Presentation Outline

- **Frames** for thinking about sustainable development
- **Values** of historic patterns of building and development
- **Threats** to historic patterns of building and development
- **Policies** to conserve our existing patterns of development
Technology will solve it
www.PreservationNation.org/green
Sources of CO-2 Emissions

U.S. CO-2 Emissions
- Transport 27%
- Buildings 48%
- Other 25%

World CO-2 emissions
- U.S. Bldgs 10%
- All Other Carbon Emissions in the World 90%

Source: Architecture 2030, American Institute of Architects
Projected Building Trends

<table>
<thead>
<tr>
<th>Source: Brookings Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Square feet</strong></td>
</tr>
<tr>
<td><strong>Existing Buildings</strong></td>
</tr>
<tr>
<td>2005</td>
</tr>
<tr>
<td>300 B</td>
</tr>
<tr>
<td>2030</td>
</tr>
<tr>
<td>Demo: 82</td>
</tr>
<tr>
<td>Remodel: 150</td>
</tr>
<tr>
<td>New: 148</td>
</tr>
<tr>
<td>Rehab: 82</td>
</tr>
<tr>
<td>New: 148</td>
</tr>
<tr>
<td>Remodel: 150</td>
</tr>
<tr>
<td>427 B</td>
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</tbody>
</table>
Frame: Technology is the solution

“gadget green”
Frame: Technology is the solution

“the assumption of consumption”
Frame: back to nature
Frame: back to nature
How did I get here?
HEAVY TRAFFIC TO DENVER
EXPECT DELAYS
Frame: back to nature
Frame: back to nature
Frame: conserving what we have
Demolition Waste

“When we throw away one two-story, 125 x 50 ft Main Street building...

We are un-doing the environmental benefits of recycling 1,345,000 aluminum cans.”

Donovan Rypkema
The greenest building is...
one that already exists
Life - Cycle Energy Use: New vs. Historic

Assumptions:

- Both houses are same size
- New house uses half of annual energy used by existing
Life-Cycle Energy Use: New vs. Historic

Assumptions:

- New house TWICE as large as existing
- Old house upgraded to be more energy efficient

Energy Use

Annual Energy Use

Big

New "Green"

Efficient Historic

25 yr

Annual Energy Use

Life-cycle use remains less
Value: Traditional Building Practice
Value: Traditional Building Practice

- site location and orientation to maximize light and passive solar
- planting of trees to protect from sun/wind
- natural ventilation from operable windows, transoms and high ceilings
- eaves, shutters, porches and awnings

- courtyards, window wells, skylights, large exterior windows to maximize natural light
- use of masonry to create thermal mass to modulate heating and cooling
- human proportions and scale and efficient use of space
Average annual energy consumption
(Btu/sf commercial buildings, non-malls)

Source: General Services Admin
Value: Adaptability
LEED Silver Certified Federal Office Building, Ogden, UT

LEED Certified Senior Housing, Salina, KS
LEED and Rehab Tax Credit projects completed in U.S.

- LEED certified projects: 3,000
- Rehab Tax Credit certified projects: 34,000
- Combined Tax Credit & LEED projects: < 100
Value: Pedestrian scale
Value: Pedestrian scale
Value: Public investments
Value: Public investments
Value: Mixed use development
Value: Transit-oriented development
Emerging View: City dwellers produce relatively low amounts of GHGs.
Cities by Age of Primary Development: Pre- vs Post-1945

PRE-1945

POST-1945

|   | Portland, OR | San Francisco, CA | Seattle, WA | Chicago, IL | New York, NY | Boston, MA | Minneapolis, MN | Philadelphia, PA | Oakland, CA | Baltimore, MD | Milwaukee, WI | Austin, TX | Sacramento, CA | Washington DC | Cleveland, OH | Honolulu, HI | Atlanta, GA | Albuquerque, NM | Kansas City, MO | San Jose, CA | Tucson, AZ | Jacksonville, FL | Dallas, TX | San Antonio, TX | Miami, FL | New Orleans, LA | Los Angeles, CA | Louisville, KY | Columbus, OH | Detroit, MI | Phoenix, AZ | Indianapolis, IN | Fort Worth, TX | Nashville, TN | Arlington, TX | Long Beach, CA | Colorado Springs, CO | Virginia Beach, VA | Memphis, TN | Las Vegas, NV | Tulsa, OK | Oklahoma City, OK | Mesa, AZ |
|---|-------------|------------------|------------|------------|-------------|------------|--------------|---------------|-------------|-------------|--------------|------------|----------------|--------------|----------------|-------------|------------|-------------|--------------|----------------|-------------|-------------|-------------|--------------|----------------|-------------|----------------|--------------|-------------|--------------|--------------|----------------|------------|----------------|--------------|
|   | 50th        | 40th             | 30th       | 20th       | 10th        | 1st        |               |               |             |             |              |            |                |              |                |              |            |              |               |               |             |             |              |               |                |            |                |              |            |              |                |               |                |              |            |              |              |                |            |                |              |
| 1 |             |                  |            |            | 18          |            |               |               |             |             |              |            |                |              |                |              |            |              |               |               |             |             |              |               |                |            |                |              |            |              |                |               |                |              |            |              |              |                |            |                |              |

Bar chart indicates average performance of cities by age.

Cities built mostly before or after 1945.

[Green] = Pre-1945 [Orange] = Post-1945
Threats to historic buildings and patterns of development
Teardown: the practice of purchasing an older house, demolishing it, and replacing it with a much larger structure.
COMING SOON
Something Bigger!
Dwarfed by change

The classic look of coastal towns has fallen under a growing shadow

Tearing down a perfectly good house and building a bigger and better one on the same spot may seem extravagant to waste—not want—not Midwesterners, but to an increasing number of people in and around Indianapolis, the concept makes sense—and it's coming soon to a neighborhood near you. Judging from the number of demolition permits granted for single-family homes in Indianapolis—up 55 percent in the last three years, from 401 in 2000 to 623 in 2003—what began as a strictly East and West Coast phenomenon has become a small but significant citywide trend. And as vacant land in and around Marion County becomes scarcer, real-estate insiders agree that the trend will only grow.

Typically, Indianapolis' teardowns are happening in older suburbs whose houses are outdated and small by today's standards, but whose location is appealing. These older neighborhoods have several advantages over far-flung new developments, including shorter and less nerve-wracking commutes, established retail and entertainment options, large yards with mature trees, and stable schools that aren't bursting at the seams due to a sudden influx of families.
Teardowns in over 400 Communities
Changes in House Size: 1950 - 2007

• Average household size decreased 22%
• Average area per person increased 188% to 840 sf
• Number of 1-person households up from 9% to 27%
• Average single family lot = 16,864 square feet in 2007

Source: US Census
HARRIS CUSTOM HOMES
1018 S. Vine Street

6 Bedroom
8 Baths
6000 Sq. Ft.
3 Car Garage

Contact Tim Harris
303-257-4779
Many neighborhoods are "over-zoned"
Buildable Lot Area

1 - Existing Structure

2 - Current Trend

A - 10’ City Right of Way

B - Front Setback no less than 20% of lot depth

C - 3’-0” Minimum Rear Yard Setback (Accessory Buildings)

D - Various Side Yard Setbacks
Policies to conserve historic neighborhoods and communities
M Streets Conservation District

GREENLAND HILLS

Est. 1923
Percentage of structures protected by landmark ordinance in major US cities

- **Chicago**: 500,000 structures, 1% landmarked.
- **New York**: 1,000,000 structures, 2% landmarked.
- **Denver**: 240,000 structures, 4% landmarked.

Total number of structures in city and % protected.
Policies: Form Based Codes

A Form Based Code (FBC) moves the emphasis of zoning from use to form.

FBC’s are based on an analysis of existing context.
Typology A1

Snapshot Area - Key

Description
This area typifies many of the earlier single family residential neighborhoods of the City. The development pattern in this area has particularly high lot coverage, with long street blocks concentrating consistently narrow lots. Detached sidewalks and mature street trees contribute a maturity and consistency to an already relatively cohesive pattern of housing. Front set backs tend to be consistent while the building form varies considerably either between lots or within the block. Building height is also relatively consistent. This would seem to be the most consistent of the residential typologies.

Diffs from other traditional typologies:
• Very high lot coverage and narrow streets
• No front accessed parking
• Very consistent pattern of street trees

Framework Features
Street Pattern: REGULAR RECTILINEAR GRID
Street Width: MEDIUM AVENUES & NARROWER STREETS
Sidewalk Location: ALONG STREET
Street Trees: YES - Regular Pattern
Block Width: RELATIVELY CONSISTENT 300' BY 600'
Consistency/Divisibility: CONSISTENT

LOT FEATURES
Lot Size: 350' BY 145
Lot Shape & Orientation: LONG, NARROW, PERP. TO STREET
Lot Width: NARROW, WITH SOME EXCEPTIONS
Lot Coverage: 50% & GREATER
Building Orientation: GEN. WITH LOT
Building Placement: FORWARD
Parking Access/Loc: GEN. REAR ACCESS

LOT FORM
Building Height: 2-2.5
Roof Height: 25'-35'
Roof Form: FRONT GABLE, SOME HIP
Consistent Front Porch
Transparency (Window Location %): 30-50% Transparency

Building Placement Diagram
Extract of the Snapshot Area - Aerial Photograph (Left)
Extract of the Snapshot Area - Aerial Photograph (Right)
**Typology D1**

**Description**

This area is characterized by a curvilinear grid network of streets, often with exceedingly long street blocks which are generally limited to two standard lot lengths wide. All vehicle access is from the front, usually associated with attached garages. Sidewalks are attached and give access to a relatively regular pattern of drives and paths. House form is relatively consistent with a common shallow pitch rectangular plan often varied by additions, front porches and garage accommodation. The axis of the house plan is parallel to the street and predominantly single story. A consistent and deep set back, combined with minimal space between the houses, establishes a relatively strong street frontage pattern and visual cohesion.

Differs from A, B & C typologies:
- Curvilinear street network
- Long, often sinuous, street blocks

Differs from typology D2:
- Lower lot coverage
- Lower front setbacks

**Framework Features**

- **Street Pattern**: CURVILINEAR GRID
- **Street Width**: WIDE
- **Sidewalk Location**: ATTACHED
- **Alyes**: NONE
- **Street Trees**: NONE, SPORADIC PRIVATE TREES
- **Concentration/Diversity**: RELATIVELY CONSISTENT

**Lot Features**

- **Lot Size**: 50′75 BY 125′, VARIES
- **Lot Shape & Orientation**: SHAPE VARIES & RECT.
- **Lot Width**: VARIABLE
- **Lot Coverage**: 25-40%
- **Building Orientation**: PARALLEL TO STREET
- **Building Placement**: CENTRAL
- **Parking Access/Locat.:** FRONT, ATTACHED GARAGES

**Building Placement**

- **Front Setback**: 40′
- **Side Setback**: 5′
- **Rear Setback**: VARIES, 40′ PATTERN

**Building Form**

- **Building Height**: 1-1.5 STORIES
- **Plate Height**: 8′-10′, 16′-20′
- **Roof Ridge Height**: 12′-15′, 25′-30′
- **Roof Form**: SMALL FRONT PORCH
- **Entry (Porch/Door Orientation)**: 25-35% TRANSPARENCY TRADITIONAL, 40-50% IN NEW CONST.
Los Angeles recently passed an ordinance changing the FAR standards for more than 300,000 properties across the city.
Policies: remove barriers

• Reducing off-street parking requirements

• Allowing Accessory Dwelling Units (ADUs)
Policies: provide incentives
Policies: direct development to places where it fits

Source: US Census
What will be the places we will want to sustain in the future?
Thank You.

www.PreservationNation.org

Jim Lindberg
National Trust for Historic Preservation
Mountains/Plains Office, Denver

james_lindberg@nthp.org
NOW... at little or no extra cost. You can include All-Year air conditioning in your plans.

Offset its cost with these savings...

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- No Porch
- No Screens
- No Fireplace
- Lower Cost Window Construction
- No Attic Fan
Total retail area in U.S. doubled, from 19 square feet per person in 1990, to 38 square feet per person in 2005.

6,000 chain outlets to close in 2009
250 vacant Walmarts
1.2 Billion SF of vacant retail space

Source: Shopping Center Today