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**R-TRAC
Meeting # 4**

**Topic: Process Overview and Benchmark Update
Wednesday June 23, 2010, 3 – 5:30 pm**

PARTICIPANTS

Utilities Green Building Team

Amanda Sutton – Green Building Program Coordinator
Doug Swartz - Green Building Program Manager
Felix Lee – Green Building Code Project Manager

Facilitator

Susanne Durkin-Schindler

Consultant

John Butler -The Brendle Group

R-TRAC Members

Company	Representative
Care Housing, Inc.	Chadrick Martinez
Aspen Construction	Gil Paben
Highcraft Builders	Gordon Winner
Aspen Homes of Colorado	Rob Sabin
The Green Team Real Estate	Lara Williams
The Group Real Estate	James Mitchell
Sovick Design Builders	Dennis Sovick
Larkspur Homes, LLC	Michael Bello
FCBR	Michelle Jacobs
IBE student	Laura Barrett
Crown Jade Design and Engineering, Inc.	Mark Benjamin
Vignette Studio	Terence Hoaglund
National Center for Craftsmanship	Nick Benson
Vaught-Frye-Ripley Design	Linda Ripley
The Atmosphere Conservancy	Alex Blackmer
Merten Design Studio	Rob Ross

Jurisdiction	Building Official
Larimer County	Tom Garton
City of Longmont	Chris Allison

Key Points

Updates:

Plan Fort Collins Open House - June 29th and 30th

GBPAC Meeting - July 7th.

City Council Work Session - July 13th

Big Picture Process

Doug Swartz

See Appendix A for presentation

The Commercial TRAC instigated a higher level discussion on the overall process of the development of the green building codes. Staff has built on that discussion to figure out where to go next in this process for the R-TRAC.

Staff and the TRAC committees have made several observations after diving into the code.

- Due to the newness of the code it still has:
 - Vague language
 - Holes
 - Duplication with existing regulations
 - Processes are loosely defined
- Overall the intent of the code is all good.

The code review process has been working well so far. TRAC members are giving staff honest feedback and valuable input. Overall, stakeholders agree that green building is good and should be encouraged in our community.

The C-TRAC gave staff some valuable feedback on the IgCC as we started to review the resources chapter. Their main comments were:

- The new code pushes the bar up too far too fast
- Green building should be a creative and fun process - not a burden
- Don't want to create an onerous and expensive process
- There is a broad range of green building knowledge and experience
- Don't want to discourage builders from doing business in Fort Collins

Staff has seen that a lot of the green building code is covered in existing regulations and codes. Those items provide a great base for the

development of a green building code. The city is currently working on adopting the 2009 I-Codes which raise the bar on energy performance.

Additional staff observations include:

- NGBS may be too flexible
- It may be too easy to reach the Bronze level
- The breadth of the templates may distract from the highest value components
- Templates would require significant resources for compliance and enforcement if adopted as is
- As buildings become "greener" or achieve higher performance levels of the NGBS the resources (time and money) necessary increase
- As builders get to higher levels in the code third party verification is needed to support the process. The City will not be able to handle all of the verification needed

Given the observations and input that have been made at this point Staff has tried to identify a new direction for this process.

- Develop a similar approach for residential and commercial codes
- Code is the minimum acceptable community standard
- Focus on a relatively small mandatory core of "keepers" from the green code templates that include:
 - Low hanging fruit
 - High value (higher impact and lower costs)
 - Missing pieces in existing regulations
 - Field proven
 - Infrastructure exists or can be easily developed
 - Enforceable (including resources)
 - Consistently enforced
- Education and training is going to be necessary for City staff as well as the building community
- Mandatory, elective, or voluntary standards are all going to require resources
- Code needs to be the best fit for the community

Staff is looking for recommendations from the committee on:

- Stand alone GB code or amendments to other codes?
- Electives - as part of codes or outside?
- Above code rewards and creative incentives.
- Rely on third party verification for more aggressive GB projects?
- Education and Training

Next steps:

The code review process has provided staff with invaluable feedback and ideas. Staff is going to continue to meet with the commercial and residential committees and review the code templates. There is going to be a back and fourth between focusing on the details and stepping back to look at the bigger picture.

Committee Comments:

- It is important to integrate the 2009 I-Codes with the green building code review process. The committee wants to make sure that the green building codes are not thrown out by council because they were not integrated with the 2009 I-codes.
 - The green building team is working with the City building department to make sure that there is some integration between these two codes. The I-code review and adoption process will continue on the schedule that has been set. The green building team will most likely look at the 2009 I-codes as a baseline and then add additional requirements to that code.
- A lot of what is done on a project is on the request of the owner or client. There should be some incentives for the owners/end users as well as builders.
- Giving incentives to the contractors would be better if the City decides to rely on third party verification. The incentives will help the contractors pay the extra costs associated with that verification.
- One option could be to add a tax for people who are doing a poor job or building large home with inefficient equipment and then give rebates to homes that are built green (aka "Feebate" system).
- The City should focus more on the areas that will help them reach the community goals of GHG emission reductions, energy efficiency, etc.
- The code should also focus on the areas that are difficult and expensive to correct if done incorrectly (ex. tight thermal envelope, moisture barriers, etc).
- There is not a lot of new construction that can happen within the Fort Collins growth management area. Need to focus on how the code will impact redevelopment as well as new construction.

- Codes are designed as the bare minimum that needs to be completed for a project. Incentives help raise the bar.
- A potential problem with incentive programs is that there is still going to be people who will not want to go through the process. There could be builders that just won't bother. How can we bring them up to par if we don't mandate them?
- Longmont has implemented the NGBS and has observed that most of the projects that have been submitted have been meeting the Silver level of the code. It is important to note that Longmont had implemented the Green Points program prior to adopting the NGBS.

Benchmarking Project Update

John Butler -The Brendle Group

See Appendix B for presentation

The Brendle Group has taken the developed baseline definition and used it to rank a home using the NGBS system. This practice will help staff and the committee understand where a "code minimum" house would rank in the NGBS. The baseline specification was developed with input from the Brendle Group as well as information from a survey of homes that was conducted in 2007. Comments from the R-TRAC were also applied to the definition.

The baseline information was then applied to a floor plan that was provided by Aspen Homes. They went through the NGBS scoring tool to rank the house. Chapters 7 (Energy) and 9 (IEQ) reached the bronze level. Chapter 6 (Resource Efficiency) didn't make a level but was close to bronze. Chapters 8 (Water Efficiency) and Chapter 10 (Operations and Maintenance) did not meet a certification level. Chapter 5 on Lot was eliminated from the baseline because it would not be included in the code if the NGBS was adopted.

Note: These rankings do not reflect a home that was actually built.

Observations that were made are:

- Language can be vague and open to interpretation
- Points are given in multiple places for the same thing
- "Additional Points" section is significant
- Easier to benchmark the "baseline" - third party verification may need to be required for building reaching a higher level in the NGBS

The next step will be to score a home that has actually been built. Aspen Homes has volunteered a home for this project.

The Brendle Group would like to propose the creation of a sub group that is just focused on the benchmarking project, potential upgrade paths, and the costs associated with reaching different levels of the NGBS. Volunteers are needed to help identify the most likely methods builders would choose to get to each level. Ideal volunteers would be familiar with the cost side of building.

Energy Logic Benchmarking **Carissa Sawyer - Energy Logic**

Third party verification is done for the NGBS by having the builder score their own building using the scoring tool. That information is put into a verification report that is taken to the site to physically inspect and verify the implementation of each item. The house is scored based on the score of the lowest ranking section of the NGBS. Guidance on the verification needed for each point comes from a book that is given to the verifier that states what exactly is needed from the builder in order for them to get that point. The documentation varies from point to point but can be cumbersome in some areas.

Energy Logic looked at several types of homes and a remodel project and determined the level reached by each project. There is a wide range of scores that were obtained from the scoring process. The homes that did not make a level could have easily have made a level if they implemented just a couple of easy sections. That level would have been easily achievable for those projects if they were aware of the standard requirements.

Committee Comments:

- The NGBS scoring process was time consuming and confusing. There are some areas that require a lot of documentation or detail. It was an informative process to go through the entire code and see what is of value in this standard.
- It would be easier to have the intent of meeting the NGBS in mind when starting a project.
- Going through the NGBS was helpful in determining the different point levels and how to achieve them.

- One of the homes assessed got a silver rating but scored a gold level in everything but indoor environmental quality. Are there too many areas where a builder can add fluff that doesn't really matter in order to get points?
- Want to focus on areas that are going to be helping the community. One example is getting points for energy efficiency vs. bamboo flooring. Which is going to have the most impact?
- What are the most important parts that we should be focusing on as a community?
 - Efficiency
 - Size
 - What is going to have the long term impacts?
- The NGBS is very comprehensive at this point. It may not need to be as comprehensive to have the impacts that we are looking for as a community. That being said all of these sections play an important role for green building.

Chapter 6 - Resource Efficiency

Felix Lee

See Appendix C for presentation

Compliance Review:

The remodel criteria are based on when the structure received its permit. If it was built prior to 1980 it is eligible for a green remodel. For a building permitted after 1979, if the renovation or addition is 75% or more of the conditioned floor area, the entire building would have to meet the requirements of the NGBS.

Determining the square footage for this requirement is done using the ANSI standard. It is still confusing to get to an answer about how to calculate sq. footage as it applies to the NGBS. This would need to be defined if this is adopted as code.

The intent of Chapter 6 is to minimize the environmental impact of building materials, encourage environmentally friendly building systems, and reduce construction waste.

The intent of Section 601.1 is to award projects that decrease the size of a house. This applies to the above grade portion of the building.

Committee Comments:

- Mandating this section may be difficult in the community. Even though the code is not saying that people could not build their big house, it is requiring that it be more efficient and meet a higher level in the standard. This can get expensive to the home owner.
- How many people would this actually impact?
- Historic homes may need special consideration.
- The phrasing of this may elicit a negative response.

NEXT MEETING

July 14th – R-TRAC Meeting #5:

3-5:30 p.m. City of Fort Collins Streets Facility

Appendix A

Staff Presentation

Upcoming Events + Meetings

- Plan Fort Collins Community Workshop
June 29, 5:30 – 9 p.m. + June 30, 8 – 10:30 a.m.
www.fcgov.com/plan
- GB Program Advisory Committee meeting
July 7, 3-5 p.m. (Streets)
GBP update, GB Costs + Benefits, Union Place
- City Council Work Session
July 13, 6 p.m.
GB Program + 2009 I-Codes updates

Big Picture: Green Building Codes

R-TRAC Meeting
June 23, 2010

Green Building Program

Voluntary,
market-driven,
above-code

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

Regulation

- **Establish GB code**

Foundation

- 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

3

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.



4

GB Program Guiding Principles

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



5

City of
Fort Collins

GB Code Goals



+ has characteristics
of a “good code.”

6

City of
Fort Collins

Characteristics of a Good Code

- Requirements support intent
- Unambiguous language (applicants, enforcers)
- Supporting materials clearly convey
 - Intent
 - What meets code
 - What doesn't

7



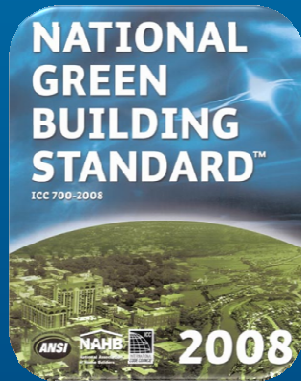
Characteristics of a Good Code

- Effective verification mechanisms
- No unintended consequences
- No conflicts with other regulations
- Straightforward to navigate: paper and field
- Consistently enforced

8

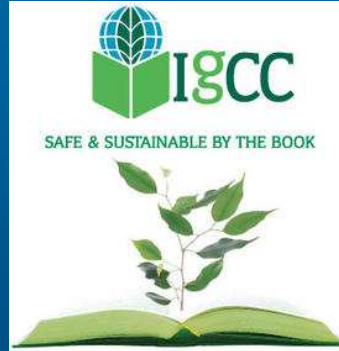


ICC Templates



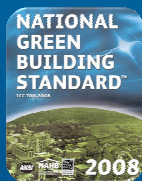
Residential

International Green Construction Code

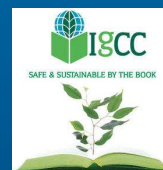


Commercial

ICC Templates



Green Building Categories Addressed
Site + Lot Development
Resource Efficiency
Energy Efficiency
Water Efficiency
Indoor Environmental Quality
Commissioning, O+M, Owner Education



**Both templates have similar intent.
Both cover similar practices.**

ICC Templates



- Initially developed by NAHB-RC ("Guidelines")
- 2008: ICC + NAHB-RC → "Standard"
- Update plans not yet clear (ICC + NAHB same page?)
- Adopted by one jurisdiction (Longmont, Jan 2010)
- Developed by ICC, AIA, ASTM
- 2010: Public review draft 1.0
- 2012: First IgCC model code:
- To be updated on 3-year cycle
- Not yet adopted as mandatory by any jurisdiction

Both templates are brand new.

ICC Templates



- Points-based rating system
- Code +/- voluntary program
- Small mandatory core + many options
- Extremely flexible
- Four levels
- Code language
- Significant mandatory code
- Electives – number specified by jurisdiction
- Flexibility TBD
- Pass/fail

**NGBS, IgCC take very different approaches.
Neither resemble traditional codes.**

Observations

Newness of templates shows

- Vague language
- Holes
- Overlaps with existing regulations
- Processes loosely defined

**A lot of work potentially needed
to tighten up the details.**

Observations

- Templates represent great intent
- GB practices would produce better buildings at less environmental impact + help meet City goals

Observations

- Process is working, insightful
- A lot of valuable input from TRAC members
- Stakeholders are enthusiastic about GB
- Great opportunities to partner with others to advance GB in Fort Collins

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Observations

GB market leaders comments on IgCC

- Pushes the bar up too far
- “Green building used to be fun; this feels like a burden.”
- Substantial cost impacts for some provisions
 - Changes in building practices
 - Documenting compliance

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Observations

GB market leaders comments on IgCC

- Broad range of GB knowledge + experience
 - “25% of contractors don’t know what ‘LEED’ stands for.”
 - “50% do . . . but don’t understand how to use LEED to build better buildings.”
- Be sure code is appropriately targeted

Observations

Staff observations

- Existing + planned regulations provide strong base.
 - Land Use Code + City Code
 - Radon-ready construction
 - 2009 I-Codes in the pipeline for Fall 2010
 - 2012 I-Codes coming next

Observations

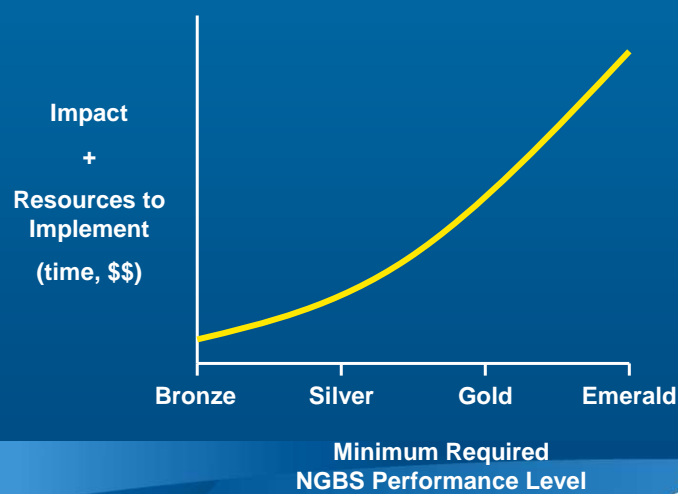
Staff observations

- “Paint-by-number” does not necessarily create great art.
- NGBS too flexible?
- Easy to reach NGBS Bronze
- Breadth of templates may distract from highest value components
- Templates → significant resources for compliance + enforcement

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Observations



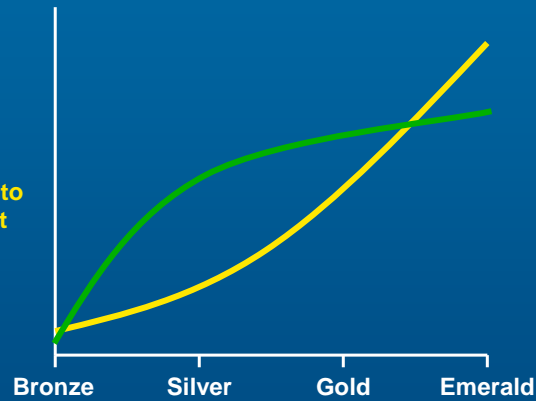
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Observations

(Update since
6/23 RTRAC mtg)

Impact
+
Resources to
Implement
(time, \$\$)



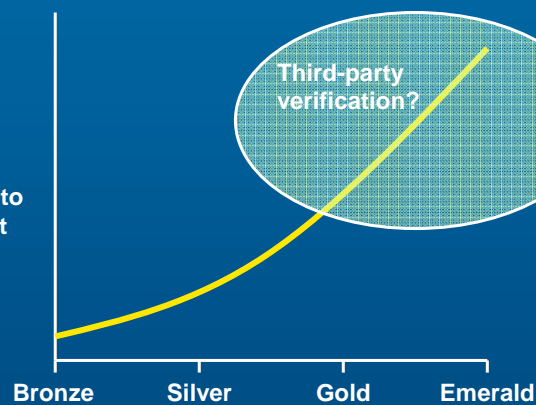
Minimum Required
NGBS Performance Level



21

Observations

Impact
+
Resources to
Implement
(time, \$\$)

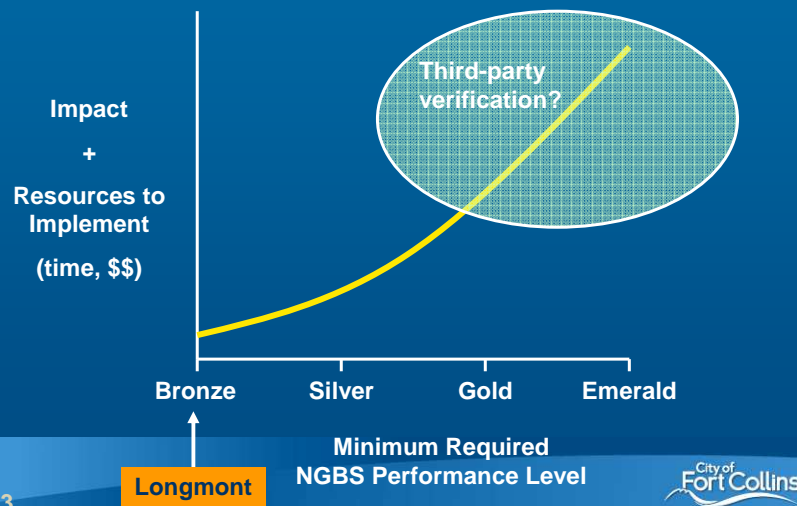


Minimum Required
NGBS Performance Level



22

Observations



Observations

Staff sense regarding direction

- Similar approach for residential + commercial codes
- Code = minimum acceptable community standard
- Relatively small mandatory core (“keepers”)
 - Low-hanging fruit
 - High value (higher impact + lower cost)
 - Missing pieces in existing regulations
 - Field-proven
 - Infrastructure exists / well on the way
 - Enforceable (including resources)

Observations

Staff sense regarding direction

- Code must be consistently enforced
- Standalone GB code or amendments to other codes?
- Electives – as part of codes or outside?
- Above-code rewards + creative incentives
- Rely on third-party verification for more aggressive GB projects?

25



Observations

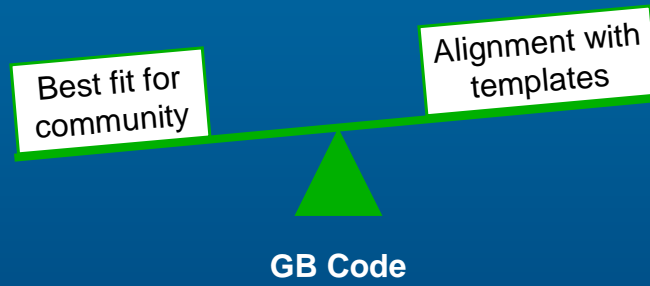
Staff sense regarding direction

- Education and training
- Get experience and develop infrastructure to support less familiar GB practices
- Over time, migrate additional GB practices → code
- Code mandatory, code elective, above-code voluntary programs all require resources

26

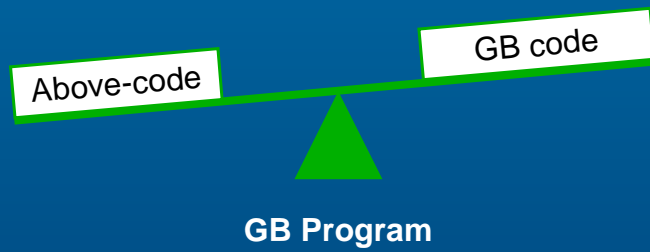


Balance



27

Balance



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Next Steps

- Continue current process / exploration
- Details ← → 30,000' view
- TRAC feedback and ideas are very valuable
- City Council feedback July 13

Outcome TBD!

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Options for Adaptation

- Which GB Categories are included?
- How far in each category? (How high is the bar?)

NGBS Categories	Performance Level Points			
	Bronze	Silver	Gold	Emerald
Lot Design, Prep, Develop	39	66	93	119
Resource Efficiency	45	79	113	146
Energy Efficiency	30	60	100	120
Water Efficiency	14	26	41	60
IEQ	36	65	100	140
O+M, Owner Education	8	10	11	12
Additional Pts - any category	50	100	100	100
Total Points:	222	406	558	697

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Appendix B

Staff Presentation



Green Building Program

R-TRAC Meeting
June 23, 2010

Benchmarking Update

WORK TO DATE

- Baseline definition of code minimum mainstream practice
- NGBS Scoring

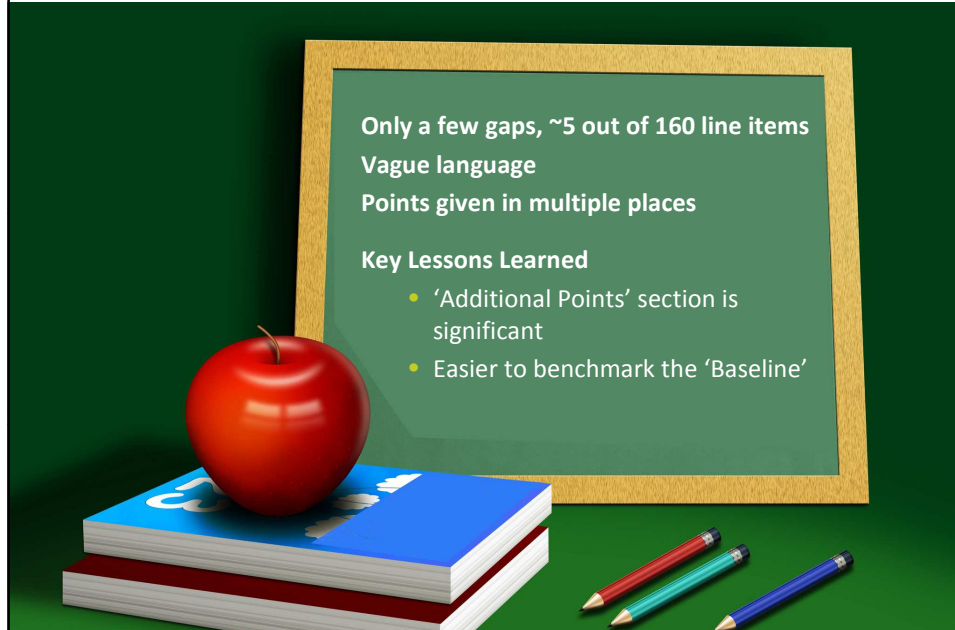
INITIAL RESULTS

- NGBS scoring of baseline home
 - Bronze level – Energy Efficiency and Indoor Environmental Quality
 - Resource Efficiency just short of Bronze
 - Not Certified – Water Efficiency and Operation/Maintenance
 - Baseline definition ?s

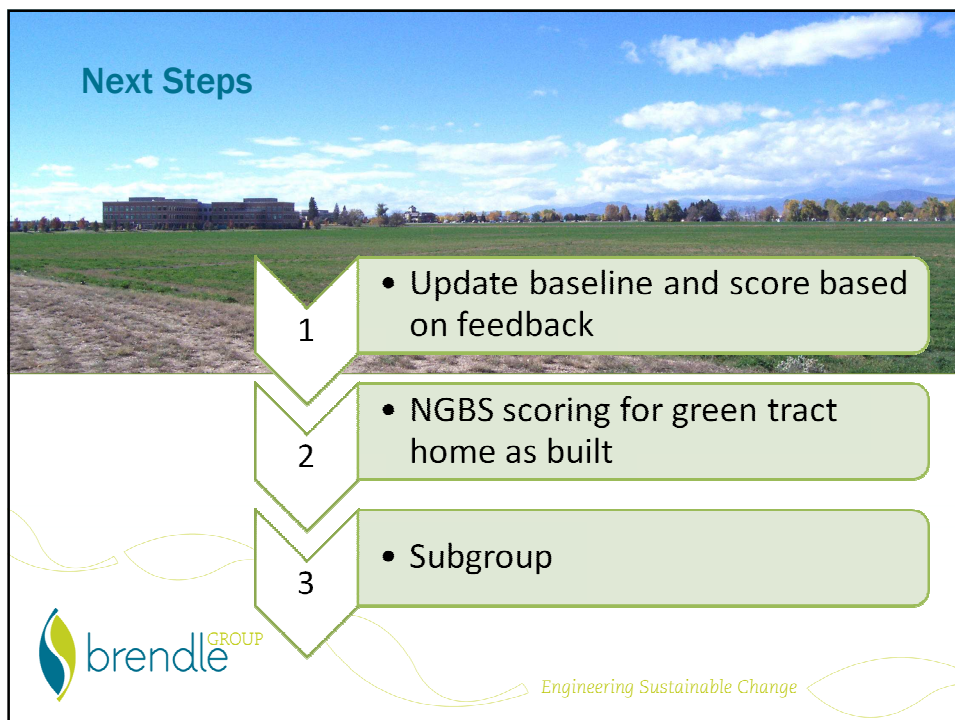


Engineering Sustainable Change

Observations and Lessons Learned



Next Steps



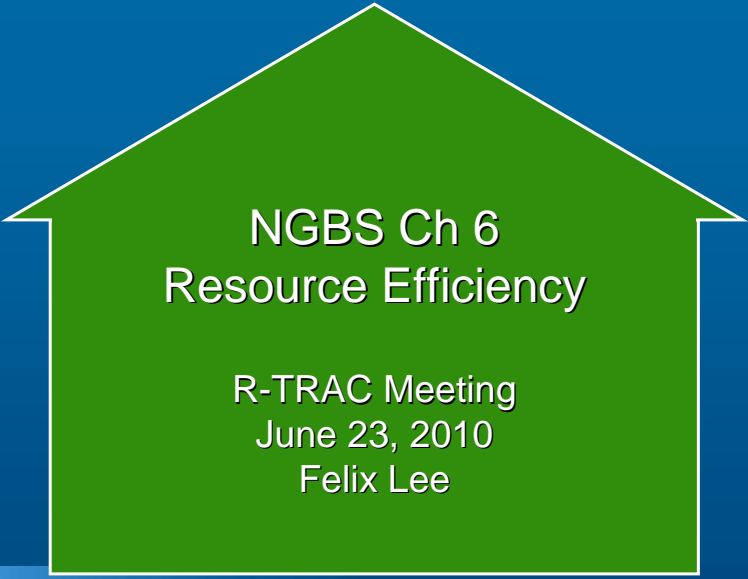


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Appendix C

Staff Presentation

A green house-shaped graphic with a white outline, centered on a blue background. The text is inside the house.

NGBS Ch 6 Resource Efficiency

R-TRAC Meeting
June 23, 2010
Felix Lee

Compliance Review

“Green Remodels” – Table 305.5

- ❖ Buildings obtaining a building permit prior to 1980
- ❖ Focuses on energy and water conservation

Green Remodels – Table 305.5

Table 305.5
Threshold Ratings for Green Remodels

Green Remodel Practice	Performance Level			
	BRONZE	SILVER	GOLD	EMERALD
Reduction in energy and water consumption in accordance with Section 305.5.5	20%	34%	43%	50%

“Green Building” Path

- ❖ For renovations or additions to buildings first permitted after 1979
- ❖ If a renovation or addition is 75% or more of conditioned floor area of entire building – considered a new building for compliance

Chapter 6: Resource Efficiency

NGBS Points System - Chaps 5 - 10

NGBS Categories	Performance Level Points			
	Bronze	Silver	Gold	Emerald
Lot Design, Prep, Develop	39	66	93	119
RESOURCE EFFICIENCY	45	79	113	146
Energy Efficiency	30	60	100	120
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IEQ	36	65	100	140
O+M, Owner Education	8	10	11	12
Additional Pts - any category	50	100	100	100
Total Points:	222	406	558	697

Chapter 6: Intent

- Minimize environmental impact of building materials
- Encourage environmentally efficient building systems
- Reduce waste during construction

Chapter 6: Green Building Practice Categories

- House size
- Efficient use of materials/waste reduction
- Durability/reduced maintenance
- Resource-efficient material selection
- Construction waste management

House size

✓ Sec. 601.1

Efficient use of materials/waste reduction

✓ Sections:

- 601.2 - Material usage
- 601.3 - Dimensions/layout
- 601.4 - Framing/structural plans
- 601.5 - Pre-fab components
- 601.6 - Stacked stories
- 601.7 - Prefinished materials
- 601.8 - Foundations
- 601.9 - Exterior wall system

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Durability/reduced maintenance

✓ Section 602

- 602.1 – Exterior doors
- 602.2 – Roof overhangs
- 602.3 – Foundation drainage
- 602.4 – Roof drip edge
- 602.5 – Roof gutter downspouts
- 602.6 – Grade
- 602.7 – Termite barrier

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Durability/reduced maintenance

✓ Section 602

602.8 – Termite resistant materials

602.9 – Water barrier

602.10 – Roof ice barrier

602.11 – Foundation water proofing

602.12 – Flashing

602.13 – Roof heat reflectance

602.14 – Recycling space

Resource-efficient material selection

• Sections:

603 – Reused or salvaged materials

604 – Recycled-content

606 – Renewable materials

607 – Resource-efficient materials

608 – Indigenous materials

609 – Life cycle analysis

610 – innovative practices

Construction waste management

✓ Section 605

605.1 – Construction waste management plan

605.2 – On-site recycling

605.3 – Recycled construction materials

NGBS Chapter 6 Review Guide

Discussion

&

Feedback

Next R-TRAC meeting

Wednesday July 14th
Streets Training Room
625 9th Street
3 – 5:30 pm

Prep: NGBS Chapter 7:
Energy Efficiency– Phase I

09 ICodes & Green Building Codes

- 2009 IECC is equivalent to NGBS Bronze level
- NGBS/IgCC would supersede IRC and IBC related to “green building practice” categories such as: energy-efficiency, water conservation, material resources and conservation, and indoor environmental quality

