The UNECE logo, consisting of a blue globe icon and the text "UNECE", is positioned at the top left of the slide. A horizontal line with a multi-colored dashed pattern runs across the top of the slide, starting from the UNECE logo and extending to the right edge.

Energy Prices and Heritage Buildings

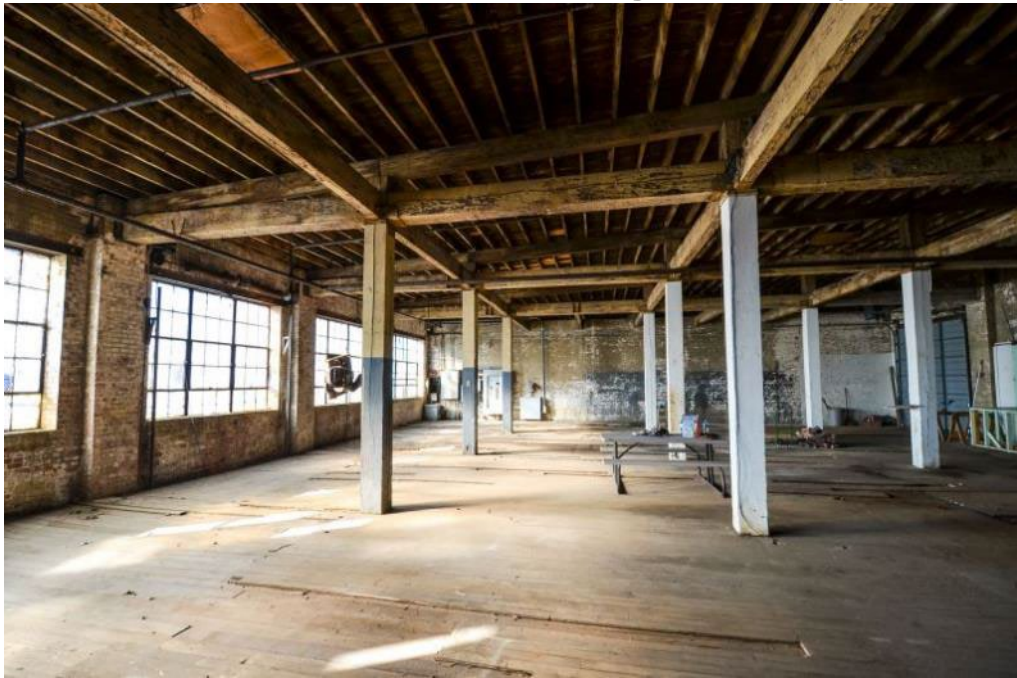
REM Side Event








October 6, 2022

Donovan Rypkema
Heritage Strategies International
Washington, DC, USA
REM Member

Rehabilitation vs New Construction

50,000 square foot warehouse –
Rehabilitate as compared to new
construction at edge of city



-  20% to 40% Reduction in Vehicle Miles Traveled (VMTs)
-  Reduction of travel related CO₂ Emissions by 92 – 123 Metric Tons
-  CO₂ saved relative to suburban construction = 18,700 to 22,000 gallons of gasoline
-  Embodied energy retained 55,000 MBTU
-  Greenfield land preserved 5.2 acres
-  Less construction debris in landfills 2500 Tons
-  Infrastructure investment saved = \$500,000 to \$800,000



Landfill Impact

The average Historic House that was Retained rather than Razed reduced the impact on the landfill by 116.6 Tons

Environmental Cost of Demolition



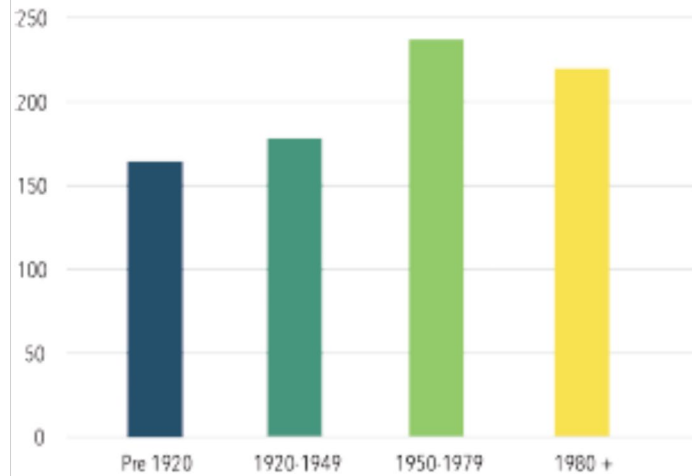
2,000 s.f. house

- 295 cy of debris (84 tons)
- Embodied energy – 900 Million BTUs = 7826 Gallons of Gasoline
- 40 Recycled Aluminum Cans = 1 Gallon of Gasoline
- Therefore 1 small demolished building = 313,000 recycled aluminum cans

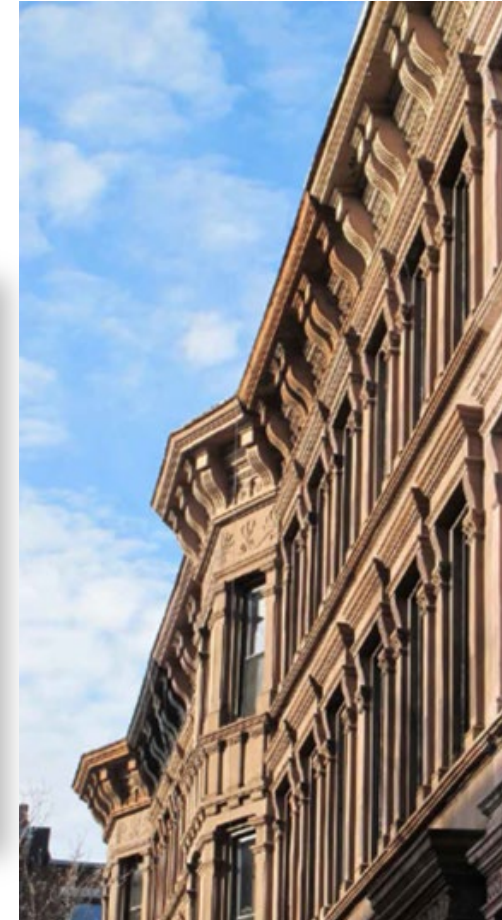
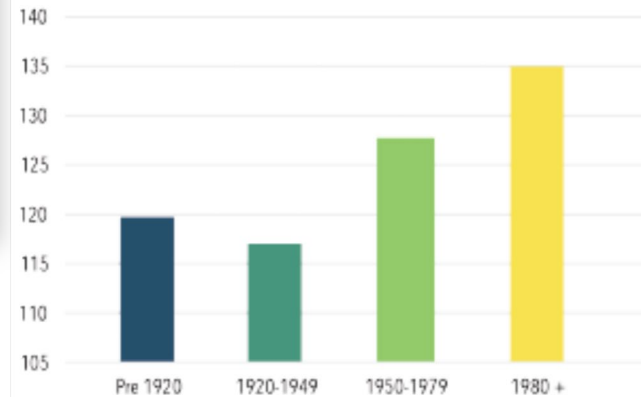
Who is using the energy?



Energy Use Intensity
Office Buildings by Year of Construction

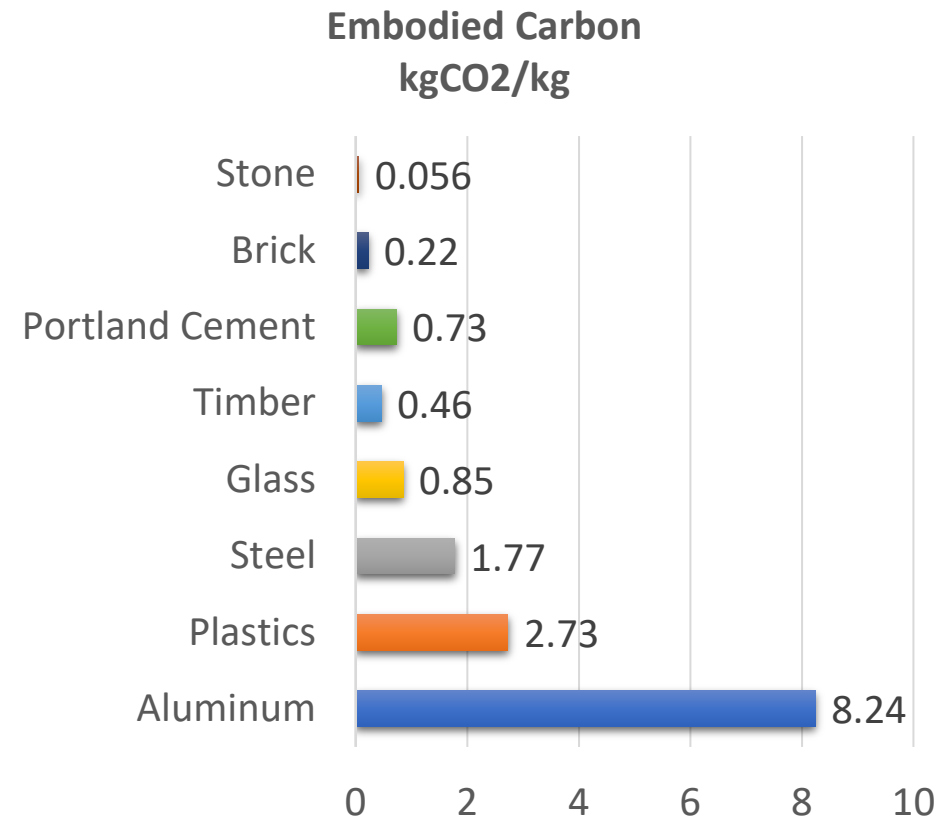
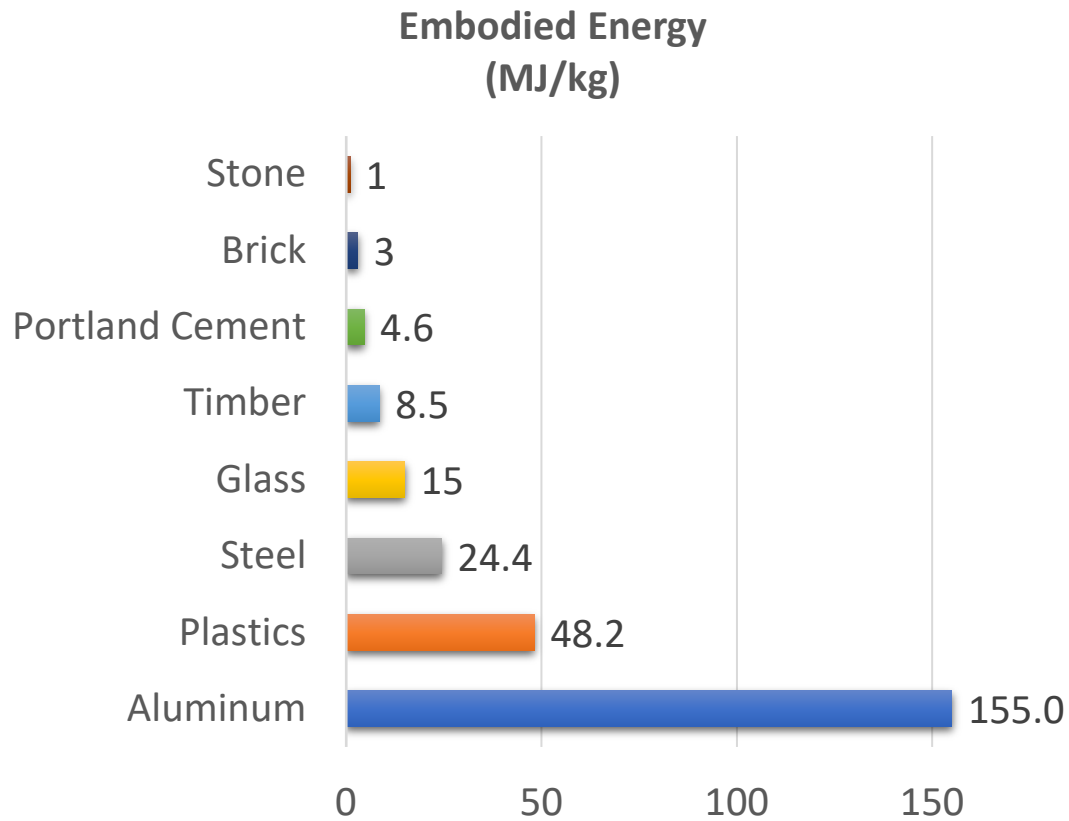


Energy Use Intensity
Multifamily Buildings by Year of Construction



A multifamily structure built since 1980 uses 13% more energy per square foot than one built before 1920

What building materials are energy hogs?



Embodied Energy

Embodied energy is the energy consumed by all of the processes associated with the production of a building, from the mining and processing of natural resources to manufacturing, transport and product delivery.

Embodied Energy =
~15 years of operational
energy use



Are Green Gizmos the Answer?



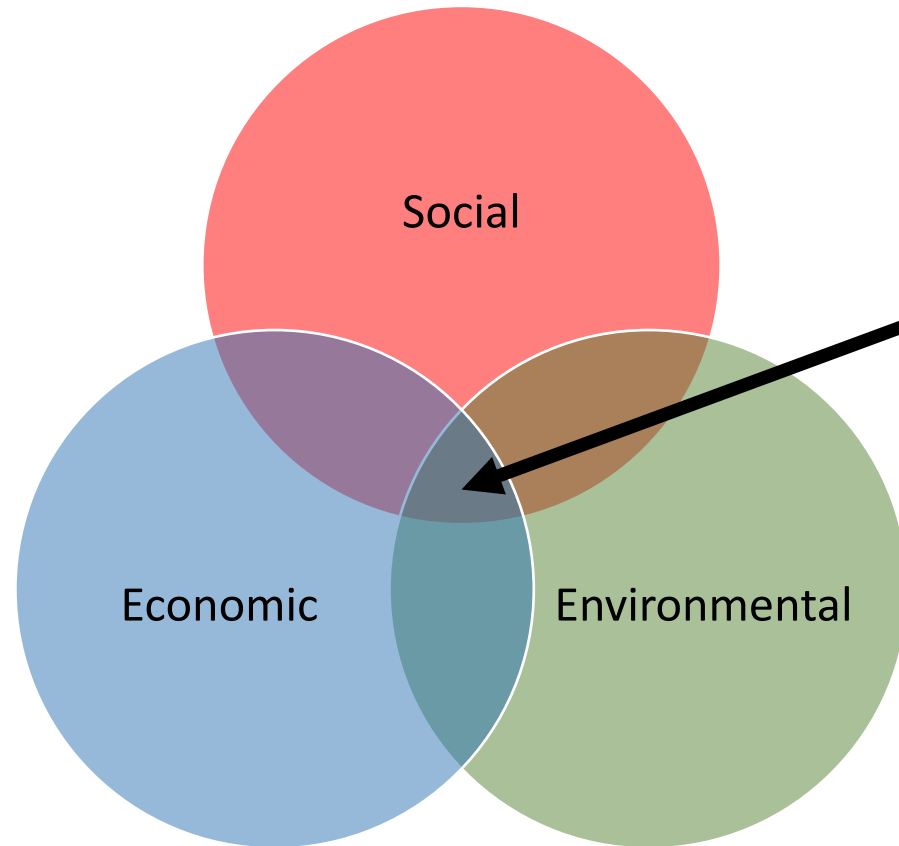
PRESERVATION GREEN LAB:

Looking for the Greenest Building?
Start with the one that already exists.

It takes 10 to 80 years of an energy efficient new building to make up for the negative climate change impacts of construction

Building reuse almost always offers environmental savings over demolition and new construction

Heritage Conservation – The Real Sustainable Development



Heritage Conservation is the one strategy that is simultaneously social, economic, and environmental responsibility