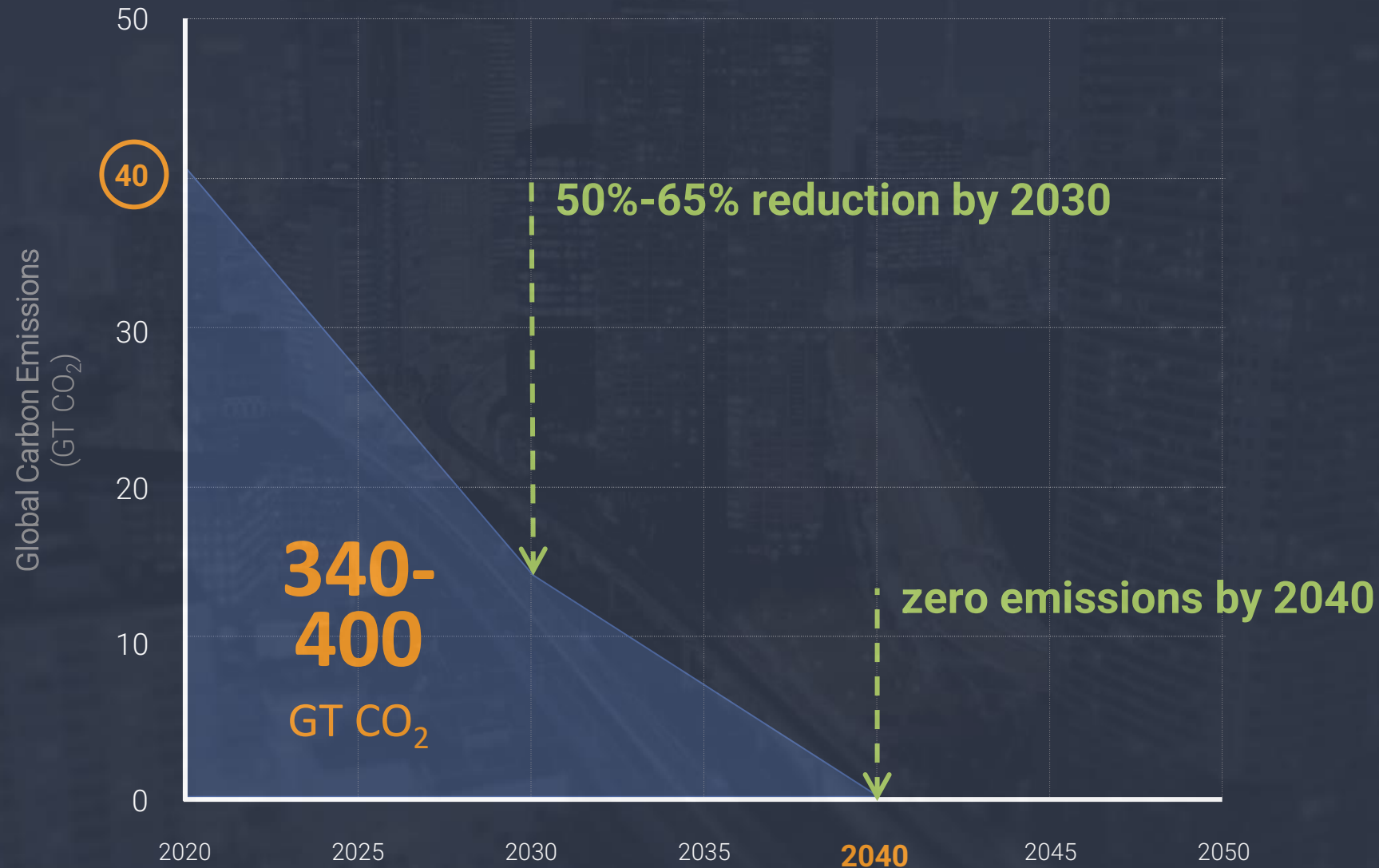
An aerial, slightly hazy photograph of a dense urban landscape, likely New York City. Numerous skyscrapers and mid-rise buildings are visible, with a multi-lane highway or elevated roadway curving through the lower portion of the frame. The overall tone is muted, with a light blue-grey overlay.

the case for **BUILDING REUSE**

GLOBAL CARBON BUDGET: 340-400 GT CO₂

BEST CHANCE OF MEETING 1.5°C

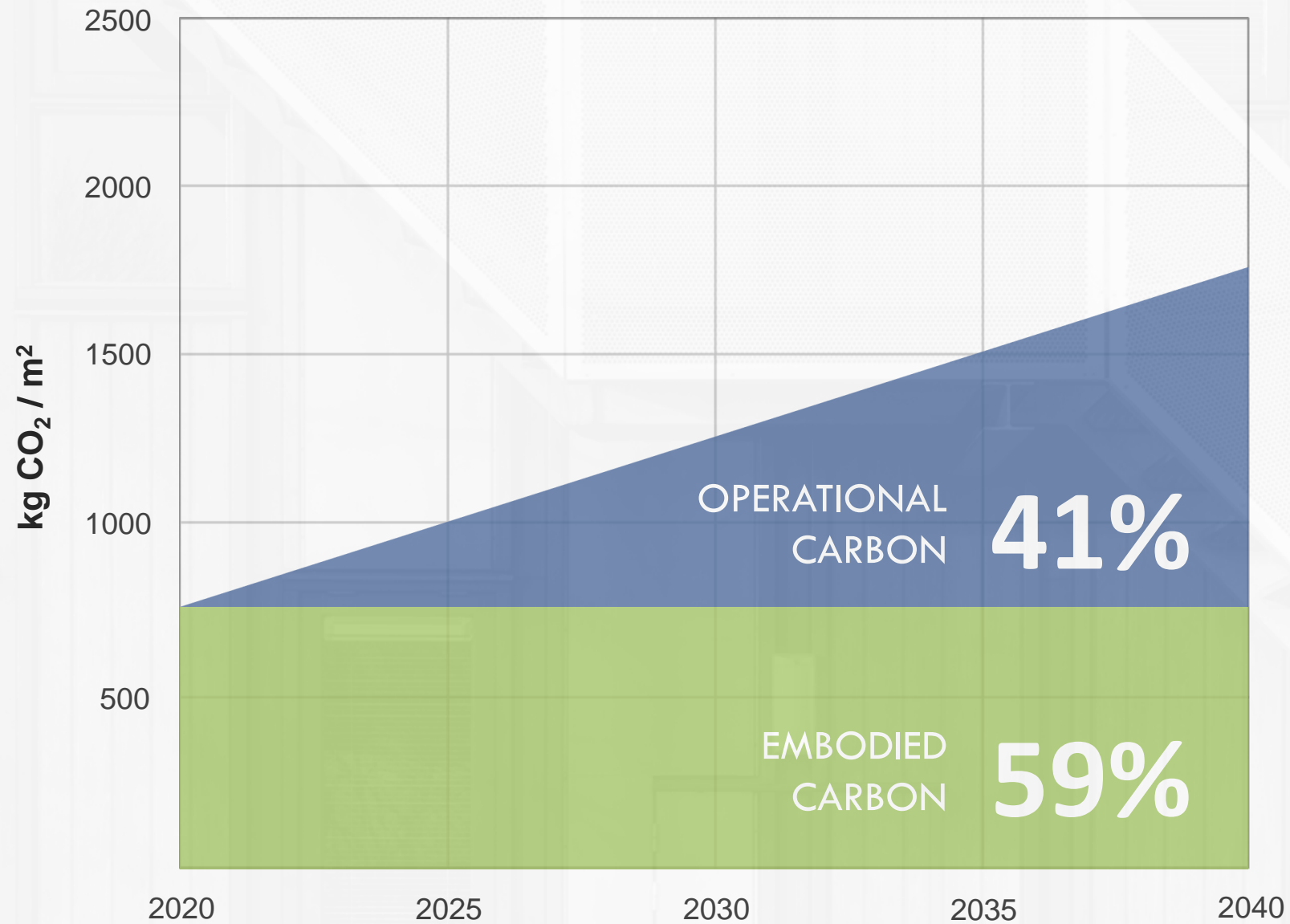
Intergovernmental Panel on Climate Change 6th Assessment Report



**The greenest building is one
that's already built.**



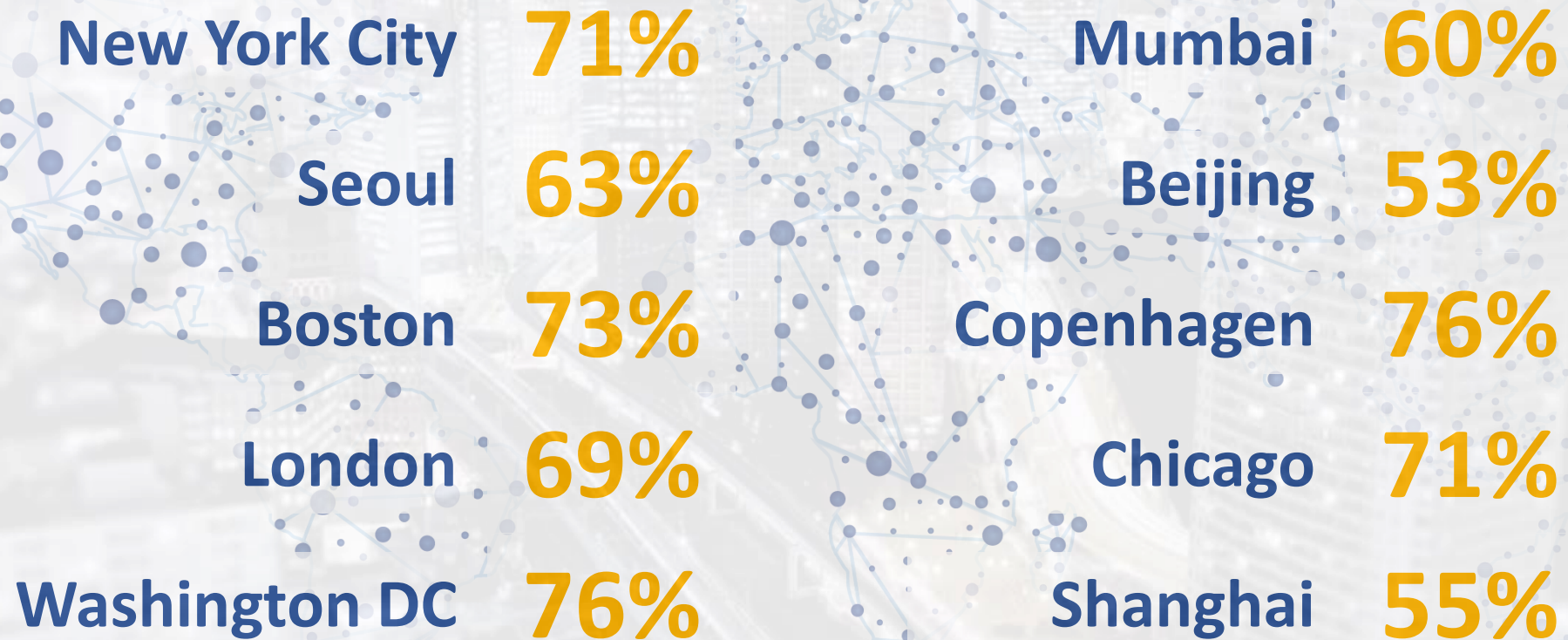
Carbon Footprint: Average New Building



Source: © 2021 Architecture 2030. All Rights Reserved.
Data Sources: Global Alliance for Buildings and Construction, 2018; IEA



Within urban environments, **existing buildings** are typically responsible for the majority of emissions.



Source: UN Habitat, Paulson Inst., city data, etc.

In 2040, **2/3 of the global building stock** will be buildings that exist today.
Without upgrades, they will still be emitting GHGs.



**The greenest building is one
that's already built.**



**The greenest building is one
that's been retrofitted.**



the **CARE** TOOL

**CARBON
AVOIDED:
RETROFIT
ESTIMATOR**

The CARE Tool Team



Larry Strain
FAIA
Founding Principal
Siegel & Strain Architects



Lori Ferriss
AIA, PE, LEED AP BD+C
Principal, Director of Sustainability
and Climate Action
Goody Clancy



Erin McDade
Assoc. AIA
Senior Program Director
Architecture 2030

caretool.org



WHO CARES ABOUT CARE?

PROJECT SUPPORTERS



National Trust for
Historic Preservation®
Save the past. Enrich the future.



THE 1772 FOUNDATION

REUSE STAR

QUINN
EVANS

BOSTON
PRESERVATION
ALLIANCE



REUSE LEADER

Eskew Dumez Ripple⁺

PROJECT COLLABORATORS



Climate Heritage
NETWORK



Carbon
Leadership
Forum

epic.

FOUNDING PROJECT DEVELOPERS

SIEGEL & STRAIN
Architects

GOODY
CLANCY



the **CARE TOOL**

**CARBON
AVOIDED:
RETROFIT
ESTIMATOR**

caretool.org

What it Does

Evaluates total carbon emissions and impact potential of existing building reuse compared to replacement new construction.

What it **Doesn't** Do

- Detailed energy modeling
- Whole Building LCA
- Allow user overrides of backend data (users can override default outputs)

Who it's For

- Public officials
- Planners
- Heritage officers
- Building owners
- Real estate developers
- Building industry professionals
- Educators

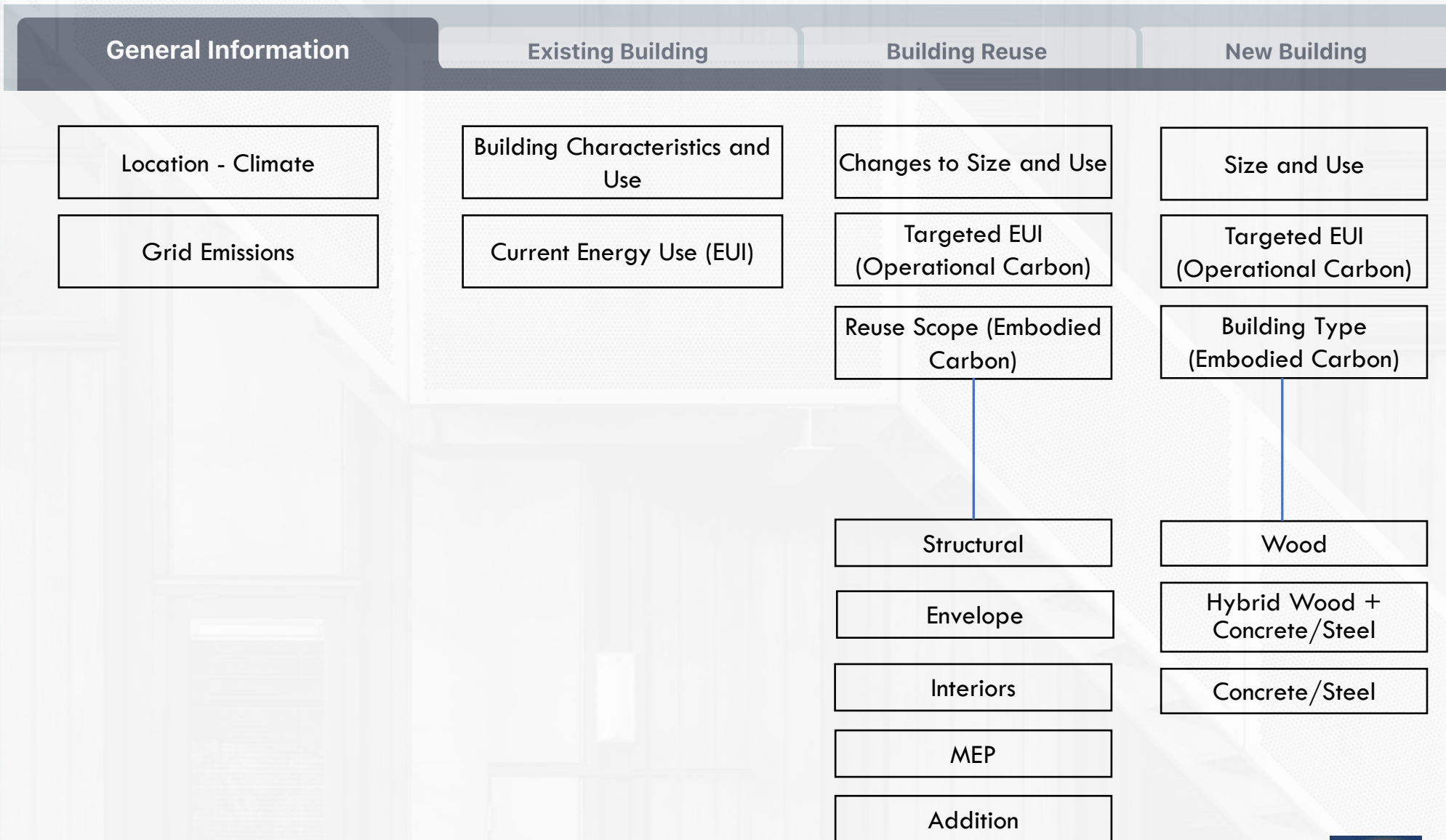


the CARE TOOL

CARBON
AVOIDED:
RETROFIT
ESTIMATOR

caretool.org

CARE Tool Taxonomy



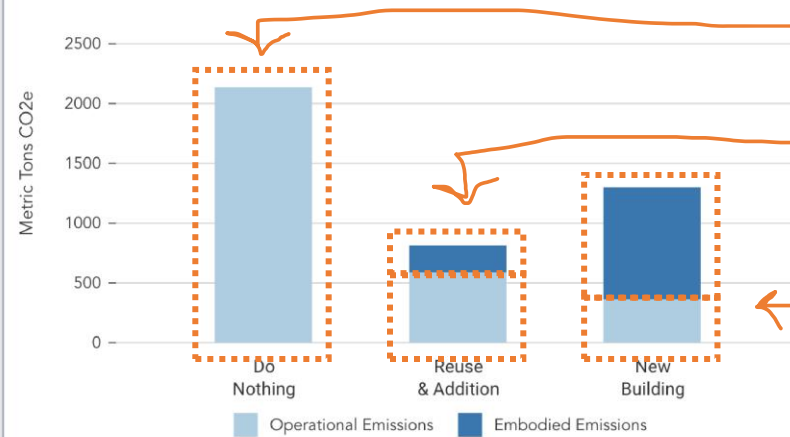
the CARE TOOL

CARBON
AVOIDED:
RETROFIT
ESTIMATOR

caretool.org

RESULTS

Total Added Embodied & Operational Emissions over 17 Years

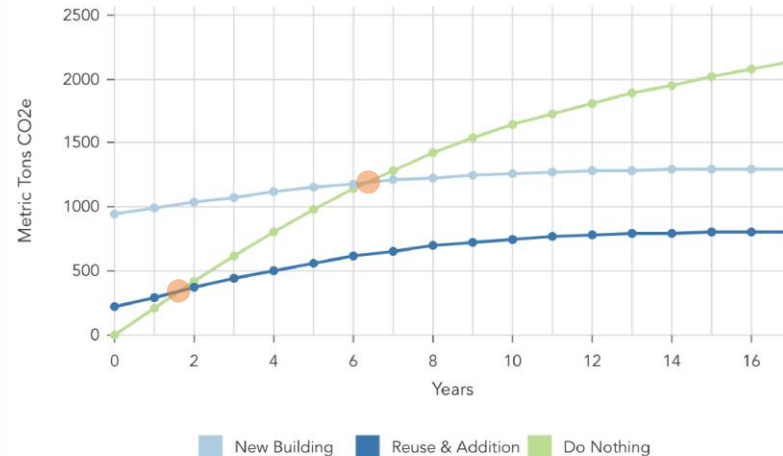


do nothing

retrofitted building:
operational emissions
embodied emissions

new building:
operational emissions
embodied emissions

Cumulative Emissions Over Time



do nothing

new building


retrofitted building



the CARE TOOL

CARBON AVOIDED: RETROFIT ESTIMATOR

caretool.org

 **CARE Tool** [CARE Tool](#) [About](#) [User Guide](#) [CARE in the News](#) [Data & Methodology](#) [Case Studies](#) [FAQ](#) [Donate](#) [User Feedback](#)

CARE Tool

CARBON AVOIDED: RETROFIT ESTIMATOR

The CARE Tool allows users to compare the total carbon impacts of renovating an existing building vs. replacing it with a new one.

“For everyone who has been interested in connecting building reuse with climate action but unsure where to start, the answer has arrived—start with CARE.”

Jack Rusk
Climate Strategist, EHDD

[LEARN MORE](#) [SUPPORT CARE TOOL](#)

[READ MORE TESTIMONIALS](#)

INSTRUCTIONS

Enter general project information in the first tab and information about the existing building in the second tab. In the third tab enter information about renovating the existing building including any planned additions, and in the fourth tab enter information about the new building to replace the existing building. Click an information [i](#) for more details.

Compare each option using the charts and table to the right. The results will automatically populate once enough information is entered and automatically update as inputs are adjusted.

PROJECT NAME

General Information

Existing Building

Building Reuse


New Building


General Information

Enter basic information about the project and analysis parameters.

PROJECT LOCATION [i](#)

Country

 ENTER PROJECT INFORMATION TO CALCULATE YOUR ESTIMATED EMISSIONS OVER TIME



ECONOMIC IMPACTS OF HISTORIC PRESERVATION



HISTORIC PRESERVATION IS ECONOMIC DEVELOPMENT

**MEASURABLE IN JOBS, LABOR INCOME,
BUSINESS CREATION, HOUSING CREATION,
PROPERTY VALUE GROWTH, RETURNS TO
LOCAL GOVERNMENTS, AND MORE.**





HISTORIC TAX CREDIT IMPACT

IN STATES WITH STATE HISTORIC TAX CREDIT PROGRAMS

FOR EVERY \$1 OF TAX CREDITS PROVIDED BY THE STATE....

\$8.76 OF ADDITIONAL ECONOMIC ACTIVITY IS SPURRED IN LOUISIANA

\$10.53 OF ADDITIONAL ECONOMIC ACTIVITY IS SPURRED IN RHODE ISLAND

\$11.70 OF ADDITIONAL ECONOMIC ACTIVITY IS SPURRED IN OKLAHOMA

HISTORIC TAX CREDITS AND JOB CREATION



DIRECT



INDIRECT

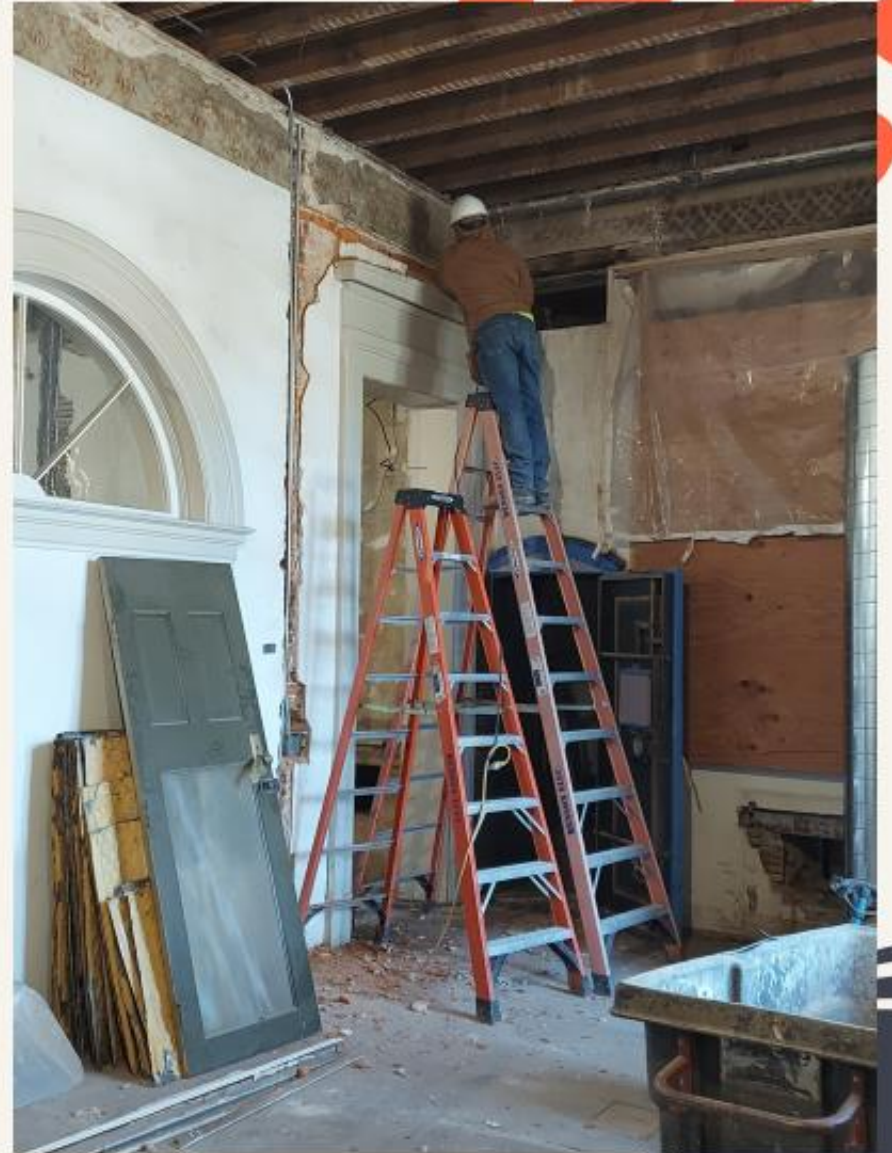


INDUCED

IN LOUISIANA, EACH YEAR

**1,725 DIRECT
JOBS**

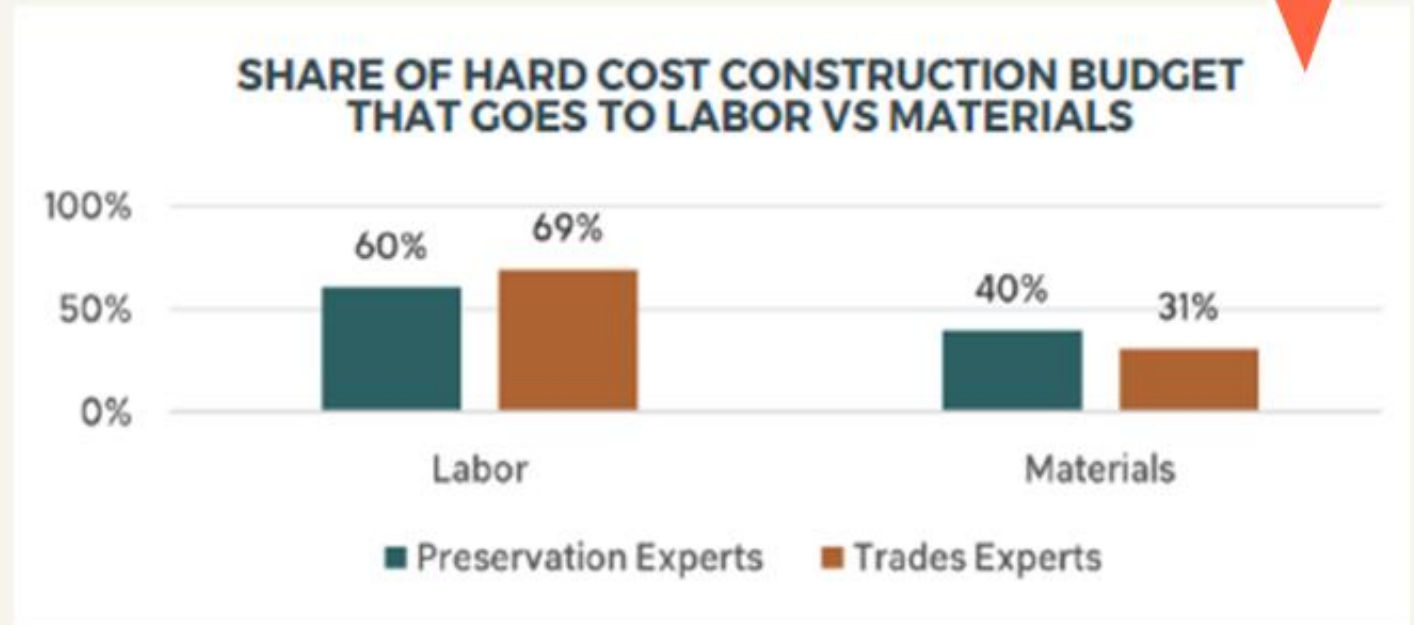
**1,429 INDIRECT
& INDUCED JOBS**



HISTORIC TAX CREDITS AND JOB CREATION

THERE IS A 9% PREMIUM
PAID TO TRADES WORKERS
WITH EXPERIENCE IN
HISTORIC PRESERVATION.

HISTORIC
REHABILITATION IS
LABOR INTENSIVE.



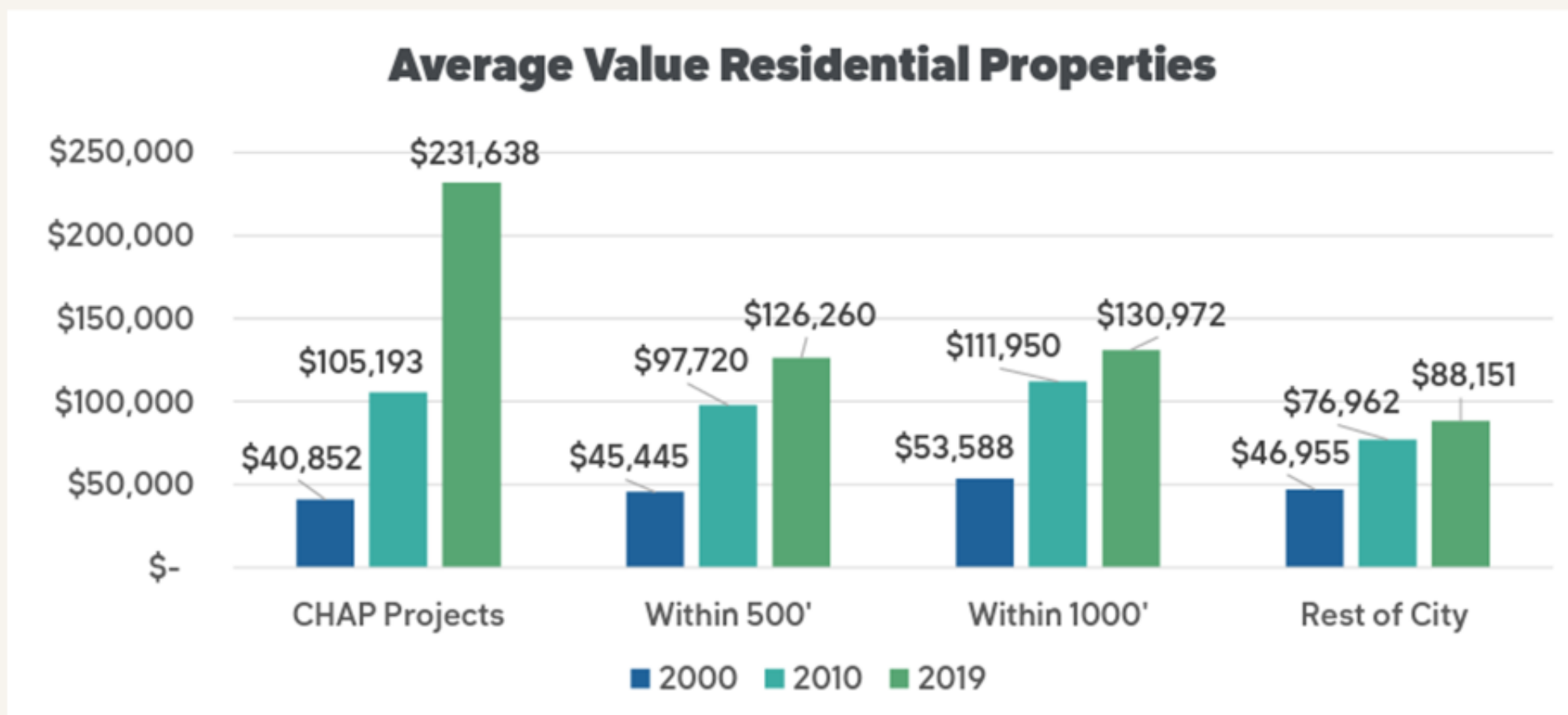
COMPARED TO OTHER INDUSTRIES IN PENNSYLVANIA

HOW DOES \$1 MILLION SPENT ON HISTORIC REHAB COMPARE WITH \$1 MILLION IN OUTPUT FROM OTHER INDUSTRIES?

	Historic Rehab	Food Processing	Drugs/ Pharm	Natural Gas Industries	Fabricated Metals
Total Jobs	12.0	5.9	5.8	7.0	5.7
Total Income	\$682,049	\$336,040	\$491,163	\$566,354	\$373,305

REHABILITATION CREATES VALUE

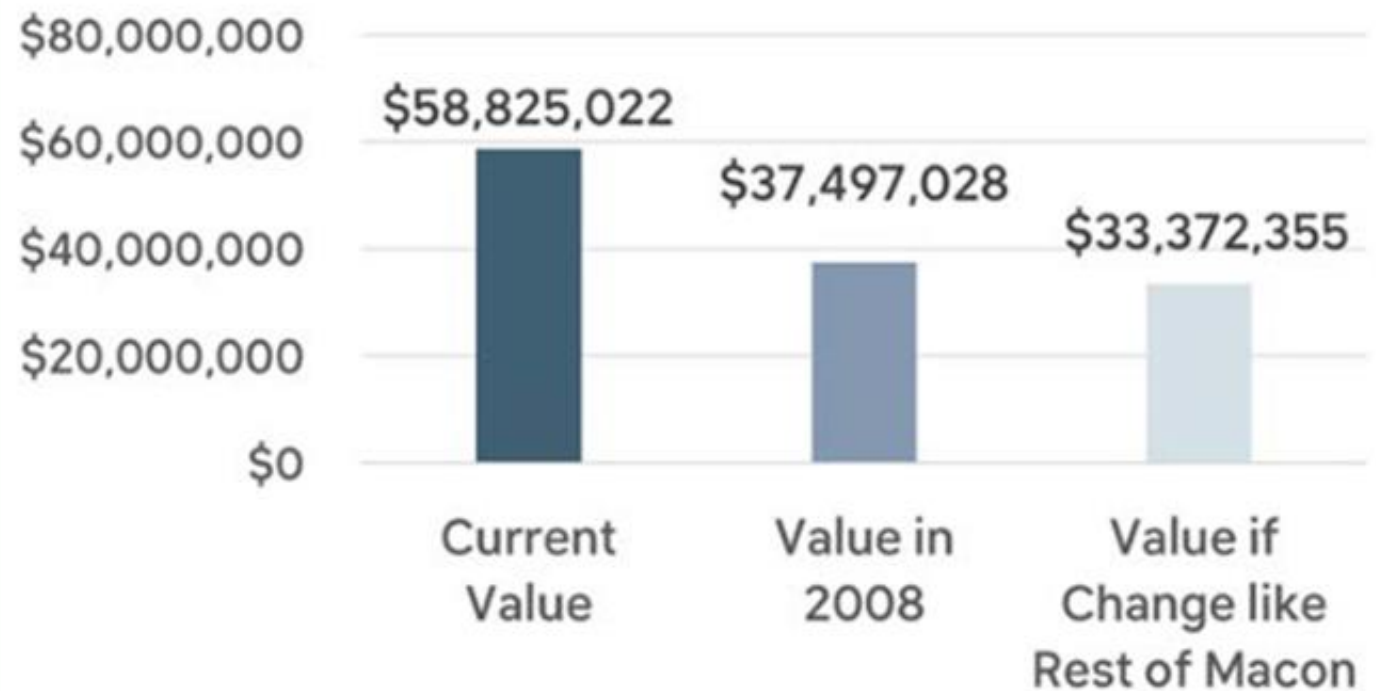
IMPACT OF A LOCAL TAX INCENTIVE (CHAP) FOR REHABILITATION IN BALTIMORE



PROPERTY TAX IMPLICATIONS IN MACON, GA

THAT DIFFERENCE IN
PROPERTY VALUES
MEANS AN **ADDITIONAL
\$271,000 IN PROPERTY
TAXES** FOR THE LOCAL
GOVERNMENT EACH YEAR.

VALUE OF RESIDENTIAL PROPERTIES IN HISTORIC DISTRICT STUDY AREA



HISTORIC TAX CREDIT LOCAL IMPACTS

IMPACT OF INCREASED PROPERTY TAX REVENUE FROM RIVER EDGE HISTORIC TAX CREDIT PROJECTS IN ILLINOIS



Hire
**ten new
teachers,**
PLUS...



Hire
**eight new
police officers,**
PLUS....



Hire an additional
**five city
maintenance
workers,**
PLUS....

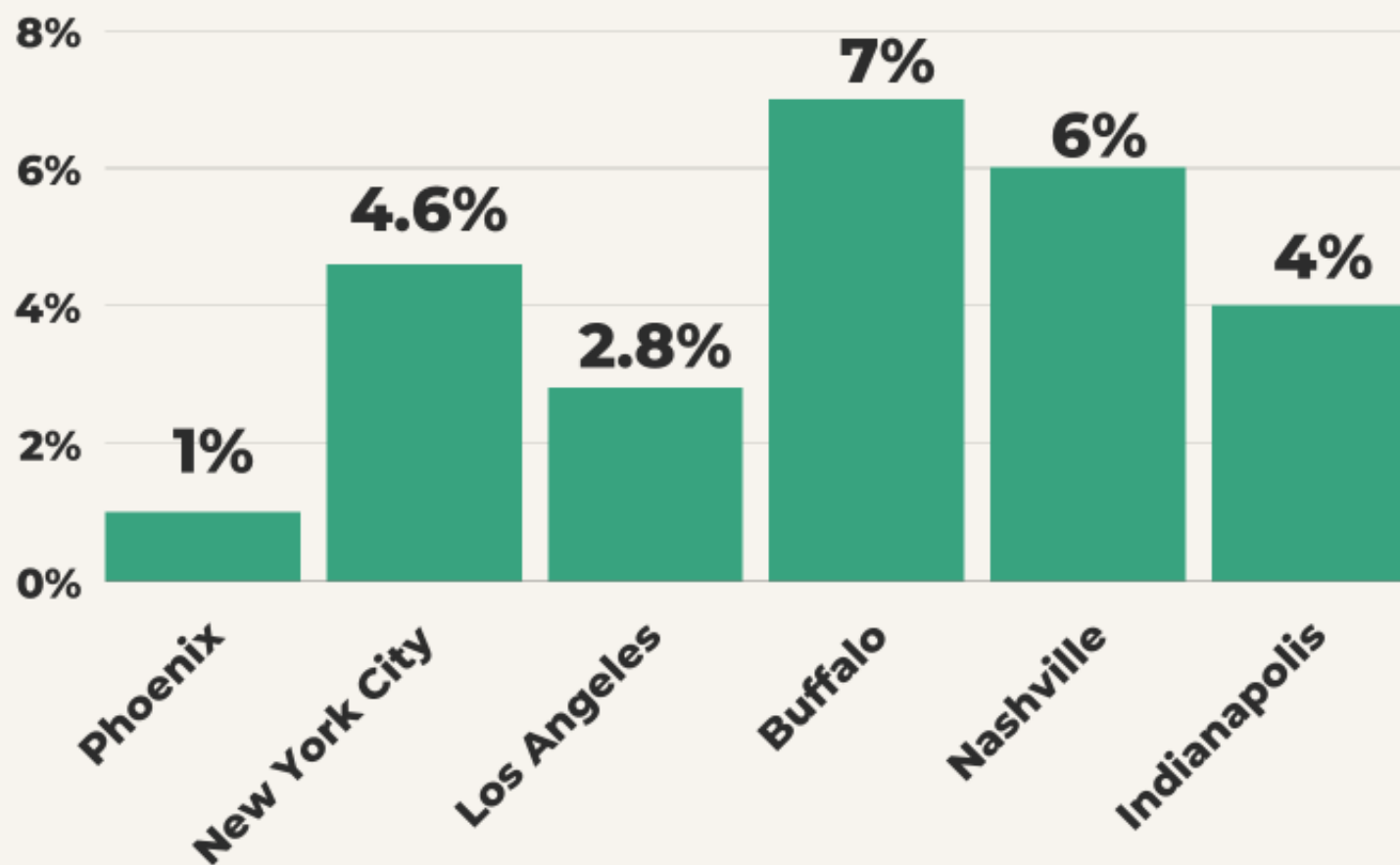


Still have enough
money to provide
**\$250 per month
rental subsidies for
163 families.**

IMPACTS OF HISTORIC DISTRICTS

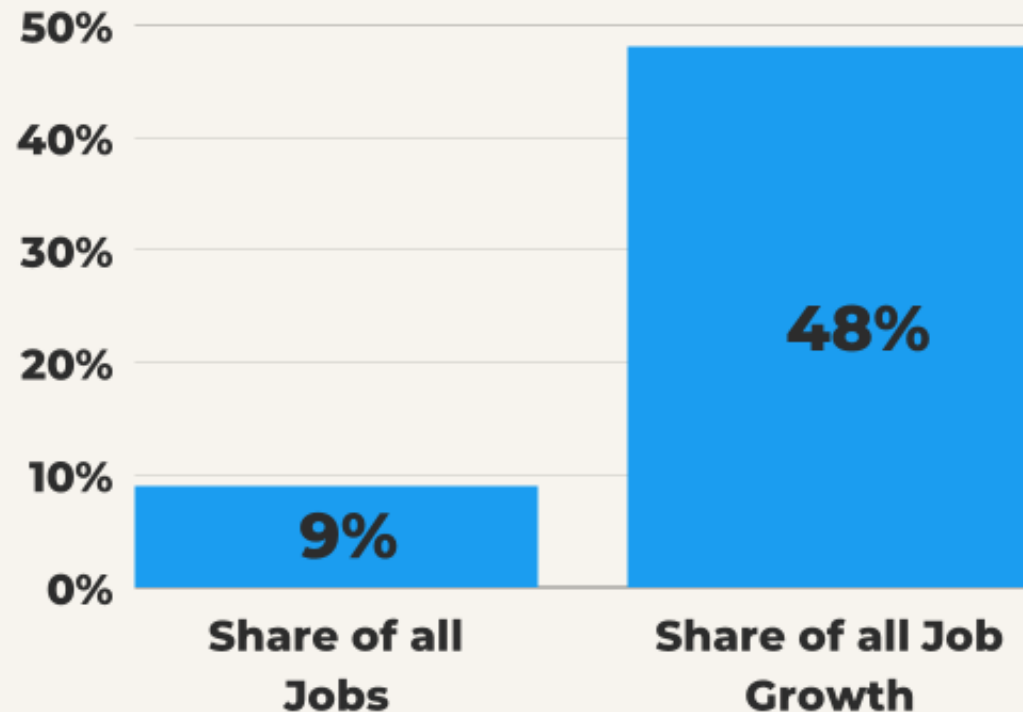
DESPITE MAKING UP SO
LITTLE OF THE LAND AREA,
HISTORIC DISTRICTS ARE
ECONOMIC AND CULTURAL
ENGINES FOR THEIR CITIES.

LAND AREA COVERED BY LOCAL HISTORIC DISTRICTS

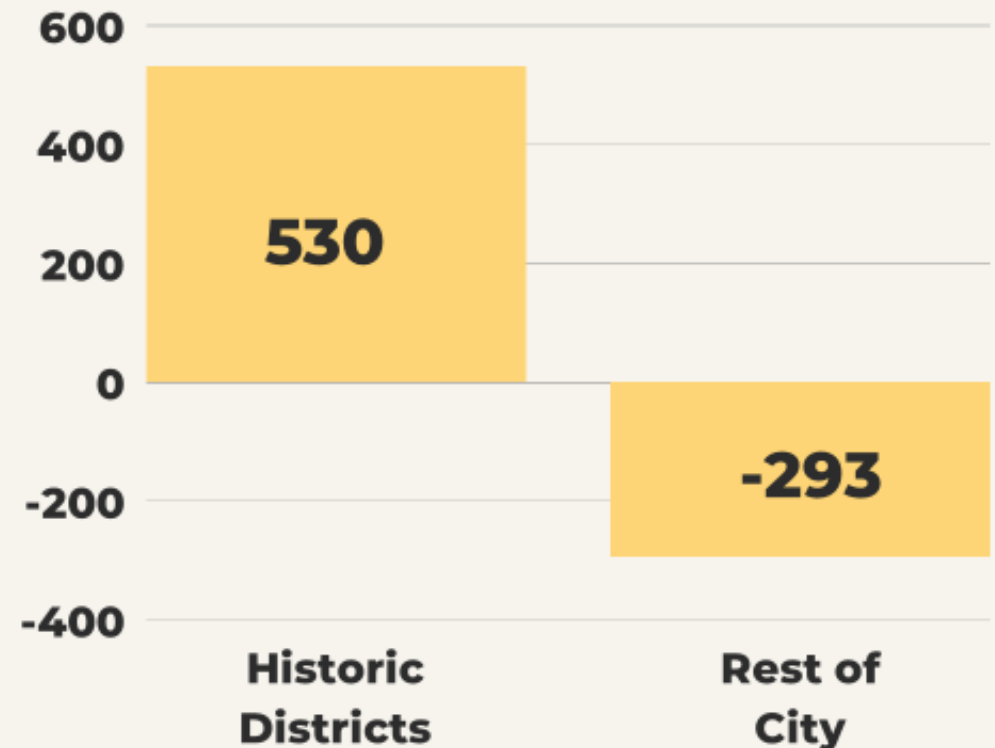


JOB GROWTH IN HISTORIC DISTRICTS

JOBS IN **BUFFALO** HISTORIC DISTRICTS (2010-2019)



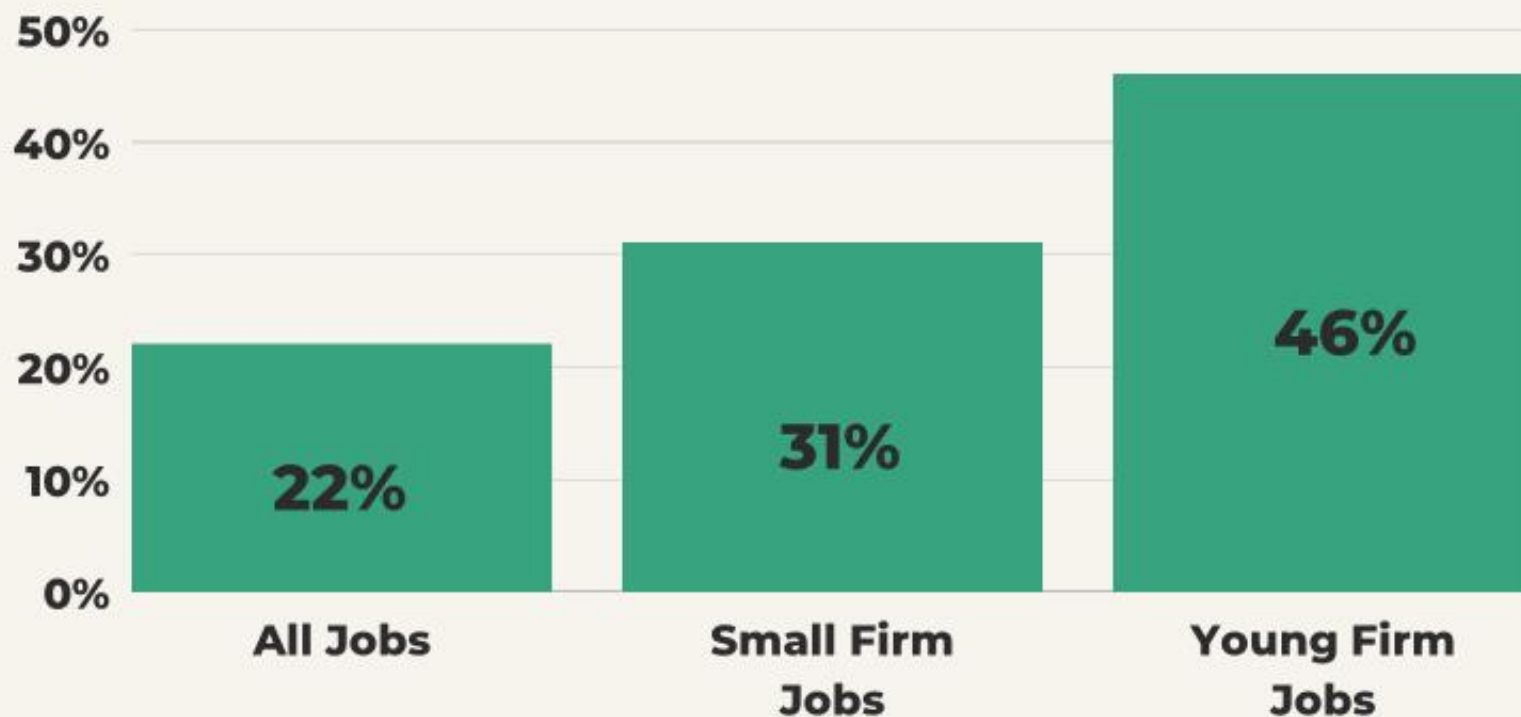
CHANGE IN JOBS, **CUMBERLAND** MD (2002-2017)





SMALL BUSINESS JOBS

SHARE OF JOBS IN SARATOGA SPRINGS, NY
HISTORIC DISTRICTS



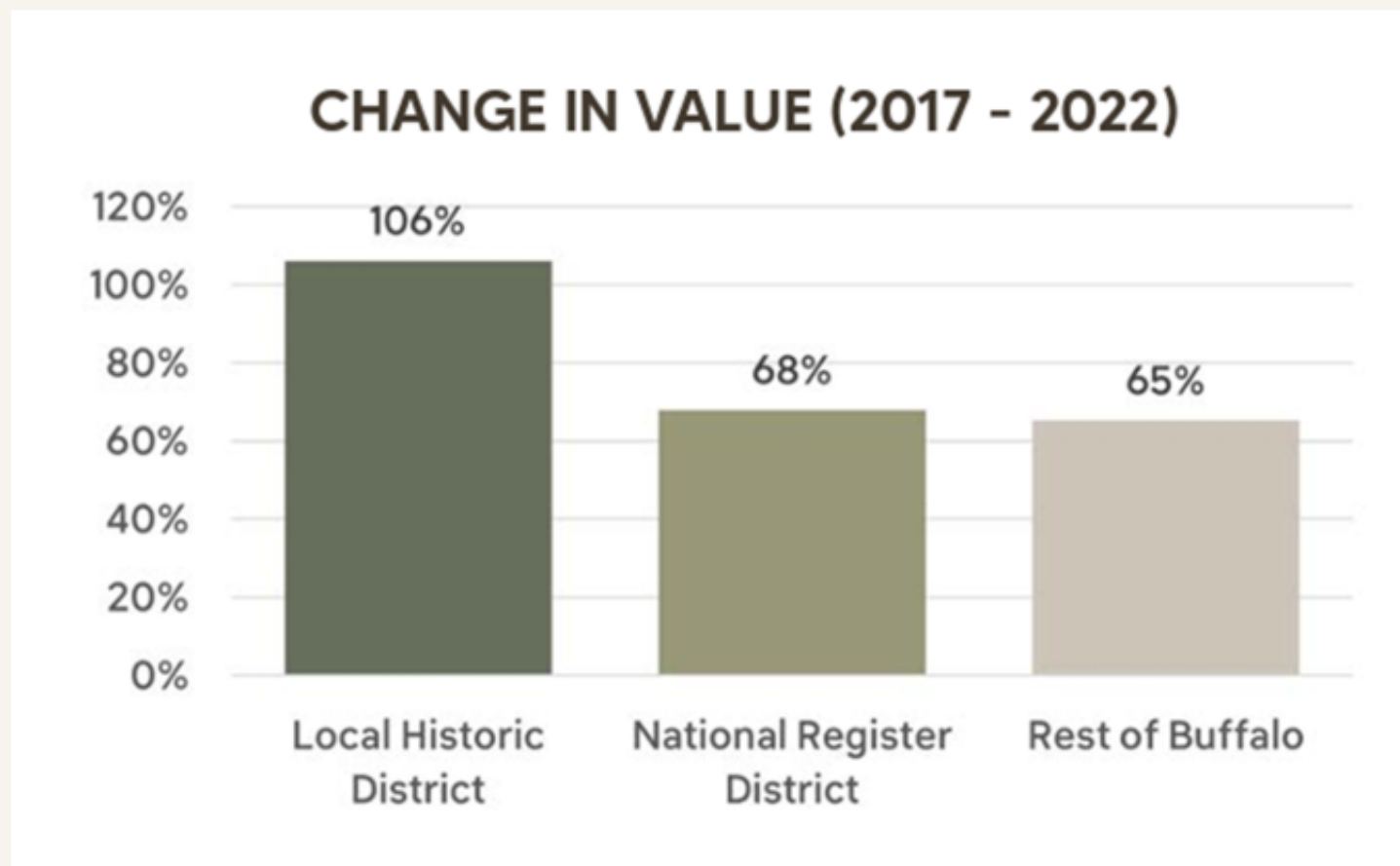
PROPERTY VALUE GROWTH IN HISTORIC DISTRICTS PHOENIX

AVERAGE VALUE PER SQUARE FOOT

Homes in Local Historic Districts vs Rest of Phoenix



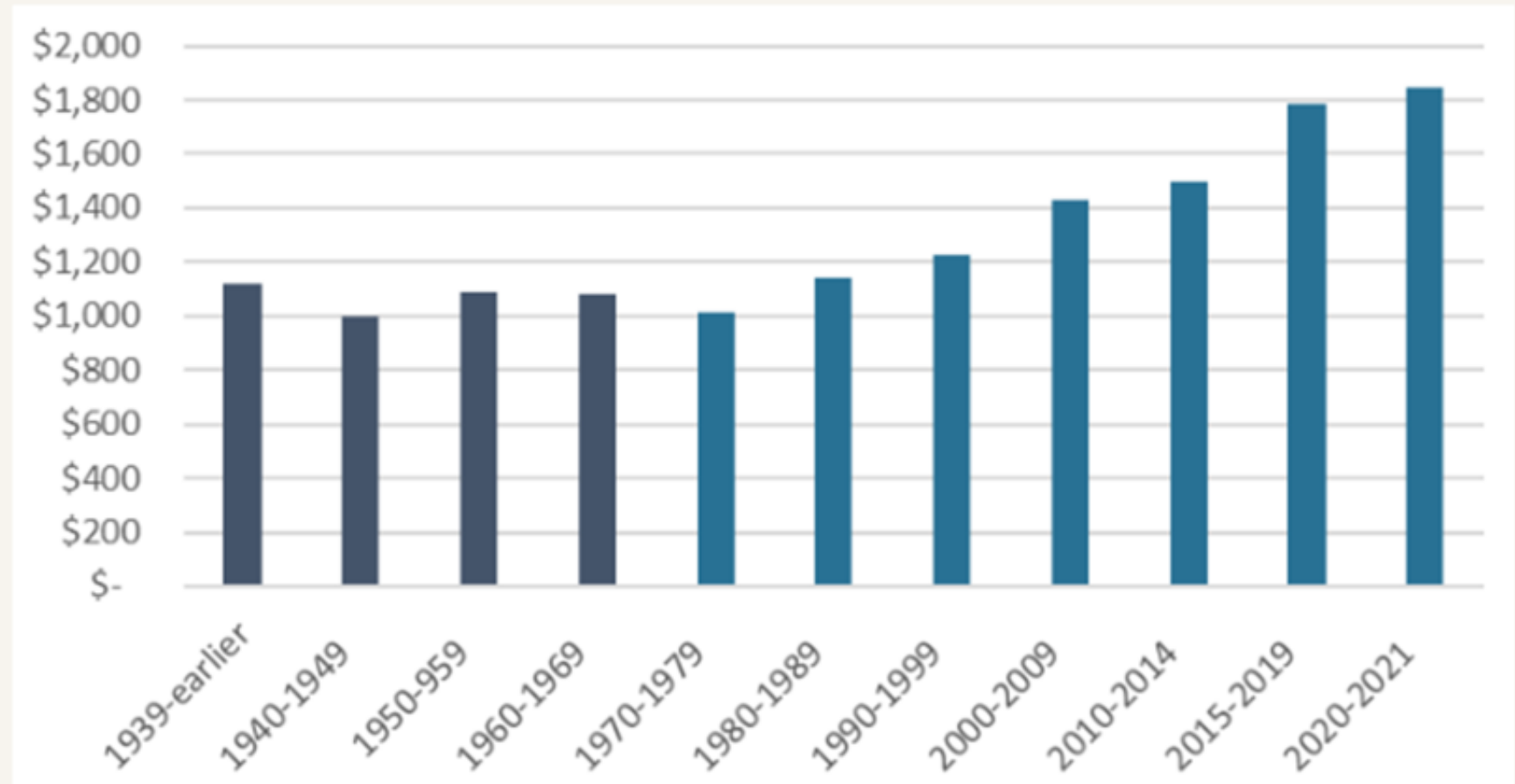
PROPERTY VALUE GROWTH IN HISTORIC DISTRICTS BUFFALO



OLDER HOUSING AND AFFORDABILITY

NATIONWIDE MONTHLY MEDIAN HOUSING COSTS BY YEAR OF CONSTRUCTION (2021)

RESEARCHERS FOUND IT IS CHEAPER TO PRODUCE A LIHTC UNIT THROUGH ACQUISITION/REHAB THAN THROUGH NEW CONSTRUCTION





TREASURE IN THE WALLS

TREASURE IN THE WALLS

FINDINGS FROM THE SAN ANTONIO DECONSTRUCTION ANALYSIS

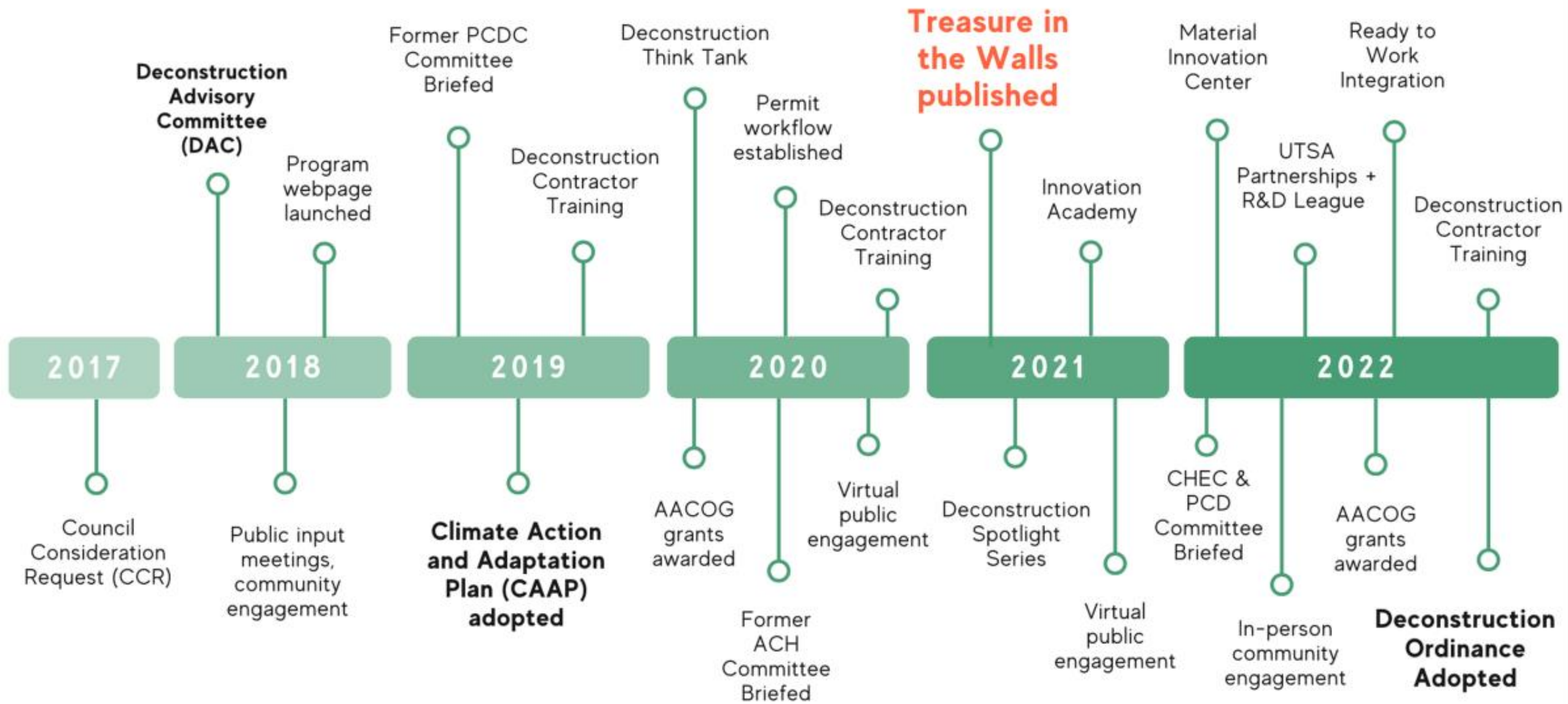
Reclaiming Value Through Material Reuse in San Antonio

Prepared for the City of San Antonio Office of Historic Preservation

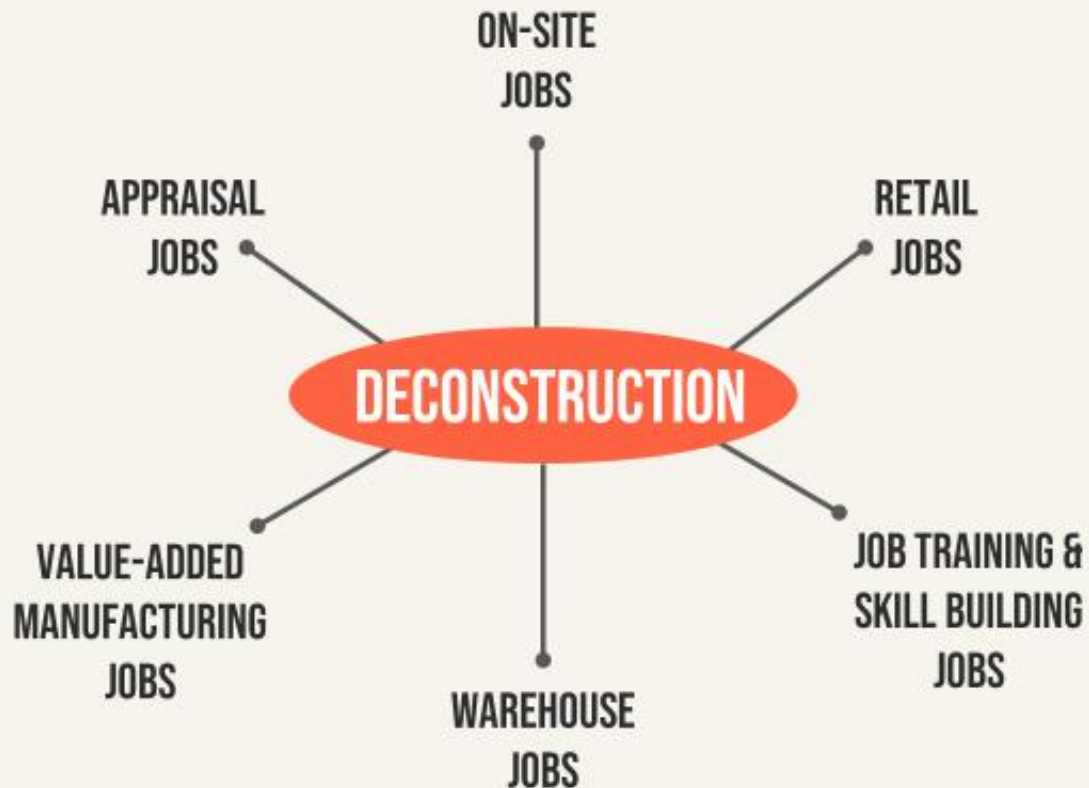
Completed by PlaceEconomics | February 2021

This study was funded through a solid waste management grant provided by the Texas Commission on Environmental Quality (TCEQ) through the Alamo Area Council of Governments (AACOG). This funding does not necessarily indicate endorsement of the study findings and recommendations.

Deconstruction Initiative Timeline



DECONSTRUCTION: A JOBS MULTIPLIER



Waste Stream Process	Jobs Per 10,000 Tons of Waste
Landfilling/Incineration (Linear)	1–6 jobs
Recycling (Partial Circular)	36 jobs
Reuse/Refurbishment (Circular)	300 jobs

Source: US EPA and the Institute for Local Self Reliance

DECONSTRUCTION: AN INCOME MULTIPLIER

COST TO DEMOLISH OR DECONSTRUCT A 1,500 SQFT HOUSE:

- **DEMOLITION – \$11,000**
- **DECONSTRUCTION – \$18,500**

	Demolition	Deconstruction
Direct Labor Income	\$3,322	\$12,358
Indirect & Induced Labor Income	\$3,093	\$11,507
Total Labor Income	\$6,415	\$23,865





**THANK
YOU!**



CONTACT INFO:
AFRYSTAK@PLACEECONOMICS.COM

QUESTIONS



PRESERVATION, REUSE, LOWER CARBON FOOTPRINT: NO TIME TO WASTE USED BUILDING MATERIALS

Save the Date

**Next Deconstruction Workgroup Meeting:
September 20, 2023**

[REGISTER HERE](#)

And check out our new Google site with resources shared at these Deconstruction Workgroup meetings, [at this link!](#)

Thank you to Evelyn Matsumoto for her volunteer efforts creating this site.



THANK YOU!

DECONSTRUCTION & BUILDING MATERIALS REUSE

Increase Material Supply

Create Jobs

Reduce Waste

Lower Costs

Save Energy

Preserve Value

Conserve Resources

Let's Do This...Together!

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Reduce and Reuse Working Group

<https://www.mass.gov/service-details/massdep-reduce-reuse-rr-working-group>