



Costs and Benefits of Sustainability

Rocky Mountain Land Use Institute

Denver, CO



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RECENT AND FORTHCOMING SUSTAINABILITY CODES

LEED-ND (if coded)

- US Green Building Council

SUSTAINABLE CODE DEVELOPMENT CODE

- Rocky Mountain Land Use Institute

ESSENTIAL SMART GROWTH FIXES FOR URBAN AND SUBURBAN ZONING CODES

- EPA and others

GREEN BUILDING CODE ASSESSMENT PROJECT

- EPA and others



SUSTAINABLE COMMUNITIES

- meet the needs of the present while ensuring that future generations have the same or better opportunities. *Brundtland Commission 1987*
- integrate and balance economic, environmental, and social goals.

KEY FEATURES OF A SUSTAINABLE CODE?

- ❑ **Covers broader range of topics**
- ❑ **Integrates natural and man-made systems**
- ❑ **Draws on useful features of other code types (design, procedures, etc.)**
- ❑ **Based on a sustainable comprehensive plan and civic engagement vs. charrettes**
- ❑ **Tailored regionally to climate and ecology**



HOW CAN A DEVELOPMENT CODE SUPPORT SUSTAINABLE?

- Development codes CAN help
- address critical issues:
 - – CLIMATE CHANGE
 - – ENERGY CONSERVATION
 - – FOOD SUPPLY
 - – HEALTH
 - – WATER CONSERVATION
 - – SAFETY
 - – HABITAT PROTECTION
 - – AND OTHERS



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IMPLEMENTING SUSTAINABILITY PRINCIPLES THROUGH ZONING

- **REMOVE OBSTACLES**
 - > Increase height limits (wind turbines)
- **CREATE INCENTIVES**
 - > Density bonuses (green roofs)
- **REGULATE**
 - > Mandatory water-conserving landscaping



ESSENTIAL SMART GROWTH FIXES FOR URBAN AND SUBURBAN ZONING CODES

- 11 chapters, each focused on a smart growth zoning element including:
 - Mixed-use zones
 - Parking requirements
 - Walkable places
 - Stormwater management
 - Annexation policies



ESSENTIAL SMART GROWTH FIXES FOR URBAN AND SUBURBAN ZONING CODES

- Introduction
- Response to the Problem
- Expected Benefits
- Steps to Implementation
 - Modest Adjustments
 - Major Modifications
 - Wholesale Changes
- Practice Pointers
- Examples and References

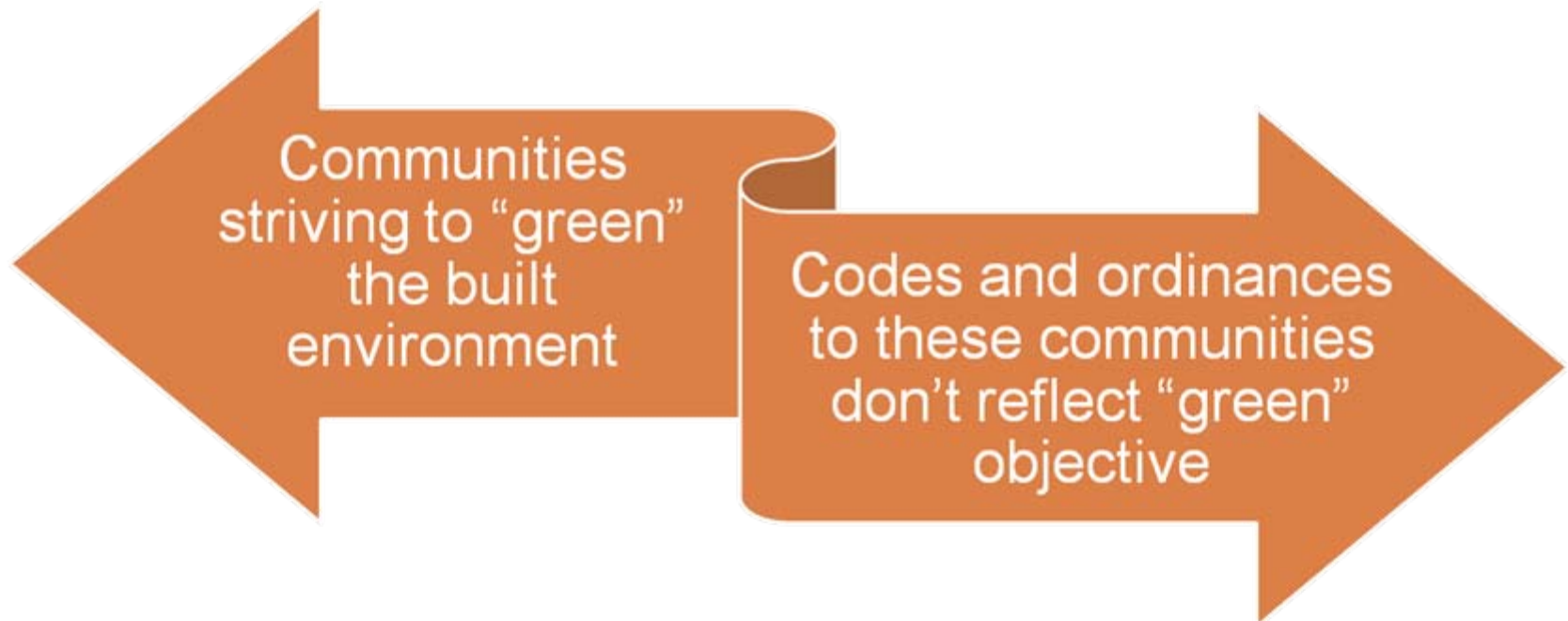


ESSENTIAL SMART GROWTH FIXES FOR URBAN AND SUBURBAN ZONING CODES

- Expected Benefits
 - ▣ Reduction of vehicle miles traveled
 - ▣ Efficient use of services and infrastructure
 - ▣ Higher-density form that supports transit
 - ▣ Increased tax base and tax revenue
 - ▣ Healthier people because of more opportunities to walk or bike



Genesis: Green Building Code Assessment Project

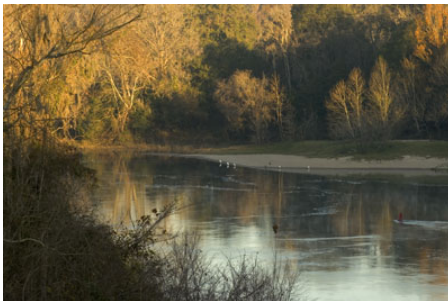




Genesis: Green Building Code Assessment Project

City of Roswell, Georgia

- Roswell Green endeavor
- Encountered permitting barriers rooted in city building codes
- Approached EPA for help with codes





Genesis: Green Building Code Assessment Project

One-Stop Shop!

- ❑ Brings all resources together and connects them to appropriate code barrier
- ❑ Eliminates search for credible data in multiple green building areas



Products of the Project



1. Comprehensive Green Building Code Assessment
2. Resources for Code Officials
3. Lean Event
4. Pilot by City of Roswell, Georgia

Green Building Code Assessment Tool

How do you use it?

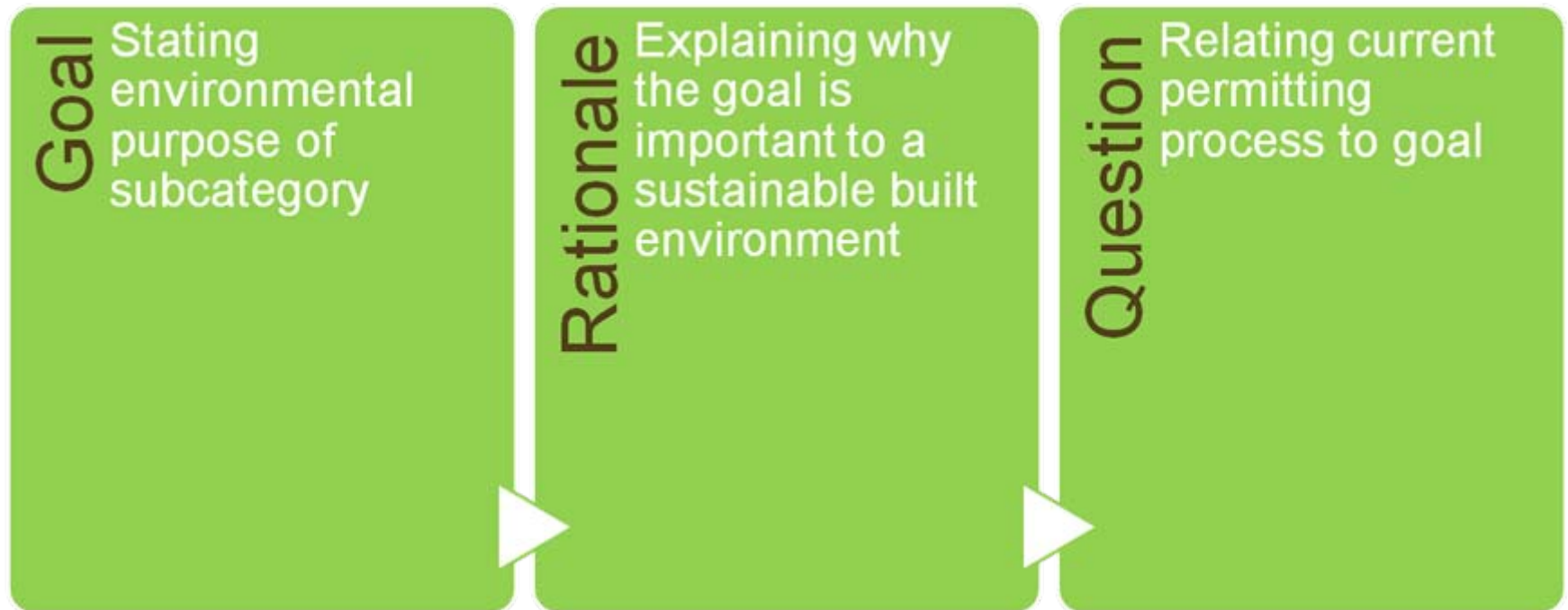


Green Building Code Assessment Tool

- Organization
 - ▣ beyond LEED
 - ▣ draft IgCC structure as of September 2009



I. Green Principles or Objectives



II. Technologies and Techniques

Strategies

Possible strategies for approaching goal in planning, design, or construction phases

Code Barriers

Sections of building codes where barriers may be



[Image from: buildingcommissioning.wordpress.com/](http://buildingcommissioning.wordpress.com/)

III. Code Assessment

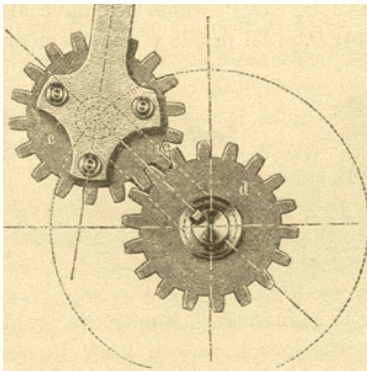
- How does the code address technology/ techniques for approaching goal?
 1. Required by code
 2. Incentivized
 3. Expressly allowed
 4. Code silent, but typically Approved
 5. Code silent, but not typically approved/approved only under certain circumstances
 6. Expressly prohibited



IV. Resources

Technical

- Handbooks/Manuals
- Databases specific to barrier category
- Specifications



Policy

- Model ordinances/regulations
- Government incentive programs
- Innovative city resolutions

Example

A. 4. Heat Island Effect

I. Green Principles or Objectives

Goal

to reduce heat islands in order to minimize impacts on microclimates and human and wildlife habitats

Rationale

buildings, roads, and other hard surfaces absorb and retain heat leading to an increase in surface temperatures. These higher temperatures contribute to higher energy costs, compromise human health and comfort, and increase air pollution. A way to mitigate heat islands is by reducing the absorptive capacity of roofs

Question

how does the permitting process allow or prevent developers from utilizing building technologies or techniques that can reduce the heat absorption of roofs?

Example

A. 4. Heat Island Effect

II. Technologies & Techniques

Strategies

ISLAND EFFECT REDUCTION could include vegetated roofs, roofing materials with a high solar reflectance index, or other high-albedo surfaces

Code Barriers

Potential areas of code barriers could include:

- + *Fire Prevention*
- + *Rooftop Structure*
- + *Structural Design*
- + *Wall Construction*
- + *Others Identified*

Example

A. 4. Heat Island Effect

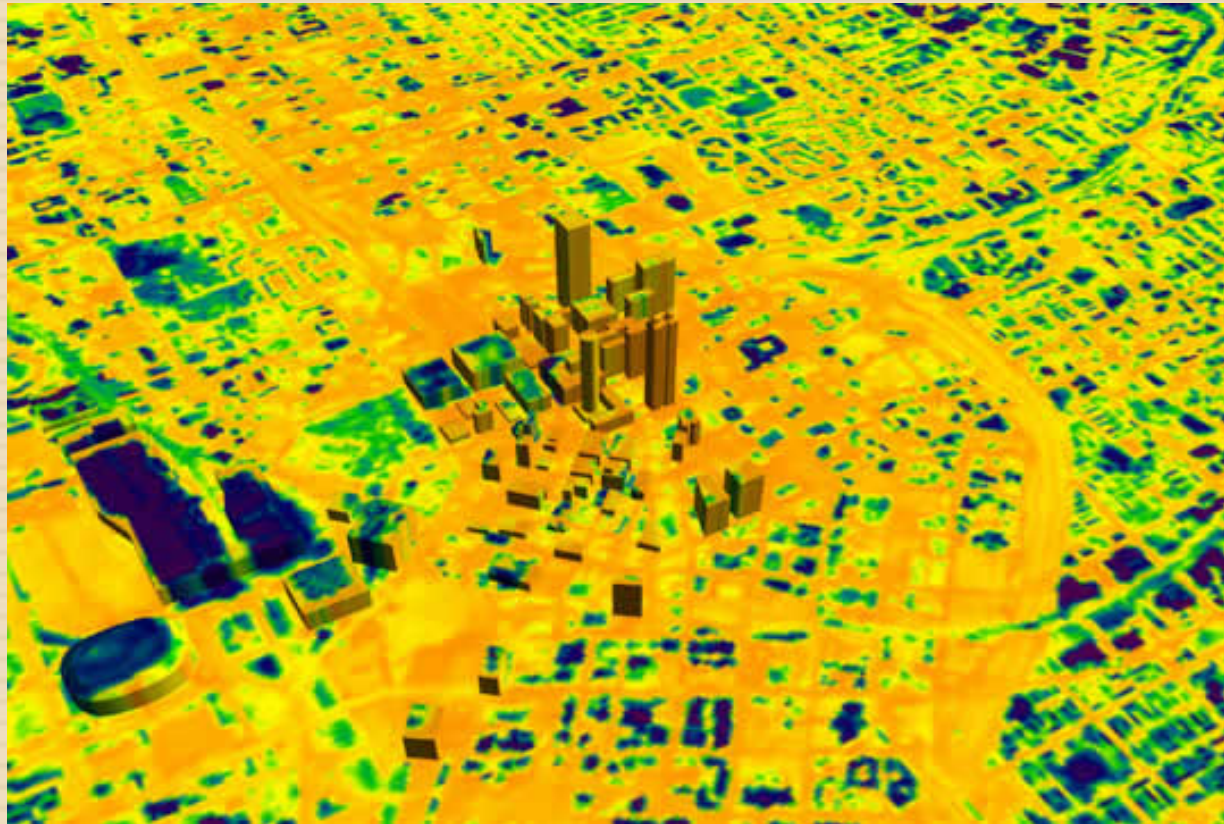
II. Resources

Technical

- US EPA Reducing Heat Islands: Compendium of Strategies
- Heat Island Mitigation Impact Screening Tool (MIST)
- Green Grid Roof Systems guide and system specifications
- Cool Roofs Rating Council

Policy

- Chicago Building Code Section 18-13-303 “Urban Heat Islands” prohibits black roofs and establishes progressive SRI requirements
- Portland, OR City Resolution requires all new City-owned facilities to include a 70% coverage ecoroof AND 30% high reflectance materials



FYI: Heat Island Effect in Atlanta

“Nighttime thermal imaging of Atlanta by NASA”

<http://www.inhabitat.com/2006/07/05/green-building-101-sustainable-sites/>

Current Actions...



- January 2010 – release for external review & comments
 - ▣ Other EPA Regions
 - ▣ ICC community
- March 2010 – to be Web-ready

Resources

- www.roswellgov.com
- www.iccsafe.org/cs/igcc
- www.usgbc.org
 - Info on 5 LEED Rating Systems
- www.greenbuildexpo.org
- www.greenplaybook.org
 - Playbook for green buildings, neighborhoods, and infrastructure
- www.cascadiagbc.org
- <http://libi.org>
- www.greencommunitiesonline.org
- www.green.dc.gov
- www.epa.gov/smartgrowth/
- www.southface.org
- www.egov.cityofchicago.org
 - Search Green Permit Brochure
- <http://law.du.edu/index.php/rmlui>
 - See Rocky Mountain Land Use Institute's "Sustainable Community Development Code" document