The Environmental and Climate Benefits of Historic Preservation

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Brownfields Leadership Circle

Economic and Environmental Impacts of the MD Historic Tax Credit Program

- Abell Foundation
- Northeast-Midwest Institute and Lipman Frizzell & Mitchell
- Historic Tax Credit up for Reauthorization – economic impact needed
- Broader issue of preservation, sustainability, smart growth

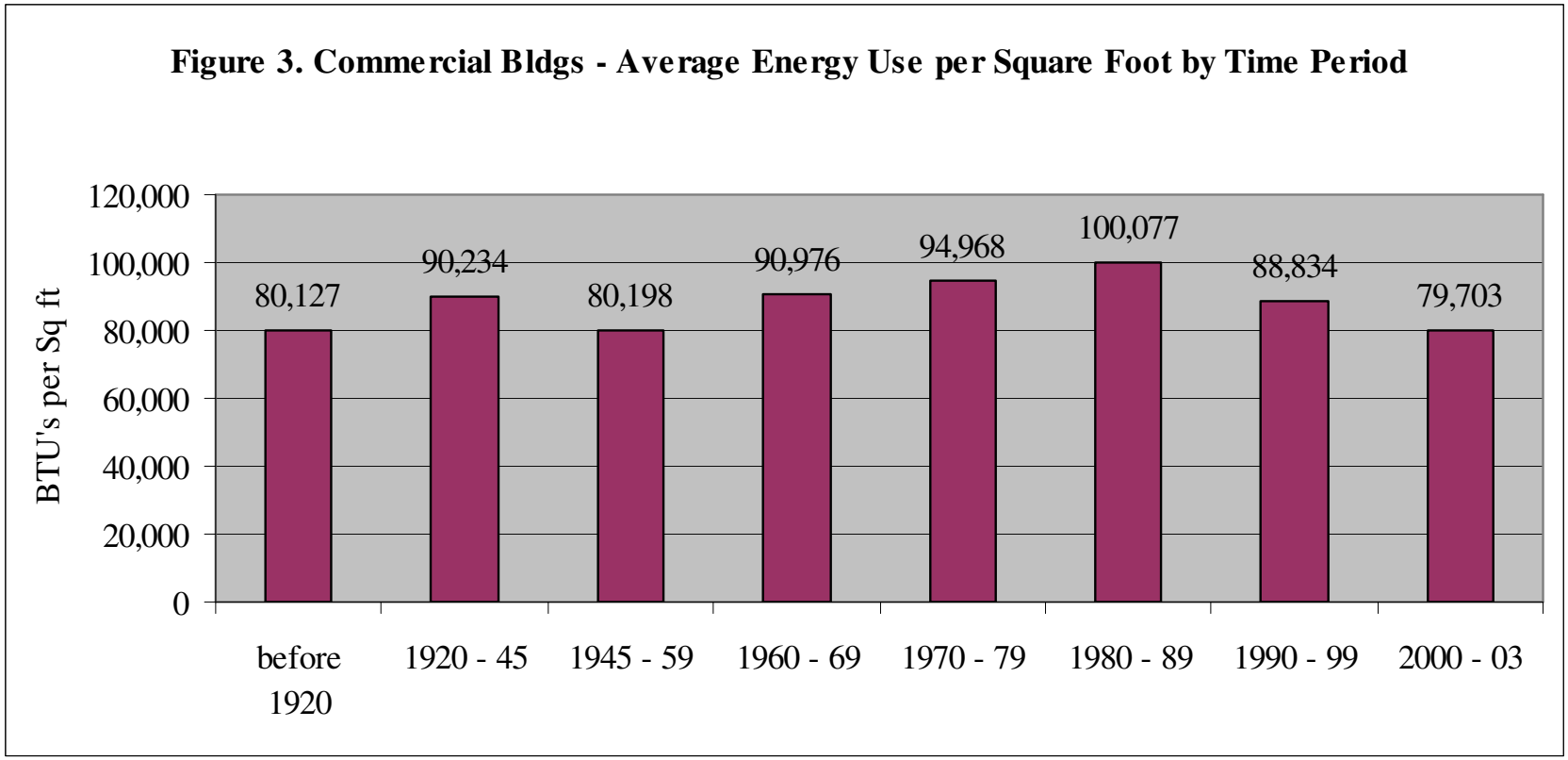
Preservation and Sustainability

- Energy efficiency within the building
- Energy-efficient locations
- Embodied energy and avoided energy losses
  - Rehab vs. New Construction
  - Energy Impacts of Avoided Demolition
  - Energy Conservation by not Building Suburban Infrastructure
- Lowering Run-Off and Improving Water Quality
- Less Waste in Landfills
- Conserving Natural Resources
- Walkable Communities and Health Benefits

Benefits of $1.0 Million Investment in Historic Tax Credits (50,000 sq ft bldg)

Benefit	Quantification
▪ Lower VMTs (30%-40% saving compared to sprawl)	198,000 – 264,000 VMTs
▪ Lower travel-related CO_2 compared to sprawl	92 – 123 metric tons CO_2
▪ If also LEED-equivalent	164 – 195 metric tons CO_2
○ This is equivalent in gallons of gasoline	18,700 – 22,000 gallons of gas
○ This is equivalent taking vehicles off the road	30 to 35 vehicles
▪ Retained "embodied" energy	55,000 MBTUs
▪ Greenfield land preserved	5.2 acres
▪ Lowered run-off	30 to 40%
▪ Less demolition debris in landfills	2,500 tons
▪ Value of natural resources conserved	$100,000
▪ Infrastructure investments "saved"	$500,000 to $800,000

Energy Efficiency in Buildings



Preservation and Energy Efficient Locations

Compact development saves 20-40% VMT, depending on:

- Residential Density
- Mixing uses
- Proximity to job centers
- Proximity to transit
- Connectivity of streets/ped-friendly

Preservation and Energy Efficient Locations

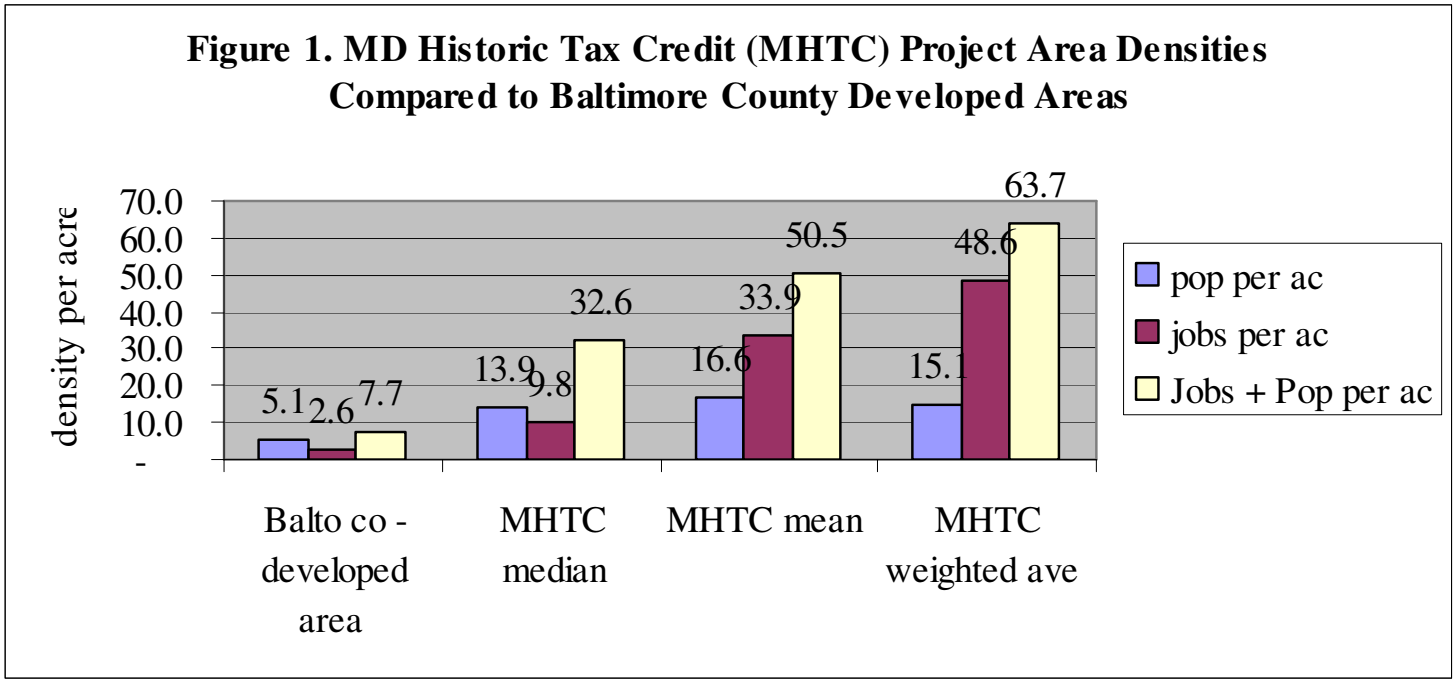
- 455 lofts,
- 120,000 sq ft office space
- 34,000 sq ft for retail and arts

EPA VMT modeling:

- 23-38 percent VMT reduction
- Parallel reductions in CO_2 and other air pollutants

Lamar on Southside - Dallas

Preservation and Energy Efficient Locations – VMT reduction model



Preservation and Energy Efficient Locations - VMT reduction model

	Tax credit project area as a multiple of Baltimore County			
	>6 X Balto Co	4 to 6 X Balto Co	2-4 X Balto Co	1.25 to 2 X Balto co
Population density	4	3	2	1
Concentration of jobs	4	3	2	1
Job + Pop combined density	4	3	2	1
Walkscore	90-100	80-89	70-79	60-69
walkscore ranking	4	3	2	1

Preservation and Energy Efficient Locations - VMT reduction model

Total Score	VMT reduction
13 to 16	more than 40 percent
8-12	20 and 40 percent
4-7	0 and 20 percent
less than 4	no effect on VMT

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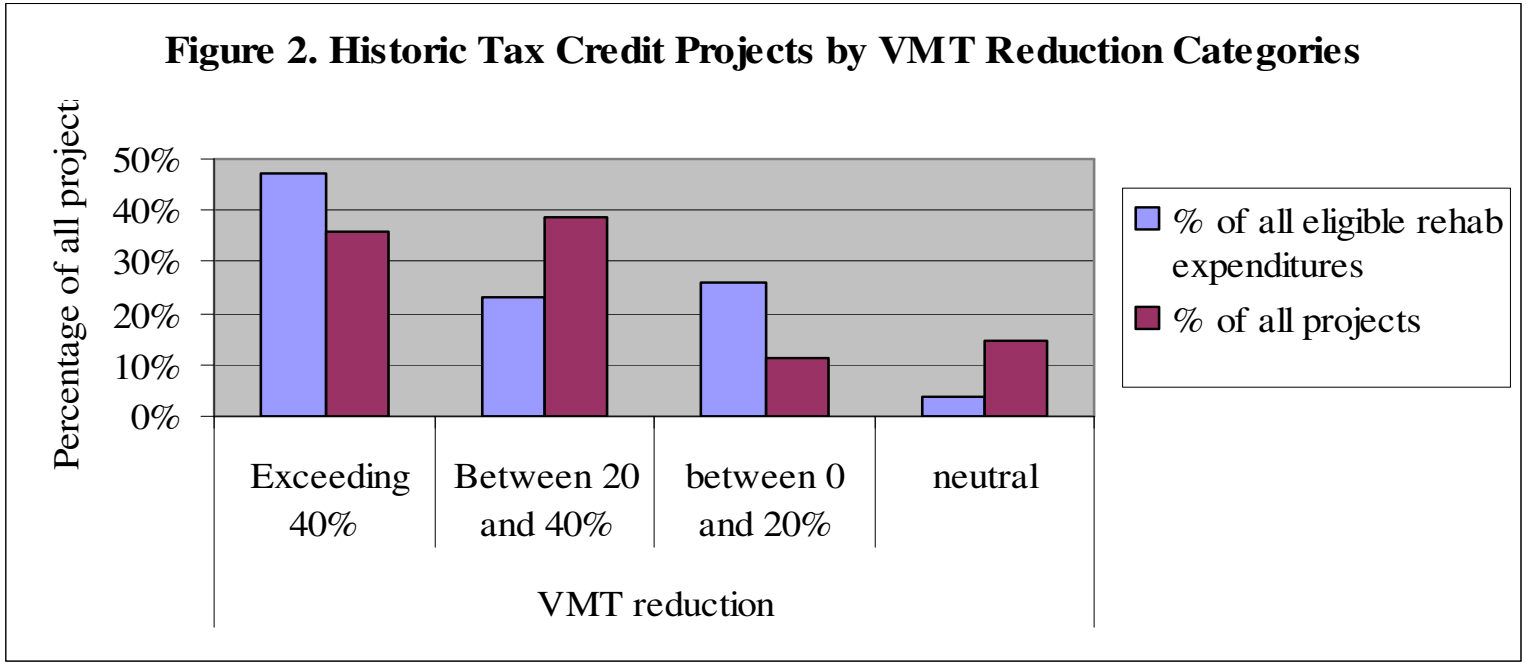
Preservation and Energy Efficient Locations



Energy-efficient Locations AND GREEN

- Brewer's Hill
- The Atrium/Hecht Co Building
- 39 West Lexington
- Oella Mills
- Standard Oil Building
- Clipper Mill
- Montgomery Park

Oella Mills

Stewarts' Building

- LEED Certification
- 37 percent used transit;
- 10 percent walked;
- 47 percent non-auto
- Walkscore 98

Other Sources of Energy Conservation

- Rehab is 20 percent more labor intensive than new construction
- Preservation requires between 50 and 80 less infrastructure
- Lowered landfilling:
  - 10.2 mil sq ft tax credit-assisted space not landfilled saves 5,000 -10,900 metric tons of CO_2.

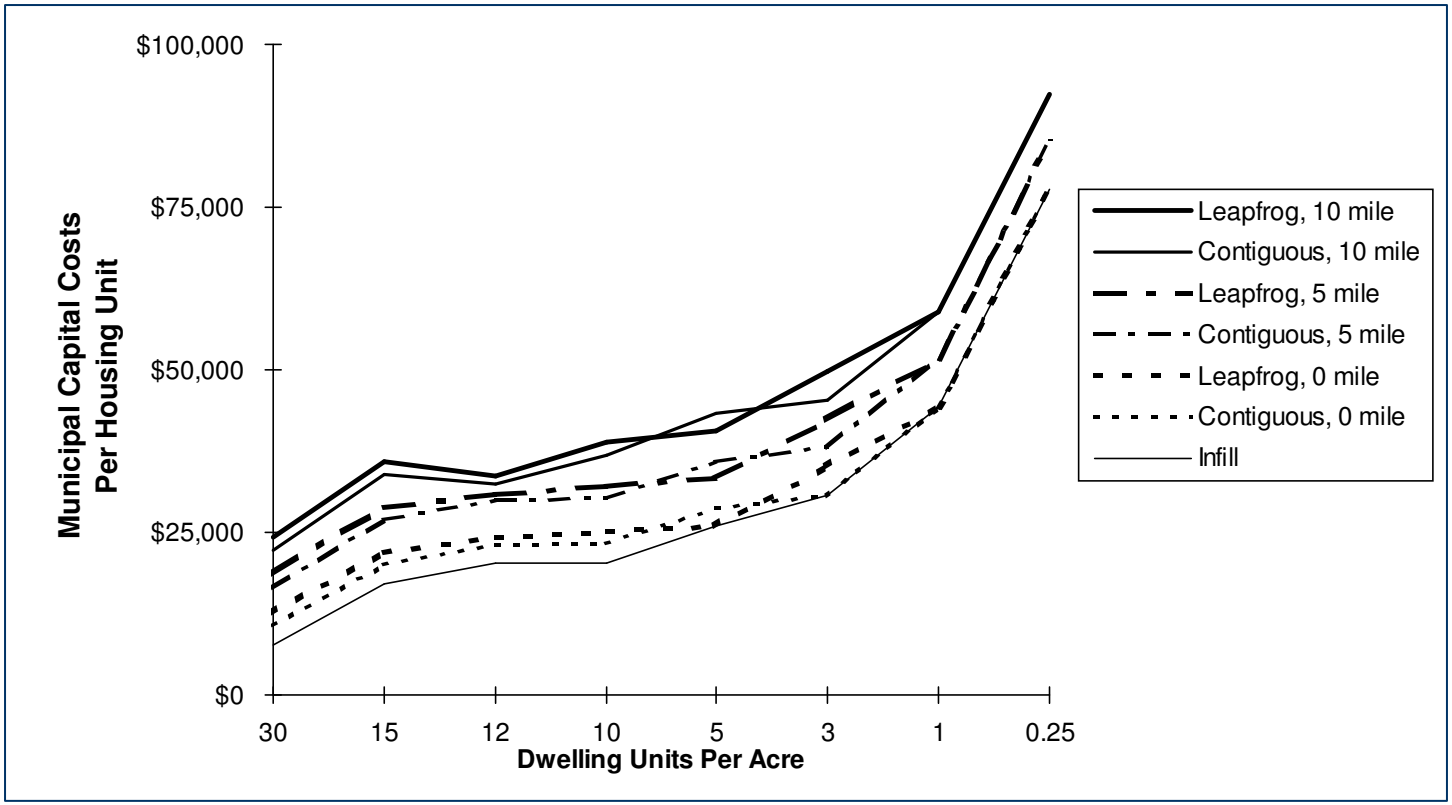
Preservation saving greenfields

- Brownfields redevelopment saves 4.5 acres of land for every 1 ac redeveloped.
- Applying that ratio to MD tax credit projects > over 1,000 acres of land preserved

Lowering Run-off/Improving Water Quality

- EPA analysis:
  - more dense 8/DU per ac. lowered runoff by 74 % relative to one DU per ac.
- Tax credit projects are 3 times more dense on average
  - Reduce run-off by 30-40 %

Saving infrastructure Investments



Saving Infrastructure Investments

- Preservation projects save between 50 and 80 percent of infrastructure costs
- Saving $20,000 to $32,000 per DU
- $1.0 Billion in rehab/tax credit projects has saved $102-163 million

Saving Landfill Space

- EPA –
  - Residential demolition >115 lbs/sq ft waste
  - Non-residential demolition >155 lbs/sq ft of waste
- $1 billion in rehab tax credit projects “saved:”
  - 387,000 tons of material from landfills
  - Which represents filling a football stadium to a depth of 50 to 60 feet.

Saving Raw Materials

- Rehab is 20% less materials-intensive than new construction
- $1.2 billion in rehab for tax credit projects saved $100 million in raw materials

Health Benefits of Walkable Communities

- Median Walkscore for tax credit projects was 91 out of 100.
- Lower rates of disease and lower health costs:
  - Atlanta - Each quartile increase in land use mix > 12.2 % reduction in obesity;
  - Residents of most walkable neighborhoods > twice as likely to meet physical fitness guidelines

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Closing thoughts about density

- Does preservation lose to New Urbanism and high rises on sustainability factors? Downsides of high rise/new construction:
  - More exposed surfaces with attendant inefficiencies in heating and cooling;
  - Low insulation values for glass and steel structures;
  - Relatively inefficient floor-plates;
  - Lower pedestrian activity benefits - "vertical gated communities?"

Case study
HF Miller Tin Can and Box Company

- 30,000 sq ft office
- 40 apartments
- Walkscore 91

CO_2 reduction analysis:

- Reduce VMT by 40%
- LEED Silver - Reduce internal energy by 30%
- Reduces CO_2 by 296 metric tons, annually
- 56% of reduction is on VMT side

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