Historic + Sustainable:

Two sides of the same coin
Sustainability is the nexus of society, the environment and the economy.

- Society: Preserving History, Historic Tax Credits
- Environment: Recycling Buildings
- Economy:
U.S. Energy Consumption by Sector

Source: © 2013-2030, Inc. / Architecture 2030. All Rights Reserved.

U.S. Electricity Consumption by Sector

Source: © 2013-2030, Inc. / Architecture 2030. All Rights Reserved.

U.S. CO₂ Emissions by Sector

Source: © 2013-2030, Inc. / Architecture 2030. All Rights Reserved.
Square Footage of U.S. Building Stock by Type

- Residential: 256.5 billion square feet (82.0%)
- Commercial: 71.6 billion square feet (6.1%)
- Single-Family Detached: 82.0%
- Single-Family Attached: 6.1%
- Apartments in 2 - 4 unit buildings: 3.3%
- Apartments in 5 or more unit buildings: 5.7%
- Mobile Homes: 2.9%

Source: U.S. Energy Information Administration
• **EMBODIED ENERGY** is required to produce a building.
  It includes the up-front energy investment for extraction of natural resources, manufacturing, transportation, and installation of materials, referred to as initial embodied energy. Recurring embodied energy is needed over time to maintain, repair, or replace materials, components or systems during the life of a building.

• **OPERATING ENERGY** is needed to operate a building
  and includes the energy required to heat, cool, and provide electrical services to a building over its life span.
Life Cycle Analysis

**Extraction** of raw materials for production of both new and replacement materials.

**Transformation** and refinement of raw materials.

**Manufacture** of products and distribution to suppliers.

**Transportation** of products to building site.

**Use** of building including construction-related activities and operating energy of the building over its lifespan.

**End of Life** disposal of materials, including transportations, to landfill, recycling or incineration.
Avoided Impacts of construction

It takes 10 to 80 years for a new building that is 30 percent more efficient than an average-performing existing building to overcome, through efficient operations, the negative climate change impacts related to the construction process.
Current U.S. Building Stock

Source: ©2012 2030 Inc. / Architecture 2030. All Rights Reserved.
Data Source: U.S. Energy Information Administration.
Preservation’s Sliding Scale

Current Year – 50 Years = Eligible to be listed on National Register of Historic Places
Preserving the Recent Past

New York State Pavilion (1964-65)

Theme Building - Pereira + Luckman | LA, CA (1961)

Miami Marine Stadium – Candela | Miami, FL (1963)

DC Library - Mies (1972)

Montgomery County

Maryland

Prince Georges County

Baltimore City
Adapting the conversation…

**These**

Before

After

**None of these**

A

B

C

D

E

F

G

4
Adapting the conversation...
Adapting the conversation...
Energy Upgrades in historic buildings

- Mechanical Systems
- Plumbing Systems
- Improving Building Insulation
- Renewable Energy Systems
- Improving Window Insulation
- Operations – reduce internal loads

SHEARING LAYERS OF CHANGE. Because of the different rates of change of its components, a building is always tearing itself apart.
Insulation Options
Window options

Annual Percent Energy Savings For Various Window Upgrade Options

Old Growth windows vs. Replacement windows

Restored Wood Window with Interior Storm Window

[Images of window options and energy savings chart]
Weatherstripping Doors

Types of weatherstripping:
- Closed-cell foam
- Ribbed
- Tubular
- Spring vinyl
- Spring metal
- Magnetic strip
- Door sweep
- Full threshold
- Spring loaded
McCormick Goodhart Mansion
(aka Langley Park)

Constructed in 1924
Listed on the NR in 1975
LEEDv2.2 Certified Gold
18.3% Improvement over ASHRAE 90.1-2004

In the Year of 1924:

- US President is Calvin Coolidge
- Greece proclaims itself a republic
- Metro Goldwyn Mayer (MGM) founded in LA
- J. Edgar Hoover appointed head of FBI
Geothermal Well Drilling

Geothermal System
Addition with Living Roof & Sustainable Materials

Dual Flush Toilet
Sustainability > Preservation
Sustainability → Preservation

Sustainability < Preservation
Sustainability > Preservation
Sustainability < Preservation

Potential Conflicts
Preservation & Sustainability

“Historic preservation is an important way for us to transmit our understanding of the past to future generations.”

“We don’t inherit the earth from our parents but we borrow it from our children.”

are about our future
Historic Rehabilitation Tax Credits

Megan Klem, Preservation Officer
Office of Preservation Services
Maryland Heritage Structure Rehabilitation Tax Credit
July 12, 2017
The Maryland Heritage Structure Rehabilitation Tax Credit

What it is:
A 20% refundable state income tax credit on eligible rehabilitation expenses on certified historic structures

Three project types:

- Competitive Commercial
- Small Commercial
- Homeowner
The Federal Historic Preservation Tax Credit

What it is:
A 20% federal income tax credit on eligible rehabilitation expenses of commercial properties that are listed in the National Register.

- Administered by the National Park Service and reviewed in coordination with the Maryland Historical Trust
- Can be used in conjunction with state commercial tax credits
- Applications accepted on a rolling basis year round
Application Process

**Part 1**
- Certifies that the property is historic
- Valid for 5 years
- No fee

**Part 2**
- Certifies that the proposed project meets the *Standards* for Rehabilitation
- $10 review fee

**Part 3**
- Certifies that the project was completed in accordance with the Part 2 approval
- Certifies eligible expenses
- Review fee is 3% of estimated or actual credit, whichever is greater

*Submission to the Trust is highly recommended before submitting to any other review board / commission*
Secretary of the Interior’s Standards

Three Main Principles:

- Distinctive features that characterize a property must be preserved. *(Standard #2 and #5)*

- When deteriorated beyond repair or missing, features must be replaced to match. *(Standard #6)*

- New construction and additions must be compatible with, but differentiated from the historic architecture. *(Standard #10)*
Most historic buildings are constructed with materials that are of superior quality to modern building materials.

Always try to repair damaged elements rather than replace them.

If an element is truly beyond repair, it may be replaced in kind.

Alternative synthetic materials like vinyl, aluminum, composites, etc. are typically not appropriate.
Standard No. 6
Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities, and where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
Replacement Considerations

**Process:**

- Deteriorated beyond repair / sufficient evidence
- Availability of material(s)
- Building type and construction
- Recurring system failures (design issues, material, or construction technique)
- Accessibility and maintenance
- Cumulative effect
Replacement Considerations - Materials

3-Tab Shingle

Architectural Shingle

Tuscany Glass Tile
Shasta Glass Tile
Textures Glass Tile
Smooth Glass Tile
Thank you
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REDUCING LEAD-BASED PAINT HAZARDS IN BALTIMORE'S LOCAL HISTORIC DISTRICTS

City of Baltimore Commission For Historical and Architectural Preservation
The Commission for Historical and Architectural Preservation (CHAP) was established in 1964. Today CHAP oversees 33 local historic districts, over 200 landmarks (ca. 13,000 structures), and manages a local historic preservation tax credit program. All exterior changes to properties in local historic districts must be reviewed and approved by CHAP. We also survey and designate historic properties and participate in all aspects of Planning and HCD activities.
CHAP works with a wide-range of neighborhoods, issues, and opportunities

Baltimore has many areas of vacancy and abandonment - unit block of South Fulton Avenue (Union Square Historic District).
Two blocks away, there are meticulously restored mid-19th century rowhomes overlooking Union Square.
CHAP oversees design review in Dickeyville, a mill village, and Ten Hills, an early 20th-century suburbs.
Built in ca. 1797, these structures were originally timber-frame whitewashed wattle and daub structure.
CHAP reviews many landmarks in Downtown Baltimore - Looking south on Calvert Street
CHAP uses one set of guidelines to review all of Baltimore’s historic Resources.

Table of Contents

Chapter 1: Design Guidelines for Building Exteriors ........................................ 7
  1.1 Identifying and Preserving Historic Building Fabric ............................... 7
  1.2 Masonry .................................................................................................... 8
  1.3 Wood ........................................................................................................ 13
  1.4 Metals ........................................................................................................ 15
  1.5 Alternative Materials .............................................................................. 17
  1.6 Doors ......................................................................................................... 18
  1.7 Windows .................................................................................................... 20
  1.8 Roofing and Roof Drainage Systems ....................................................... 25
  1.9 Porches, Steps, and Railings .................................................................... 30
  1.10 Paint and Color ....................................................................................... 32
  1.11 Lighting .................................................................................................... 35
  1.12 Signage and Awnings ............................................................................ 36
  1.13 Mechanical, Electrical & Plumbing ....................................................... 38
  1.14 Modern Equipment ............................................................................... 39
  1.16 Accessibility ............................................................................................ 40
  1.17 Lead-Based Paint Hazards ..................................................................... 41
  1.18 Alterations and Additions ...................................................................... 42

Chapter 2: Design Guidelines for Additional New Construction and Non Contributing Buildings ................................................................. 45
  2.1 Guiding Principles for New Design ......................................................... 45
  2.2 Site Design ................................................................................................. 46
  2.3 Scale and Form .......................................................................................... 47
  2.4 Building Features ...................................................................................... 48
  2.5 Materials and Detailing ............................................................................ 49

In August of 2014, CHAP revised its guidelines to directly address lead-based paint hazards. CHAP began this process in early 2012.
When we began our revision process, CHAP first answered the question ‘what are Lead-based paint hazards?’ We discovered they are many things...
CHAP adopted HUD’s definition of a lead-based paint hazard, “any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or lead-contaminated paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects as established by the appropriate Federal agency” (HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing [2012 Edition]).
Then we asked ‘why are lead-based paint hazards such a big deal?’ Public Health officials are continually learning more about the negative effects of lead poisoning:

Lead Paint Effects on Children
- Learning Disabilities
- Violent, Aggressive Behavior
- Language Delay
- Attention Deficit Disorder
- Hyperactivity
- Decreased Intelligence (I.Q.)
- Reduced Motor Control and Balance
- Hearing and Memory Problems

Lead Paint Effects on Adults
- 46% increased rate of early mortality
- 16% to 19% risk of cardiovascular disease
- Hypertension
- Depression
- Reproductive Problems
- Complications related to osteoporosis
- Possible link to Alzheimer's disease

From Coalition to End Childhood Lead Poisoning Lead Paint Hazards in Older Properties – The Case for Developing Greater Flexibility in Historic Preservation Properties
‘what has been the public sector’s response to address lead-based paint hazards?’

Since 1994 there has been changes in lead paint law and policy:

• Center for Disease Control has lowered the accepted lead level from 10 ug/dl to 5 ug/dl. Recent reports suggest that no lead level in the blood stream is safe.

• 2012 Reducing the Incidence of Lead Poisoning Law (HB 644) expanded the definition of an effected property to include houses built between 1950 and 1978.

• 2011 Jackson v. Dackman Company invalidated the limited liability section of the lead law. In other words, the Court of Appeals essentially removed the “law's $17,000 cap on payments to victims of lead poisoning from landlords who comply with the law (Sun 10/24/2011).”
It took CHAP several years to craft, review, and approve a page and a half of new guidelines!
In summary, the Lead-based paint guidelines address the following:

• Allow for the replacement of historic fabric because they are a lead-based paint hazard.

• *define* lead-based paint hazards into three categories of accessible, friction, or impact surfaces (based on HUD guidelines)

• All work must follow state and federal law.

• Defines special features as “features that are custom designed or crafter, or that represent a high degree of styling of detailing, or that are composed of more unusual buildings materials,”

• Allows for preservation in that “CHAP may require the use of alternative methods [to eliminate lead-based paint hazards] rather than removal.”

• Calls for a process.
These windows are of a unique design, but the originals were in terrible condition (rot at sill level and broken and cracked rails, stiles, and muntins. The applicant replicated them in wood with true divided lights.
Since we revised our guidelines to approve of replacing historic components because these features are lead-based paint hazards, we have reviewed and approved five applications.
Conclusion:

• In order to be responsible stewards of the built environment, we must acknowledge and address lead-based paint hazards.

• Creating a process allows for flexibility in being strict or lenient on design reviews.

• Always make sure the Commission supports underlying premises and assumptions prior to revising guidelines. Commisioners must understand the seriousness of lead-based paint hazards.

• If you plan on revising guidelines, be inclusive, transparent, and take your time.