


**Greening the Fort**

Business Environmental Program Series  
October 26, 2010



## Green Building Program Goal

The goal of Fort Collins' Green Building Program is to develop a framework where building projects align with community goals of maintaining a vibrant economy, healthy community and sustainable environment.



## Community Goals

**Reduce  
carbon  
emissions**

(2008 Climate Action Plan)

**Reduce  
energy use**

(2009 Energy Policy)

**Reduce water use**

(2009 Water Conservation Plan)

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## Agenda

- The Leading Edge
  - Josie Plaut, Institute for the Built Environment, Colorado State University
- Green Building(s) Now:
  - Union Place
    - Rob Ross, Merton Design Company
  - Rocky Mountain Innovation Initiative
  - Discovery Science Center
    - Gary Schroeder, Fort Collins Utilities
- Break
- Going Mainstream
  - Fort Collins Green Building Program Update
- Questions + Discussion

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## Green Building – Beyond Sustainability

Josie Plaut

Institute for the Built Environment

Colorado State University



## Green Building(s) Now

Union Place

Rob Ross, Merton Design Company



Green Building(s) Now  
Rocky Mountain Innovation Initiative  
Discovery Science Center  
Gary Schroeder, Fort Collins Utilities



Going Mainstream  
Fort Collins  
Green Building Program

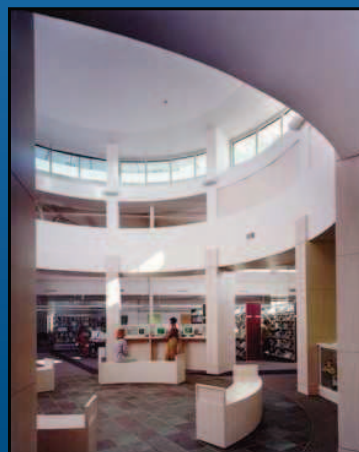
John Phelan  
City of Fort Collins





## Why?

- Better Buildings
  - Better indoor environment for  
(learning, working production,  
selling, living, etc)
  - Healthier environment
  - Cost less to operate and  
maintain
  - Have higher future value



## Why?

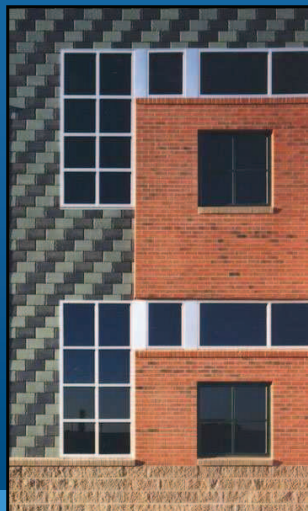


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- Lost opportunity
  - Every building is important.
  - Design and construction decisions impact performance for life of building.
  - New buildings today will be in use long after 2050 horizon in community plans.

## Why?



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- Leadership
  - FC is a hub for energy efficiency and clean energy
  - Market transformation
  - Long-term view, sustainability and beyond



## Who Builds Buildings?

- Owners
- Builders
- Contractors
- Architects
- Engineers
- Suppliers
- Vendors



- The City
  - Zoning regulations
  - Land Use Code
  - Building Code
  - Development Review
  - Permits
  - Inspection

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## Fort Collins Green Building Program

### Our charge from Council

- Develop a Fort Collins Green Building Program, including both required (code) and voluntary (above-code) elements for City Council consideration.

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## GB Program Guiding Principles

- Support GB transition actively underway in marketplace
- Support quality building projects that can demonstrate substantive, measurable results.
- Support the development of City processes that are relatively simple and easily navigated.

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## GB Program Guiding Principles

- Dovetail elements addressing individual buildings and lots with neighborhood- and urban-scale green elements.

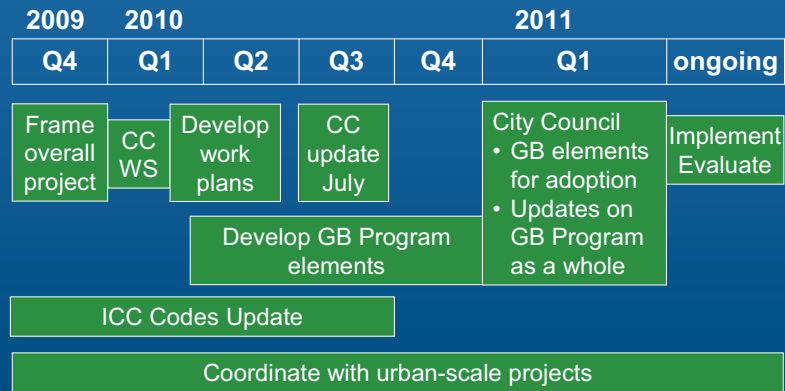


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## GB Program Timeline



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## Fort Collins Green Building Program

Voluntary,  
market-driven,  
above-code

Regulation

Foundation

- Provide incentives for projects significantly exceeding minimum codes
- Recognize GB innovation + success
- Provide education and training

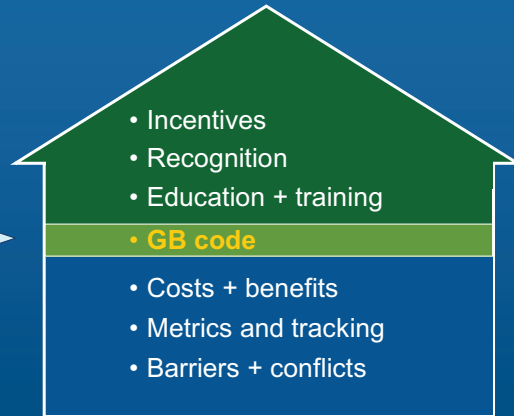
- Establish GB code

- Research and document local costs + benefits of GB
- Develop metrics and tracking system
- Revise City policies / codes / processes to address barriers + conflicts related to GB

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## GB Program Approach

- Focus on code elements first



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## GB Program Players + Roles

### Staff

- Manage project
- Expertise
- Outreach

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## GB Program Players + Roles

### GBP Advisory Comm

- Stakeholders
- GB Program focus
- 2-way communication
- Encourage participation

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## GB Program Players + Roles

### R-TRAC

- Residential buildings

### C-TRAC

- Commercial buildings

### TRACs

- GB code focus
- Expertise
- Tech + market
- Communicate with peers

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## GB Program Players + Roles

### Consultant

- Costs + benefits
- Analytical support

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## GB Program Players + Roles

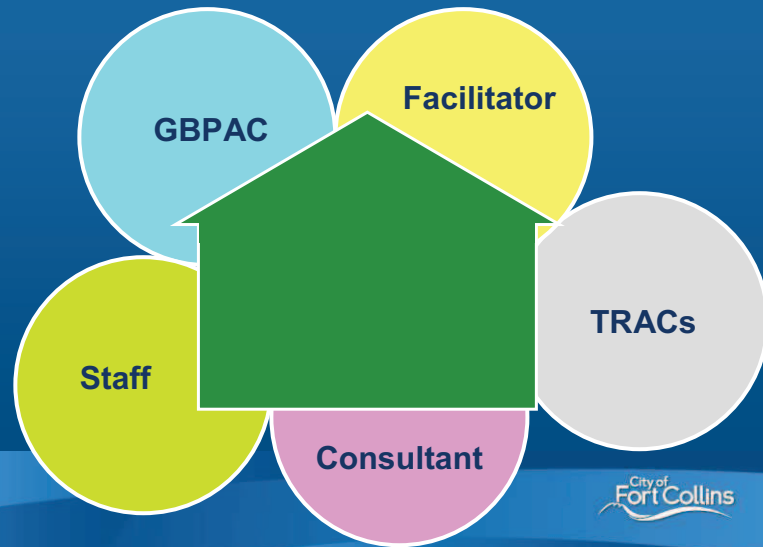
### Facilitator

- Efficient process
- Participation
- All views heard

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## GB Program Players + Roles



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GREEN  
CODES

Energy-efficiency  
codes

Health/safety codes

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## Adopted 2009 I-Codes

- 2009 International Building Code (IBC)
- 2009 International Residential Code (IRC)
- 2009 International Mechanical Code (IMC)
- 2009 International Fuel Gas Code (IFGC)
- 2009 International Energy Conservation (IECC)

## Green Building Codes

- Residential and commercial
- New construction
- Major alterations and additions to existing buildings

## Green Building Categories

- ✓ Site (land use and development)
- ✓ Lot (individual land parcel)
- ✓ Material resource conservation/efficiency
- ✓ Energy conservation/efficiency
- ✓ Water conservation/efficiency
- ✓ Indoor/outdoor environmental quality
- ✓ Education/Operation & Maintenance

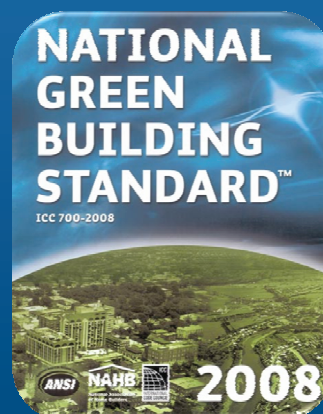
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## Residential Model Green Code

### NGBS – residential

**Bronze**  
Silver  
**Gold**  
Emerald



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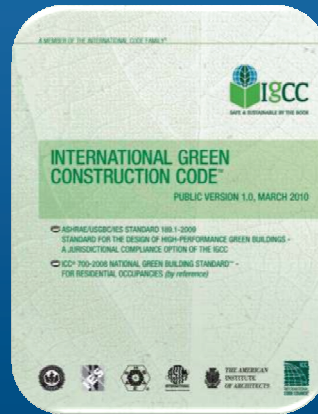




## Commercial Model Green Code

**IgCC**

**Commercial,  
industrial, &  
institutional**



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## Fort Collins Green Building Program

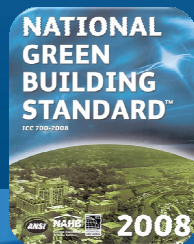
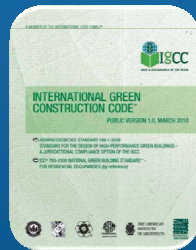
Our charge (now)

- Develop proposals to “green” the current buildings codes for Council review in December 2010.

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## Greening FC Codes



Recommended  
green  
building  
practices

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## GB Practices - Themes

- Breadth of green building
- Lead rather than follow
- Refine I-Codes
- Installed Performance
- Systems Approach
- Lost Opportunities
- Reasonable Steps
- Alignment between residential and commercial



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## GB Practices - Challenges

- Change
- Infrastructure
- Economic case
- Electric savings impact
- Implementation resources



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## Proposed GB Practices – Residential

- Resource efficiency
  - Construction waste management,
    - Recycling plan
    - Required recycling for wood, metal, concrete and cardboard

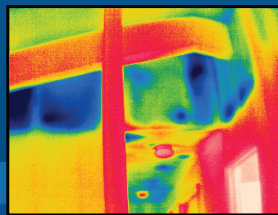


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## Proposed GB Practices – Residential

- Energy efficiency
  - Building Envelope (shell)
    - Solar control (limit unshaded window area)
    - Advanced air sealing
    - Window thermal properties
    - Window installation



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## Proposed GB Practices – Residential

- Energy efficiency (continued)
  - Mechanical Systems
    - Safe combustion appliances
    - Heating and cooling design
    - Whole house ventilation
    - Efficiency motors
    - Ductwork installation
    - Equipment commissioning



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## Proposed GB Practices – Residential

- Water efficiency
  - Low flow fixtures
  - High efficiency irrigation
  - Reduced turf area
- Indoor environmental quality
  - Low-VOC materials
- Other
  - Dark-sky exterior lighting
  - Owner operations and maintenance manual



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## Proposed GB Practices – Commercial

- Resource efficiency
  - Construction waste management,
    - Recycling plan
    - Required recycling for wood, metal, concrete and cardboard



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## Proposed GB Practices – Commercial

- Energy efficiency
  - Electrical distribution design
  - Building envelope
    - Continuous air and thermal barrier
    - Insulation installation standards
  - VAV fan control
  - Hotel/motel room controls
  - On-site renewables
  - Outdoor lighting controls
  - Daylighting



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## Proposed GB Practices – Commercial

- Indoor environmental quality
  - Air handling system access and cleanability
  - Air plenum materials
  - System protection during construction
  - Building flush out
  - Isolation of pollutant sources
  - Asbestos use prevention
  - Materials emissions (VOC)
  - Sound transmission
  - Daylighting

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## Proposed GB Practices – Commercial

- Water efficiency
  - Low flow fixtures and spray heads
  - No once-through cooling
  - Multi-family water metering
- Operations and maintenance
  - Fundamental building commissioning
- Other
  - Require energy assessments for building alterations

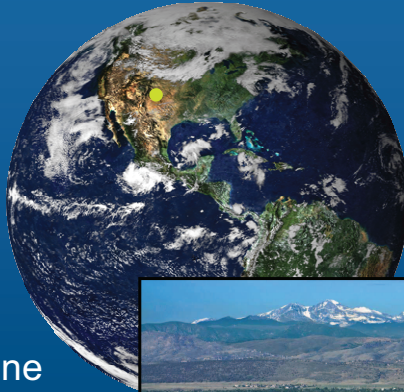
## Code Proposal Documentation

- Code proposal “at-a-glance”
- Benefit cost summary
- Green building practice summaries



## The Challenge

- Better buildings
- Energy
- Water
- Carbon
- Triple Bottom Line



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## Role Models



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## Fort Collins Green Building Program

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market-driven,  
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Regulation

- Establish GB code

Foundation

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## Fort Collins Green Building Program

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**Regulation**

- **Establish GB code**

Foundation

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## Next Steps and Public Outreach

- R-TRAC and C-TRAC meetings in October / November
- City Boards and Commissions meetings in November and December
- Public Open House, November 17
- City Council Work Session, December 14

[www.fcgov.com/greenbuilding](http://www.fcgov.com/greenbuilding)

## Questions